



TO: 4FRI Executive Board and Planning Team

DATE: January 16, 2020

RE: Stakeholder Comments: 4FRI Rim Country Draft Environmental Impact Statement

The Four Forest Restoration Initiative (4FRI) is a collaborative, landscape-scale restoration project intended to restore lands across portions of four National Forests (Apache-Sitgreaves, Coconino, Kaibab, and Tonto). The collaborative component of 4FRI is managed by a Stakeholder Group (SHG), which was formally chartered in 2010 and has been heavily engaged in the initiative since its inception. Per that Charter, the mission of 4FRI is to: *(1) integrate comprehensive restoration, fire management, and community protection planning at the landscape scale; (2) strategically prioritize and place restoration treatments; (3) safely re-establish natural fire regimes at the landscape scale; (4) identify and implement sustainable cost offset opportunities through wood and biomass utilization; (5) employ monitoring and adaptive management supported by the best available science; (6) build public support for accomplishing restoration and community protection through public education; and, (7) support land use policies that enable landscape-scale restoration while meeting the ecological goals of the 4FRI.*

The SHG collaborative has broad representation from state and local government, utilities, non-governmental organizations, private industry, academic institutions, and private citizens. Working relationships between the SHG and Forest Service were formalized in a Memorandum of Understanding (dated March 8, 2011), which stipulated that the 4FRI Collaborative shall be fully engaged in all phases of the NEPA process, including efforts to:

A. Develop agreement-based recommendations that are intended to inform and build agreement on: the purpose and needs statement, alternatives, collection and use of data, impact analysis, development of a preferred alternative, and/or recommendations regarding mitigation of environmental impacts;

B. Provide input to the U.S. Forest Service in a timely manner that matches the needs of an efficient NEPA and implementation timeline;

Pursuant to the MOU, the SHG is pleased to provide comments on the Draft Environmental Impact Statement for Rim Country (RC DEIS). Please note that individual stakeholders will also be providing separate comments as they see fit.

STAKEHOLDER REVIEW PROCESS

4FRI stakeholders worked closely with the Rim Country Planning Team through most of the EIS process. Much of the initial work was undertaken by the Planning Work Group, which was chartered in 2015 then put on hiatus in mid-2018. In December 2018, the SHG chartered a new DEIS Work Group (DEIS WG), tasked to continue collaboration with the Forest Service in developing the DEIS, review the draft document, and prepare comments on behalf of the full SHG. Between January and November 2019, the DEIS WG (Appendix I) held numerous meetings with the 4FRI Planning Team and Executive Board while also soliciting input from the 4FRI Multiparty Monitoring Board and other stakeholders. The 4FRI DEIS Working Group acknowledges and thanks the Forest Service for this collaborative effort to provide clarity on the DEIS and listen to SHG concerns. We thank the Forest Service Executive Board for the incorporation of key changes that, while delaying the release of the DEIS, provided increased trust for these collaborative efforts.

These efforts were distilled into draft comments that were provided to the full SHG for review and consideration. Following a final revision, these comments were approved by full consensus with no reservations, by the SHG on January 8, 2020. There is concurrence between stakeholders and the Forest Service on many aspects of the RC DEIS. In the interest of streamlining the Forest Service's content analysis, we have focused our comments on elements of the RC DEIS requiring additional information, analysis, or clarity. We also recommend modifications of treatment designs in order to reflect the best available science and maintain the social license developed through the 1st 4FRI EIS process. Per our discussions and verbal agreement with the 4FRI Planning Team, we anticipate continued collaborative work on a number of these issues, which will occur concurrently as the Forest Service completes the Rim Country EIS.

Our comments fall into eight major categories: (1) Flexible Toolboxes (aka Condition-based Management), (2) the degree of openness pre- and post-treatment, (3) old-growth protection and large tree retention, (4) management of dwarf mistletoe, (5) description of pre-treatment conditions, (6) role of the collaborative in implementation, (7) adaptive management and monitoring, and (8) issues previously discussed with the Forest Service and resolved in the published DEIS.

