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Ms. Sandy Bahr
Chapter Director
Sierra Club - Grand Canyon Chapter
202 E. McDowell Rd., Suite 277
Phoenix, AZ 85004

Dear Ms. Bahr:

This letter is in response to the objections filed on the Four Forest Restoration Initiative (4FRI) Final Environmental Impact Statement (FEIS) and Draft Record of Decision (DROD) released by the Forest Supervisors of the Coconino and Kaibab National Forests, Earl Stewart and Mike Williams, respectively. I have read the objections and reviewed the project record and FEIS. My review of the objections was conducted in accordance with the administrative review procedures found at 36 CFR 218, Subparts A and B.

OVERVIEW OF THE FOUR FOREST RESTORATION INITIATIVE

The Four Forest Restoration Initiative (4FRI) is a collaborative effort with over 30 stakeholder groups and the Forest Supervisors and staff of the Coconino, Kaibab, Tonto, and Apache-Sitgreaves National Forests. The 4FRI landscape spans 2.4 million acres across the Mogollon Rim of Northern Arizona and is the largest landscape-scale restoration project selected by the Collaborative Forest Landscape Restoration Program (CFLRP, established under section 4003(a) of Title IV of the Omnibus Public Land Management Act of 2009).

The FEIS documents the analysis of environmental effects associated with a suite of restoration treatments on approximately 586,110 acres of National Forest System lands. The project would be implemented over a 10-year period or until objectives are met. The area affected by the proposed decision includes approximately 355,707 acres on the Flagstaff, Mogollon, and Red Rock Ranger Districts of the Coconino National Forest and approximately 230,402 acres on the Williams and Tusayan Ranger Districts of the Kaibab National Forest.

ADMINISTRATIVE REVIEW PROCESS

The legal notice of the objection filing period was published on December 5, 2014. Objections were received from the following eligible groups and individuals:

- Marsha Honn #15-03-00-0005-O218
- Chad Hanson, John Muir Project #15-03-00-0007-O218
- Arthur Firstenberg #15-03-00-0008-O218
- Sandy Bahr, Sierra Club-Grand Canyon Chapter #15-03-00-0009-O218
- Stephen Dewhurst #15-03-00-0010-O218
- Jay Lininger, Center for Biological Diversity #15-03-00-0011-O218
- Kevin Mueller, WildEarth Guardians #15-03-00-0012-O218
- Dorothy Holasek #15-03-00-0013-O218

An objection was also filed by William Baker (#15-03-00-0006-O218); however, his objection was set aside from review because he did not submit any comments during a designated opportunity to comment as required by the regulation at 36 CFR 218.5.

On February 10, 2015, I notified the eligible objectors that I was exercising my discretion under 36 CFR 218.26(b) to extend the time for the objection review until April 6, 2015. On April 3, 2015, I sent a letter to all objectors explaining my decision to further delay my response to the objections so that we could continue our discussions and attempt to resolve issues during the week of April 6. This extra time allowed us to continue our thorough review of the issues and meetings with objectors to attempt to resolve the issues. Over the last few weeks of March and the first two weeks of April, the Forest Supervisors and I met with several objectors to explore opportunities to resolve all or part of their objections. Meetings were held in person, via teleconference, and by video conference as follows:

- On March 16 we met with Chad Hanson (in person), John Muir Project (JMP); and Kevin Mueller (phone) and Bryan Bird (in person), WildEarth Guardians at the Southwestern Regional Office in Albuquerque. Dr. William Baker also attended, not in an objector capacity but rather as a science advisor to JMP and WildEarth Guardians.

- On March 18 we met with Todd Schulke (in person), Center for Biological Diversity; Sandy Bahr (phone) and Alicyn Gitlin (in person), Sierra Club; Stephen Dewhurst (in person), and Dorothy Holasek (phone) at the Coconino Forest Supervisor's Office in Flagstaff.

- Marsha Honn and Arthur Firstenberg declined to meet to discuss their objections.

Members of the 4FRI Stakeholders Group, the 4FRI Interdisciplinary Team, the general public, and other Forest Service resource specialists and staff also attended the meetings. Several follow up conference calls were held to continue discussions around resolution of the issues (March 25 and 27, April 1, 2, 6, 8 and 9). I appreciate the extraordinary amount of time and effort invested by all parties. The open, candid discussions allowed us to focus on those areas where we may be able to come to some resolution on the issues raised in the objections.

As a result of our continued dialogue, we were able to reach an agreement with WildEarth Guardians to resolve their issues. On April 10, 2015, an Objection Resolution Agreement documenting specific clarifications and modifications to be made to project documentation was signed by Kevin Mueller of WildEarth Guardians and the Responsible Officials (Forest Supervisors). The resolution included an agreement by WildEarth Guardians to withdraw their objection in whole. Upon the withdrawal of their objection, I issued a letter on April 10, 2015, setting aside their objection from further review in accordance with 36 CFR 218(a)(6).

While resolution was ultimately not reached with the other objectors, the meetings were productive and I believe that the proposals we discussed brought us closer to agreement. The Forest Supervisors have agreed to make the changes described below in order to demonstrate their commitment towards resolving the issues, even though, with the exception of WildEarth Guardians, the objectors chose not to withdraw their objections.

RESPONSE TO ISSUES

I must provide a written response to the objections that sets forth reasons for the response; however, this response need not be point by point [36 CFR 218.11(b) and 36 CFR 218.57(b)]. The Responsible Officials and I have reviewed the project in light of the issues presented in your objection letters and during the course of the objection resolution meetings. While my response to each objector is not on a point-by-point basis, I want to assure you that we considered and reviewed all the issues and suggested remedies for all objections received. The modifications and clarifications we agreed to make to the FEIS and supporting documents as a result of the objection resolution meetings are described below. By copy of this letter, I am instructing the Forest Supervisors to document these modifications and clarifications to the FEIS and supporting documents in an appendix to the Record of Decision. None of the modifications and clarifications are substantial changes to the analysis for the decision nor do they present significant new circumstances or new information relevant to environmental concerns or bearing on the alternatives or impacts; therefore, a supplemental EIS is not required.

Marsha Honn (0005) and Dorothy Holasek (0013)

Both Ms. Honn's and Ms. Holasek's objections were concerned with air quality and the public health effects of prescribed burning. Their concerns were adequately responded to in the response to comments on the Draft EIS. The FEIS appropriately discusses the release of contaminants from prescribed burns and complied with law, regulation, and policy in consideration of a range of alternatives for review. No further action by the Responsible Officials is required.

Chad Hanson, John Muir Project (0007)

The objection filed by the John Muir Project (JMP) raised issues identical to those raised by WildEarth Guardians. The two groups presented a united front at the objection resolution meetings up until April 3, 2015, when JMP withdrew from the resolution process. JMP's objection raised the following issues:

7. Key scientific sources regarding historical forest structure and fire regimes, and Mexican spotted owl responses to fire are missing from the record.
8. Concerns regarding heterogeneity across the landscape.

JMP Issue 1: In the resolution agreement with WildEarth Guardians, the Forest Supervisors agreed to address the concern that findings of key scientific sources regarding historical forest structure and fire regimes, and Mexican spotted owl responses to fire are currently missing from the record, by modifying (in **bold**) the FEIS, Silviculture Report, and Fire Report as follows:

- Add language and references to the Silviculture Report outlining the forest density structure of Williams and Baker, et.al.

  The forest structure described in various literature (Reynolds, et, al., 2013; Williams and Baker, 2012; William and Baker 2013; Woolsey, 1911; Pearson. 1950; Covington and Moore, 1994; Swetnam and Baisan, 1996; Covington, et. al., 1997) is very similar to that described in this project. While the individual metrics used in the literature to describe the desired stand structure vary slightly, it is clear that almost all of the stand densities in the 4FRI EIS fall within the Natural Range of Variability described in the relevant literature.

- Compare the forest structure indicated in the literature to what is being proposed by the 1st 4FRI EIS (the forest densities are very similar).

Literature-indicated Forest Structure	What the Silviculture Report/FEIS Propose (language can be added where needed)
Defined small trees as > 10cm up to 40 cm (3.9" up to 15.7" DBH). Defines high density forests with approximately 141-145 trees/ha (57-59 trees per acre), and 17.3% of the forest exceeded 200 trees per hectare (81 Trees per acre), and 4.2% of the area exceeding 300 trees per acre (122 trees per acre). 58 TPA over 4" DBH 16-18% of forest areas >81 TPA 52-81% of trees under 16": DBH	**In Alternative C, 4FRI proposes mechanical treatment on 431,049 acres.** **Post-treatment structure is:** **VSS 2 (4.0-4.9") = 18.24 TPA (0-604) (28.1%)** **VSS 3 (5.0-11.9") = 24.39 TPA (0-639) (37.5%)** **VSS 4 (12.0-17.9") =12.7 TPA (0-84) (19.5%)** **VSS 5 (18-23.9" = 6.89 TPA (0-53) (10.6%)** **VSS 6 (24"+) = 2.83 TPA (0-18) (4.3%)** **Total Trees Per Acre = 65.05** **Projections for post-treatment density figures are:[4]** **65.05 TPA across the treatment stands (4.0"+ DBH)** **29.3% of stands are > 81TPA** **90.3% of the stands have >52% of the trees**

[4]Refer to Project Record #954, Summary of Projected Post-Treatment conditions by Type.