KEY ISSUE 1: FLEXIBLE TOOLBOXES

The RC DEIS encompasses a vast planning area of considerable biological complexity, for which existing data can be limited and sometimes inaccurate—stand exams being a prime example. The SHG understands this creates a need for flexibility during implementation, in order to ensure that a particular unit of the landscape receives the appropriate restoration treatment. To address this need, the RC DEIS includes a Flexible Toolbox Approach with two Flexible Toolboxes—one for mechanical treatments in terrestrial uplands and one for work done to restore watersheds and aquatic systems. Both are examples of “Conditions-based

Management,” an emerging paradigm for Forest Service projects across the western US. The SHG understands the intent of Flexible Toolboxes on Rim Country, but has numerous outstanding questions and concerns about the Flexible Toolbox Approach presented in the DEIS. At this point, we are not in a position to present a consensus statement on this approach. We also note that the Conditions-based Management approach is complex, controversial among 4FRI stakeholders, and, to our knowledge, has yet to be evaluated in a rigorous scientific framework. Under these circumstances, the SHG feels that the Forest Service must proceed cautiously, articulating the RC DEIS Flexible Toolboxes as clearly as possible, with inclusion of appropriate sideboards to maintain stakeholder support.

Concerns and Recommendations Applicable to Both Flexible Toolboxes

1. CONCERN: Restoration efforts in aquatic systems and terrestrial uplands (through the two Flexible Toolboxes) should be effectively integrated. The RC DEIS treats the two Flexible Toolboxes as discrete entities and decision processes, which may complicate prioritization/implementation of projects, decrease efficiency, and potentially compromise outcomes on the ground. For example, there are situations where needed or planned restoration of an aquatic system will influence treatment selection in the adjacent uplands and vice versa; however, the RC DEIS lacks a mechanism to address this.

RECOMMENDATION: the SHG recommends that the Forest Service work with stakeholders to develop an effective bridge between aquatic and terrestrial restoration efforts and their respective Flexible Toolboxes, and include this in the Final EIS.

2. CONCERN: The RC DEIS lacks a robust framework for allocating and tracking treatment application temporally and spatially. The overarching concern is that flexibility provided by the Flexible Toolboxes could inadvertently result in an overall action with individual and/or cumulative effects that are different or in excess of those analyzed and disclosed in the EIS. The SHG is also concerned that treatments be applied across the four-forest footprint in a manner that is predictable, reliable, and repeatable over the lifespan of the EIS. These concerns are most critical for the Mechanical Treatments Flexible Toolbox, but apply to the Watershed and Aquatics Flexible Toolbox as well. Assuming that the Flexible Toolbox cannot result in more acres than analyzed in the NEPA decision for each type or intensity of treatments, the Mechanical Treatments Toolbox poses particular challenges for implementation—one can envision scenarios under which the acreage limit for a particular thinning treatment is reached well before work is completed across the planning area or where the acreage allocated to that treatment is concentrated on a relatively small area. The SHG understands that the Forest Service has processes and reporting in place that collect some of the data needed to track implementation, but these are not standardized across Forests/Districts nor integrated in a manner that can support all four forests.

RECOMMENDATION: The SHG recommends that the Forest Service allocate sufficient resources to develop an appropriate tracking system, with coordination at the Region, Forest, and District levels. We request that this tracking system be incorporated in the Final EIS (FEIS) Implementation Plan and: (a) effectively allocate treatments with fixed acreage limits across Forests and Districts; (b) ensure that treatment acreages do not exceed sideboards in the ROD; (c) ensure consistent interpretation of decision criteria and treatment application over shelf-life of the Rim Country ROD with a mind toward the inevitable staff turnover; (d) allow tracking of accomplishments in near-real time, and last but not least (e) provide regular, timely updates to the SHG and interested members of the public. Accurate tracking of what treatments are actually implemented will be critical to the validity of the monitoring and adaptive management framework, and will ensure compliance with the ROD.

Concerns and Recommendations Applicable to the Mechanical Treatments (Terrestrial) Flexible Toolbox

1. **CONCERN:** The treatments' decision process should be clearly interpretable and understandable to stakeholders, the public, and implementers. As presented in the RC DEIS, the SHG finds the Flexible Toolbox framework for Mechanical Treatments complex and extremely confusing, thereby potentially leading to inconsistent and unpredictable treatment decisions. We also note that the text narrative (RC DEIS Appendix D, Section F) is sparse on details and does not directly correspond to the decision process illustrated in the graphics and decision matrices. Most importantly, we are concerned that this process appears open to interpretation and may not provide an adequate road map for repeatable application over the expected implementation time period of this EIS.