	<16" DBH. The range of TPA is approximately 0-639 TPA

- Add language and reference to Fire Ecology Report (Introduction, p. 1, 5th paragraph): **Landscape scale analyses are important for understanding how ecosystems responded historically to climate change or disturbances across environmental gradients (White and Jentsch, 2001).** Fire is a keystone process in healthy ponderosa pine ecosystems as well as grasslands, aspen, and other ecosystems within the analysis area. Fire Ecology is the study of the symbiotic relationship of fire with all spatial and temporal components of an ecosystem…

- In both the Fire Ecology Report and the Fire Ecology section of the FEIS, change "Opposing Science" heading to "**Other Science Reviewed**" and modify language in this section:

  Commenters also cited publications (Williams and Baker, 2013; Williams and Baker 2012) to support their comments. **Over the last several years, there has been a series of publications with differing conclusions about the role of fire in ponderosa pine forests in Arizona.** Williams and Baker compiled a large set of historical data that consists of records made by land surveyors for the General Land Office (GLO) in the late 1800s and early 1900s. Surveyors marked trees around corner points that delineated square miles and quarter-miles, sometimes making additional comments about the country they were walking through. This research provided new data in the form of estimates of forest density, species, and diameters of trees at the time of the survey **(Williams and Baker, 2012). Based on the density and size-class data, they devised a method for determining past fire regimes, concluding that the proportion of high-severity fire in recent fires was less than or similar to the proportion in historical fires (Williams and Baker 2012).** They also concluded that, **historically,** high severity fire was more prevalent across the ponderosa pine in Arizona than had been indicated by previous research **(cited elsewhere in this report). Fulé et. al. (2013) responded with concerns about Williams and Baker's (2012) methods and conclusions about high severity fire.**

  In evaluating the available research that is specific to fire regimes in ponderosa pine in Arizona and the project area, many people feel that ecological, social, and economic values are not consistent with the pre-restoration disturbance regime of large, high severity fires, especially under changing climate. However, ecological restoration in the project area will lead to a restored fire regime with historical levels of low, mixed, and high-severity fire, even if the details of the historical levels remain under on-going study.

- Add paragraph and modify language in Affected Environment, Historic conditions affecting the 4FRI analysis, section:

The 4FRI project area lies between Grand Canyon National Park's South Rim and the southern boundary of the Coconino National Forest. This area is dominated by ponderosa pine that is intermixed with pinyon pine, juniper, Gambel oak, aspen, grassland, and shrubland vegetation. Across the landscape, this mosaic of vegetation supported, and was supported by, a mosaic of fire regimes, ranging from low to high severity (Williams and Baker 2013). The driest part of the project area is on the Coconino Plateau, where ponderosa pine forests may have been less continuous, with significant portions of the landscape being pinyon/juniper or grass and shrubs, and more of the ponderosa pine is intermixed with shrubs (such as sage), or pinyon/juniper. Studies done in this area showed that, particularly where pinyon/juniper and mixed conifer intermixed with ponderosa pine, low-severity fire likely structured the majority of the forest while roughly a third was structured by mixed-severity fire, probably including small, patchy crown fires (Williams and Baker 2013; Huffman et. al., 2008).

Historically, both lightning and human-caused fires, once started, could burn until extinguished by rain, or until they ran out of fuel (typically when they reached an area that had recently burned). Fires could burn for months and cover thousands of acres (Swetnam 1990, Swetnam and Baisan 1996). Effects from these long burning fires would vary as conditions changed over the weeks they burned. As a result, most ponderosa pine in the southwest burned every 2 to 22 years as **mostly** low-severity, often area-wide fires (Weaver 1951, Cooper 1960, Dieterich 1980, Swetnam et al. 1990, Swetnam 1990, Swetnam and Baison 1996, Fulé et al. 1997a, Fulé et al. 2003, Covington et al. 1997, Heinlein et al. 2005).

Across the treatment area, the desired condition would allow the use of prescribed fires to supplement unplanned ignitions, producing an average annual Fire Return Interval (FRI) in the ponderosa pine of no more than 20 years, with a 10 year FRI being preferred unless monitoring indicates a change is warranted. The FRI on the southern end of the project would average less than 10 years because the higher precipitation produces faster regeneration and growth (Puhlick et al. 2012), while the northern, drier portion of the project area could go for 20 – 30 years, depending on environmental conditions affecting fuel accumulations, regeneration, and initial condition (Fulé and Laughlin 2007). Across the treatment area, forest conditions would allow for the use of fire as addressed in the land and resource management plan. Frequent surface fires would rarely move up into tree crowns and, when crown fire did occur, it would **mostly** be passive crown fire, limited to the tree or the group within which it started, **or small patchy areas of crown fire**. Restored sustainable fire regimes, from a combination of planned and unplanned ignitions, would regulate landscape structure, pattern, and composition, aligning forest changes with climate changes.

While researchers generally agree that there was mixed and/or high severity fire in ponderosa pine (Williams and Baker 2013, Roccaforte et al. 2008), there are some unresolved questions about the amount, pattern, and distribution of these fires. Some studies on the rates of these fires suggest they were relatively infrequent (Williams and Baker 2012). This is corroborated by Jenkins et al. (2011), whose paleoecological reconstruction found high-severity fires in transitional ponderosa and dry mixed-conifer forests at 200-600 year intervals over the last 1000 years.

Some science indicates the size and extent of high severity fires are much larger than historic data indicates was typical of ponderosa pine in the southwest (Swetnam 1990, Covington and Moore 1994; Swetnam and Betancourt 1998, Westerling et al. 2006, Climate Central 2012, Miller and Safford 2012) and, while the number of fires reported in and adjacent to the project area has decreased over the last 40 years, the average size has increased.

These modifications and clarifications also respond to JMP's concerns and no further action by the Forest Supervisors is required with respect to this issue.

JMP Issue 2: In the resolution agreement with WildEarth Guardians, the Forest Supervisors agreed to address the concerns regarding heterogeneity across the landscape, by modifying (in **bold**) the ROD, FEIS, Silviculture Report and Fire Report as follows:

- Add the following language to promote heterogeneity to the Final ROD:

The objective of the project is to restore forest structure, pattern, composition, diversity and landscape heterogeneity, within the ponderosa pine (Pinus ponderosa) ecosystem that will lead to increased forest resiliency and function and restore the historical fire regime. The intent of the 4FRI project is to obtain a high level of vegetative responses that will increase ecosystem diversity by increasing horizontal and vertical heterogeneity. Restoration initiates or accelerates ecosystem recovery with respect to ecological health, integrity, and sustainability (Reynolds et al 2013). Resiliency increases the ability of the ponderosa pine forest to survive natural disturbances such as insects, diseases, fire, and climate change (FSM 2020.5) without changing its inherent function (SER 2004). Restoration activities proposed with this project are expected to put the project area on a trajectory towards comprehensive, landscape-scale restoration, with benefits that include improved vegetation biodiversity, wildlife habitat, soil productivity, and watershed function, as well as increased forest structure heterogeneity. To ensure that the project will maintain and restore historical forest structure, the restored landscapes of the project area are projected to have an average of at least 65 trees/acre over 4" diameter, 29% of forest area with > 81 trees/acre, and 90% of forest stands with > 52% of the trees < 16" diameter as documented by scientific reconstructions of historical forest structure.

Restoration treatments will expand burn windows for both planned and unplanned ignitions, so that the proportion of the project area with restored historical levels of low, mixed, and high-severity fires is maximized. While the 4FRI does not provide any direction for managing unplanned ignitions, treatments are expected to increase the decision space for line officers deciding how to manage lightning caused fires wildfires. This can be expected to increase the area that can be managed for historic fire regimes, including low, mixed, and high severity fire.

- This language in the Final ROD will be supported in the FEIS, Silviculture Report, and Fire Report by adding the following language to those documents:
  - **Alternative C includes mechanical treatments on 431,049 acres.**
  - **The post-treatment tree density (trees per acre, TPA), after mechanical treatments and prescribed fires, across the 431,049 acres, is projected to be no less than 65 TPA (mean).**
  - **In the post-treatment landscape, across the 431,049 acres, it is projected that more than 16% of stands will have no less than 81 TPA (mean).**
  - **The post-treatment landscape, across the 431,049 acres, is projected to be dominated by small trees, with more than 51.8% of the trees smaller than 15.7" DBH.**
- Discussion and explanation of other scientific references, published prior to the completion of the 4FRI EIS analysis, will be added or expanded upon in the FEIS, Silviculture Report, and Fire Report for the following literature and findings:
  - **Williams and Baker (2013) found the mean density of historical forests was 142-144 trees/ha (57-59 TPA), and 16-18% of forest area was dense, with > 200 trees/ha (81 TPA).**
  - **Leiberg et al. (1904): "The light stands in many cases represent tracts which were burned clear, or nearly so, one hundred or one hundred and twenty years ago, and now are stocked chiefly with sapling growths, ranging in age from 35 to 90 years."**
  - **Jenkins et al. (2011 p. 138-139): "...the evidence indicates that severe wildfire was an important influence on the pre-European-settlement landscape in transitional PIPO and PIPO-MC...Fires are recorded in our study area with a frequency of several centuries, ranging from 600 to 200 years for multiple-basin events."**

- **Williams and Baker (2012): This study found that the historical fire regime in ponderosa pine forests on the Mogollon Plateau included 62.4% of the area with evidence of only low-severity fire, 23.1% of the area with mixed-severity fire, and 14.5% of the area with high-severity fire (Williams and Baker 2012, Table 2). Also, the historical fire rotation for high-severity fire was 828 years across the Mogollon Plateau, thus these fires were infrequent, as also found by Jenkins et al.**

- **Williams and Baker (2013): This study found that the historical fire regime in ponderosa pine forests on the Coconino Plateau included 58.8% of the area with evidence of only low-severity fire, 38.7% of area with mixed-severity fire, and 2.5% of area with high-severity fire (Williams and Baker 2013, Table 2).**

These modifications and clarifications also respond to JMP's concerns and no further action by the Forest Supervisors is required with respect to this issue.