RECOMMENDATION: To address these shortcomings, the SHG recommends that the FEIS include a reliable implementation process that includes more complete explanations of the overall approach, filters, and decision criteria. If included, graphic illustrations of the Flexible Toolbox decision flow should be complete and correspond 1:1 with the narrative description presented in the text.

2. **CONCERN:** The logic framework and science underlying the decision parameters and their quantitative thresholds in the Decision Matrices (DEIS Appendix D, Section F) are not clearly articulated. The Forest Service provided a verbal explanation to the DEIS WG on October 7, 2019.

RECOMMENDATION: The SHG recommends that this information be added to the FEIS along with appropriate citations from the scientific and professional literature.

3. **CONCERN:** There is uncertainty whether or not acreages for each treatment type represent fixed ceilings. In meetings with the DEIS WG, the Forest Service has indicated that the

acreage allotted to a particular treatment can be decreased, but cannot be increased, as the EIS Effects Analysis is bounded by the upper amount. This suggests a “trade-off” process is relied upon for the implementation of the Flexible Toolbox; any such process needs to be captured more fully in the FEIS. The SHG is most concerned about higher-intensity mechanical treatments; however, the RC DEIS does not provide sufficient information for us to comment on the net acreage assigned to them (see Key Issue #2, below).

RECOMMENDATION: The SHG recommends that operational elements of the Mechanical Treatments Flexible Toolbox be clearly explained in the FEIS and that the Forest Service work with stakeholders to develop collaboratively supported treatment acreage allocations for inclusion in the ROD.

4. **CONCERN:** There is insufficient clarity on the criteria used to determine changes in treatment intensity, i.e., the degree to which intensity can increase or decrease on a particular area (the former being of greatest concern to stakeholders) and specific circumstances under which such adjustments can occur. This element of the Flexible Toolbox is likewise complex and not easily understood, even for those well-versed in forest management practices. The potential for confusion among the public (and Forest Service implementers at District level) is huge, as is the negative response that could occur. In discussions with the DEIS WG, the Forest Service has explained the difference between “hard” Habitat and Forest Cover Filters and “soft” Decision Modifiers included in the Flexible Toolbox. The SHG understands that “hard” Filters can change treatment type, but “soft” Modifiers only allow changes in treatment intensity. We also understand that the assigned treatment intensity can only increase when ground conditions do not match those described in the stand data, but treatment intensity can always be decreased at the implementer’s discretion.

RECOMMENDATION: The SHG recommends that these operational elements of the Flexible Toolbox be described in greater detail in the FEIS/Implementation Plan, along with specific examples of circumstances under which treatment intensity could be adjusted up or down. These could include, but not be limited to: an area found to have different site index than indicated in the stand data, triggering a more intense treatment, or development of new residential areas or infrastructure resulting in an expansion of the WUI, that would likewise receive more intense treatment.

Concerns and Recommendations Applicable to the Watershed and Aquatic Flexible Toolbox

1. **CONCERN:** There is an understanding that aquatic ecosystems are integrally linked to upland forest conditions and that restoration treatments in the uplands will improve both aquatic and watershed health; however, there is concern that restoration specifically focused on aquatic systems may take a back seat to work done in the uplands. The SHG

understand the pressing need to restore forest ecosystems that are outside the natural range of variability and pose significant risks to communities and resource values. However, restoration of degraded aquatic systems is an equally high priority to 4FRI stakeholders. Over the course of RC DEIS preparation, the Arizona Game and Fish Department, Forest Service, Trout Unlimited, and US Fish and Wildlife Service have worked collaboratively to identify and prioritize aquatic habitat restoration needs within the Rim Country footprint. These recommendations reflect known site-specific conditions as well as long term restoration goals identified in Arizona Game and Fish Department watershed management plans applicable to the planning area. An example plan for the Verde River Watershed can be found at <http://arctgis.azgfdportal.com/verdewatershed>.

RECOMMENDATION: The SHG recommends that this list of prioritized restoration projects (Appendix II) be included in the FEIS.

2. CONCERN: The RC EIS and ROD should provide site-specific coverage for priority projects. The SHG understands that environmental review is an expensive, time-consuming process and that Forest Service capacity for NEPA is increasingly constrained. Efforts like the Rim Country EIS should preclude or minimize the need for additional NEPA before initiating a project.