Arthur Firstenberg (0008)

Mr. Firstenberg's objection alleged the agency failed to adequately address effects of the project on people with disabilities and failed to analyze the effects of escaped prescribed burns. These issues were adequately responded to in the response to comments on the Draft EIS and specifically addressed in the FEIS.

Mr. Firstenberg also raised several issues related to opposing science. Although he had not raised these issues previously as required by 36 CFR 218.10, the we reviewed the issues and determined they had been sufficiently dealt with in the analysis and/or decision rationale. No further action by the Forest Supervisors is required.

Sandy Bahr, Sierra Club; also represented by Alicyn Gitlin (0009)

Sierra Club's objection raised the following issues:

10. The agency failed to disclose the cumulative effects of 4FRI project implementation combined with permitted grazing.
11. The agency failed to disclose all factors contributing to aspen decline in the project landscape and failed to consider best available science.
12. Neither the proposed project nor the Biological Opinion establishes a monitoring plan or requirements to assess the effects of the project on Mexican spotted owl (MSO).

In order to address the issues related to cumulative effects and aspen decline, the Sierra Club proposed several modifications and clarifications that could be made to resolve their issues. Based on their review of these suggestions, the Forest Supervisors have agreed to provide further discussion and clarification as follows:

Sierra Club Issue 1: Link tree density to historic grazing and associated removal of understory (mention is made of reduced grasses and forbs; but link not made to increased tree density, inability to carry fire, or reduced competition of seedlings with understory plants).

- Modify Appendix F (Cumulative Effects) to include a discussion on how historic grazing influenced the existing condition. Add references such as Drake (1910), Belsky and Blumenthal (1997) and Bakker et al. (2010) to this discussion.

Sierra Club Issue 2: Mention interaction of grazing with fire suppression to degrade forests, including old growth forests.

- Add grazing presence/absence and grazing intensity as indicators to the Monitoring Plan (Appendix E). Add grazing as a monitored covariable of the existing indicators in Appendix E (Monitoring Plan). Add range readiness language to Appendix C (Design Features, Best Management Practices, and Mitigation) and Appendix D (Implementation Plan).

Sierra Club Issue 3: Noxious weeds/cheatgrass; mention reduced competitive and reproductive capacities of native species in grazed areas, and that actions associated with grazing can spread exotic plant seed.

- Add the Belsky and Blumenthal (1997) reference to the discussion on the historical impact of livestock grazing to grasslands in Appendix F (Cumulative Effects).

Sierra Club Issue 4: Grazing contributes to aspen decline/detrimental to aspen recruitment and survival.

- Modify the design features in Appendix C (Design Features, Best Management Practices, and Mitigation) to include measures that would be taken to protect aspen.

- Modify the Fire effects analysis to include language on deterrents used to protect aspen from ungulate grazing.

- Add to the Purpose and Need section of the FEIS and Appendix F (Cumulative Effects) citations from Ripple and Beschta 2007, 2011 and Hebblewhite et al., 2005.

- Incorporate language from the Range Report specific to grazing and impacts to aspen into the Water Quality and Riparian Analysis section of Chapter 3 of the FEIS and Appendix F (Cumulative Effects).

Sierra Club Issue 5: Grazing impacts springs/riparian areas; interaction with OHV use.

- Incorporate language from the Range Report specific to grazing and impacts to aspen into the Water Quality and Riparian Analysis section of Chapter 3 of the FEIS and Appendix F (Cumulative Effects).

Sierra Club Issue 6: Add the following references to peer-reviewed literature: Kerns et al. 2011 (which describes USDA research: "understory release from a long history of cattle grazing caused a greater degree of change than the initial reintroduction of fire."), Belsky and Blumenthal 1997, Cooper 1960, Madany and West 1983, Savage and Swetnam 1990, Arnold 1950.

- Add a discussion on how historic grazing influenced existing condition to Appendix F (Cumulative Effects). Add Belsky and Blumenthal 1997, Cooper 1960, Madany and West 1983, Savage and Swetnam 1990, Arnold 1950 references to this discussion.

Sierra Club Issue 7: Explain how future livestock management would differ from the past practices that helped lead to unhealthy forests in the first place.

- Clarify how range readiness is assessed in the Range Report and clearly link range readiness to the Implementation Plan (Appendix D) and the Monitoring Plan (Appendix E).

- Add range readiness to the project design features (Appendix C).

- Clarify in the range report that allotment management monitoring occurs in addition to 4FRI monitoring.

- Add language to the cumulative effects discussion in Appendix F that directs readers to the Range Report for information on grazing program-related requirements that set the sideboards on utilization, pasture use, etc.

Sierra Club Issue 8: Explain how monitoring will detect problems and what changes might be made to grazing practices in the future, including changes to timing, duration, stocking rates, or availability of pastures.

- Add language to the ROD that describes the complexity of grazing activity occurring concurrently with restoration treatments. Clarify that the allotment management plan (AMP) and annual operating instructions (AOI) process is the mechanism used to decrease or increase grazing numbers (not site-specific projects). Explain that monitoring for 4FRI will help inform future grazing analyses.

Sierra Club Issue 9: Acknowledge that removal of livestock after treatment (fire, cutting, or seeding/planting/mulching) may be necessary for a period of years. Only fire is mentioned as potentially impacting the availability of pastures to livestock, but if forests are returning to an unhealthy state (i.e., reduced understory, dense regeneration, altered fire regimes, noxious weeds) then livestock utilization may have to be altered.

- Modify the Range section in Chapter 3 of the FEIS to include vegetation treatments as a ground-disturbing action that will be considered along with fire.

- Clarify in Appendix C (Design Features, Best Management Practices, and Mitigation) and range report that restrictions in grazing of livestock will occur after significant burns in pastures, that livestock pasture rest after ground disturbing treatments (i.e., thinning, seeding, and aspen restoration) may occur, and that line officers will evaluate, at a minimum, annual monitoring of range readiness to determine when grazing may resume within a pasture.

- Clarify in Appendix C and range report that annual monitoring includes measures for forage production, precipitation, forage utilization, livestock numbers, and livestock season of use.

- Clarify in Appendix C and range report that condition and trend monitoring every five to 10 years measures plant canopy cover, plant frequency, and ground cover.

- Modify a design feature in Appendix C (Design Features, Best Management Practices, and Mitigation) to clarify the process of evaluating range readiness after ground-disturbing treatments.

With respect to the Sierra Club's issue related to the MSO monitoring plan, please see the responses to the Center for Biological Diversity objection below.

Stephen Dewhurst (0010)

Mr. Dewhurst's objection raised the following issues:

7. The FEIS failed to develop and analyze a full ecological restoration alternative, resulting in an inadequate range of alternatives.

8. The FEIS revised the purpose and need after the analysis was complete by changing the desired conditions in the Fire Regime Condition Class (FRCC) section of the purpose and need.

To demonstrate how the purpose and need changed, Mr. Dewhurst pointed out the differences in Table 13 between the draft and final EIS. Upon review of the table, the Forest Supervisors understand why it gives the impression that the desired conditions were changed. They have agreed to provide further clarification and discussion as follows:

- Correct the FRCC table, modify the table description and add a statement in this section to define FRCC and clarify that FRCC 1 is within the historic range and 2 and 3 are departed.

Table 13. Existing and Desired Conditions for Vegetation Condition Classes/Fire Regime Condition Classes in Ponderosa Pine

	Existing Condition (% of total area)	Desired Condition (% of total area)
Vegetation Condition Class 1	14	85 – 95
Vegetation Condition Class 2	25	5 – 15
Vegetation Condition Class 3	61	0
Fire Regime Condition Class of Treatment Area	**3***	**1***

*Habitat requirements for MSO and goshawk in the ponderosa pine type will limit the intensity of vegetation treatments in some areas. The number of acres this applies to may vary over the life of this project.

Add the following statement:

> **The desired condition is to have a range of 85 to 95 percent of the ponderosa pine in vegetation condition class 1 (see table 13). There would be a range of 5 to 15 percent vegetation condition class 2. There would be zero percent in the vegetation condition class 3. The desired condition for the ponderosa pine is FRCC 1; however, habitat requirements for MSO and goshawk in the ponderosa pine will limit the intensity of vegetation treatments in some areas. The number of acres this applies to may vary over the life of this project.**
>
> **Fire regime condition class assessments determine how departed a landscape's fire regime is from its historic fire regime. It is scaled from 1 to 3, with 3 being the most departed and 1 being the least departed. The fire regime is significantly departed from historical ranges on about 66 percent of the project area. The project area is classified as FRCC 3 (table 13). In FRCC 3, the risk of losing key ecosystem components is high. Approximately 25 percent of the project area is in FRCC 2, indicating the ecosystem is moderately departed from its historical range.**

With respect to the contention that the FEIS failed to analyze an adequate range of alternatives because it failed to consider a full restoration alternative in detail, the range of alternatives considered by the Responsible Officials included five alternatives analyzed in detail, and six alternatives, including an evidence-based full restoration alternative, were considered but eliminated from detailed study. The record adequately describes the rationale for eliminating alternatives from detailed study. The Forest Supervisors have agreed to send Mr. Dewhurst the full restoration alternative evaluation paper which includes rationale for eliminating the alternative from detailed analysis for his review. No further action by the Forest Supervisors is required.

Jay Lininger, Center for Biological Diversity (CBD); represented by Todd Schulke (0011)

The Center for Biological Diversity's objection raised issues related to canopy cover, goshawk survey requirements, and treatments and monitoring in Mexican spotted owl Protected Activity Centers (PACs).

In order to address the specific concerns related to these issues, CBD proposed several modifications and clarifications that could be made that would resolve their issues. Based on their review of these suggestions, the Forest Supervisors have agreed to provide further discussion and clarification as follows:

CBD Issue 1: The FEIS uses the word "intent" throughout the implementation plan in relation to retaining canopy cover at the existing forest plan standard level in "high" VSS, and VSS 5 and 6 stands. The FEIS needs to be unequivocal in following the existing standards and guidelines.

- Modify Appendix D (implementation plan) to change the language from "intend to" to "will" on 38,260 acres. This modification will also be made in the ROD.

CBD Issue 2: The FEIS is only clear about using the landscape canopy standard from existing (Coconino) and previous (Kaibab) forest plans in stands that were slated for higher intensity treatments. The assumption was that the upper 4's, 5's and 6's that were under lighter prescriptions would not go below the plan canopy cover standards. But the way the ROD and the FEIS are written there isn't explicit guidance for this nor is there any clear mechanism for monitoring this.

- Add language to the implementation plan (Appendix D), FEIS, silviculture report and ROD that includes less intensive treatments on about 46,090 total acres where there is a preponderance of large trees (upper VSS 4, 5, 6). This will add about 7,835 acres to the 38,260 acres that were included in the FEIS and draft ROD. The language for these additional acres will be modified in Appendix D (Implementation plan) as described in the Issue1 response. Modified language will state that, on approximately 46,090 acres, both ground-based and remote sensing monitoring will occur to document and ensure sufficient canopy cover remains (in the identified stands with a preponderance of large trees), and to compare the two methods.

- Modify existing language in the ROD to note that approximately 46,090 acres (total) will be treated less intensively. Assure Appendix D (implementation plan) and the ROD are consistent.

- It was noted that the monitoring plan already provides various methods for monitoring, including remote sensing and field (ground-based) validation. No change is needed to the monitoring plan.

CBD Issue 3: Adopt design features and/or Implementation Plan components to ensure that vertical crown projection is measured using ground-based methods throughout the project area.

- Add language to the Decision Rationale section of the ROD to explain that there is unresolved conflict related to measuring canopy cover.
- Clarify in the Implementation Plan (Appendix D), FEIS, Silviculture Report and ROD that canopy cover measurements on an additional 7,835 acres where there is a preponderance of large trees (for a total 46,090 total acres) will use both ground-based and remote sensing methods to ensure and compare consistency with expected canopy cover levels.
- Clarify in the ROD that both CBD and the Forest Service considered resolution of this issue larger than 4FRI, requiring involvement from multiple resources, including research. The Multi-Party Monitoring board will facilitate the process and develop a way to compare methods.

CBD Issue 4: Include in Amendment 2 up to 2,500 acres recommended by the Arizona Game and Fish Department ("AGFD") as corridors for grassland wildlife (Rosenstock and Gist 2014). Apply conservation measures for old growth and large trees within grassland corridors, such as a diameter cap. We request an addition to wildlife corridor deferral from forest plan canopy cover retention.

- Modify the ROD and Appendix D (Implementation Plan) to address the inclusion of approximately 2,750 acres of wildlife corridor explaining that "VSS 5 and 6 tree groups will be retained within the 2,750 acres designated for corridor treatments outlined in Rosenstock and Gist (2014)."
- Modify the Implementation Plan (Appendix D) to add: The wildlife corridor will be designed in alignment with the Large and Old Tree Implementation Plans. If there is potential for the corridor to affect VSS 5 and 6, adjustments (avoidance) will be made.
- Modify the Forest Plan Amendment 2 section of Appendix B (FEIS Forest Plan Amendments) to explain that the Coconino NF portion of the corridor will be deferred from forest plan canopy cover retention.

CBD Issue 5: Monitoring of Mexican spotted owl.

To resolve CBD's issues around monitoring and implementation of combined (mechanical/fire) treatments in Mexican spotted owl (MSO) Protected Activity Centers (PACs), the Forest Supervisors agree to make the following changes (in **bold**) to the MSO Monitoring Plan (FEIS, Appendix E):

- **Four** PACs will initially be selected from the pool of 18 for combined treatment, and at **least 4 reference PACs** will be selected for comparison.

- **Treatment of the remaining 14 PACs will be contingent upon the results of monitoring during this initial phase of PAC treatments.**

- **Of the 18 candidate PACs, those dominated by stands proposed for 9 inch dbh cutting limits will be prioritized for treatment and monitoring, provided that they are currently occupied.**

- **In the 18 combined treatment PACs, trees up to 17.9 inches dbh may be cut; however, trees over 14 inches dbh will not be removed. These select trees between 14-17.9 dbh may be felled and left onsite as logs, converted into snags, or burned. Coarse woody debris / surface fuels in treated PACs will be retained at levels compliant with forest plans.**

- **Pending U.S. Fish and Wildlife Service (FWS) approval and to the extent possible, all MSO residing in treated and reference PACs will be banded with unique color-coded leg bands to allow for individual identification and monitoring before, during, and after treatments have been implemented.**

- Surveys for occupancy and reproductive success will be conducted for two seasons before any PACs where MSO are detected receive combined treatments.

- **In the event that any of the 18 aforementioned PACs are surveyed for MSO occupancy for 3 consecutive seasons and no MSO are detected, treatment within those PACs may commence to retain and improve MSO habitat components (in addition to the 4 PACs discussed above). Monitoring within these PACs will remain consistent with occupied PACs.**

- Surveys for occupancy and reproductive success will be conducted in consecutive years post-treatment starting with the year of mechanical treatment and continuing until two years post-prescribed fire treatments.

- Vegetation data will be collected prior to treatment, then one year post-mechanical treatment and two years post-fire treatment for a total of three visits per PAC.

- Vegetation and spotted owl survey protocols will remain consistent across treatment groups and throughout the monitoring period.

- **If any of the 18 PACs being monitored burn at mixed or high severity, the monitoring will continue for 3 consecutive seasons.**

- **In the event that a mixed- or high-severity fire burns in any of the 117 PACs within the analysis area, MSO monitoring will be initiated and will continue for at least three consecutive years in all burned PACs. However, no more than 6 PACs affected in this way will be monitored during any given year. If monitoring objectives other than post-fire occupancy are included in this monitoring plan then there will be reductions in sample size to offset increasing expense per PAC. If the number of PACs burned as described exceeds the number to be monitored then there will be a preference to continue monitoring PACs for which baseline (pre-burn) data exist.**

- **A summary of the data collected during PAC monitoring will be made publically available and presented to the stakeholder group on an annual basis.**

- **The Multi-Party Monitoring Board will evaluate monitoring outcomes and other relevant science to develop and provide recommendations regarding future treatments in MSO PACs.**

- **Funds for the MSO monitoring will be established and demonstrated to the Multi-Party Monitoring Board prior to any treatments occurring in the 18 PACs.**

The following language will be added to the ROD and Attachment 1, MSO Project Monitoring, of the Monitoring Plan (Appendix E):

- There is mutual recognition of the need to evaluate the impacts of vegetation treatments on Mexican Spotted Owl (MSO) and its habitat at a broad scale. There is also a mutual understanding that the desired evaluation is beyond the scope of a single project such as the Four Forest Restoration Initiative. We have agreed to convene a working group that will design such a study. We anticipate that this effort will bring together subject matter experts, including representatives of the Forest Service, the U.S. Fish and Wildlife Service, the Rocky Mountain Research Station and other research stations, and the MSO Recovery Team, in cooperation with the Center for Biological Diversity and other stakeholders as appropriate.

- The primary objective of the first meeting will be to bring forward the key questions related to characterizing the effects of vegetation treatments on MSO and its habitat and to identify the resources needed to rigorously evaluate these effects at the appropriate scale. The group will review the best available science and develop a consistent monitoring approach across multiple administrative units, expanding upon existing monitoring efforts where appropriate.

CBD Issue 6: Concerns regarding requirements for northern goshawk surveys on both the Coconino and Kaibab National Forest.

- Add language in the ROD, Appendix C (Design Features, Best Management Practices, and Mitigation), Appendix E (Monitoring Plan), and the wildlife report to clarify that pre-treatment goshawk occupancy surveys will be conducted in goshawk habitat on both forests.

CLOSING

I want to thank those of you who participated throughout this project development and administrative review process. Your input and participation have been extremely valuable in helping the agency make more informed decisions. I also want to thank the 4FRI Stakeholders Group and Coconino and Kaibab National Forest employees who have put so much effort into what has been a very complex project development, analysis, and planning effort. The stakeholders and forest employees' professionalism and dedication to this landscape-scale restoration initiative is greatly valued and appreciated by me, the agency, and the public we serve.

By copy of this letter, I instruct the Forest Supervisors to comply with my written response, as well as the changes they have agreed to make as outlined above. As soon as they have complied with the instructions, they may sign the final ROD and notify interested and affected publics of their decision.

My review constitutes the final administrative determination of the Department of Agriculture. No further review from any other Forest Service or USDA official of my written response to the objections is available [36 CFR 218.11(b)(2)].

Sincerely,

CALVIN N. JOYNER
Regional Forester

cc: Earl Stewart, Scott Russell, Mike Williams