RECOMMENDATION: The SHG recommends that the FEIS provide site-specific coverage for priority restoration projects listed in Appendix II. The Rim Country final decision should be sufficiently clear so as to prevent the need for, and confusion about, additional NEPA on these projects. Additionally, we consider it important that the Forest Service maintain flexibility to conduct additional restoration work in any other aquatic system within the Rim Country footprint that is not listed in Appendix II, which may be needed after the ROD is signed (e.g., following damage to aquatic systems from post-wildfire floods).

3. CONCERN: As a CFLRP project, stakeholder engagement is required throughout the planning and implementation of projects associated with the RC DEIS.

RECOMMENDATION: The SHG recommends establishing a formal coordination process between the Forest Service and stakeholders that occurs when planning watershed/aquatic restoration projects. Early engagement with stakeholders will facilitate accomplishment of priority projects, help leverage additional funds, and facilitate sharing of resources and site-specific information.

KEY ISSUE 2: DEGREE OF OPENNESS PRE- AND POST-TREATMENT

The degree of forest stand openness following mechanical thinning is a significant concern among stakeholders, which is exacerbated by the ill-defined “interspace” concept used in the RC DEIS.

Concerns and Recommendations

1. CONCERN: “Interspace” is a spatial concept that does not directly translate into quantitative metrics of forest structure readily understood by stakeholders and the public. This creates considerable uncertainty about conditions following mechanical thinning, which may or may not comport with stakeholder expectations. For example, on field trips to the Chimney Springs Task Order (1st EIS, Coconino NF), stakeholders saw considerably different openness on areas thinned to the same level of interspace. We also saw areas thinned to different levels of interspace that were visually indistinguishable. To address this uncertainty, stakeholders have previously requested that pre- and post-treatment conditions (and the treatments themselves) be described in terms of “canopy cover and openness,” removing “groups,” “interspaces” and other confusing or redundant terms. Until these canopy cover/openness data are in hand, the SHG cannot comment on treatment designs that are potentially controversial, but we want to register our concern with these.

RECOMMENDATION: The Forest Service has verbally agreed to develop canopy cover/openness metrics for inclusion in the FEIS, as part of the ongoing collaborative efforts with the stakeholder DEIS Work Group. This work is recommended to incorporate learning from implementation on the 1st EIS area as well as available literature on the natural range of variability for canopy cover, openness, aggregation, and other relevant metrics (literature bibliography attached as Appendix III). If interspace is used in implementation, the FEIS should provide a clearly understood and repeatable method for estimating interspace as well as a crosswalk with canopy cover/openness and other relevant stand descriptors (e.g., basal area, trees per acre).

2. CONCERN: RC DEIS prescriptions include “regeneration openings,” which the SHG considers scientifically unjustified and a potential impediment to meeting restoration objectives. The SHG asserts that regeneration openings are inconsistent with current science for frequent-fire forests as well as fundamental principles of forest restoration—which emphasize the role of natural processes rather than sustained yield from a regulated forest. There is also concern that on some sites, too-intense mechanical thinning will facilitate excess regeneration and undesirable proliferation of ladder fuels.

RECOMMENDATION: The SHG recommends that the Forest Service remove regeneration openings from treatment designs in the RC DEIS.

3. CONCERN: There is uncertainty about the “Open Reference Condition” modifier included in the Mechanical Treatments Flexible Toolbox. In meetings with the DEIS WG, the Forest Service has explained the process for using this modifier, which we understand applies solely to mollic-intergrade soils where savannah treatments are not proposed. However, the RC DEIS presents minimal information on this treatment, consisting of a brief footnote in the Mechanical Treatments Flexible Toolbox (RC DEIS Appendix D) and definition in the Glossary (RC DEIS Appendix F). We are also concerned that the proposed approach appears subjective and open to various interpretations by implementers. For example, how would

suspected mollic-intergrade soils be identified on areas where not previously mapped? Would field personnel be required to conduct standardized soil assessments (e.g., dig soil pits)? This modifier is further complicated by issues of scale, as it can be applied to “portions of a stand.”

RECOMMENDATION: The SHG recommends that the Forest Service provide a clear rationale for this modifier, including supporting science. The FEIS and Implementation Plan should also specify the process for identifying unmapped units of mollic-intergrade soils and the minimum size unit to which the modifier can apply.

4. **CONCERN:** There is uncertainty about the extent and location of WUI treatments and how they influence net openness across the landscape post-treatment. The SHG worked with the Forest Service to develop a WUI definition for use in Rim Country. We understand that these areas will receive the most intense mechanical thinning treatment. In discussions with the Planning Team, the DEIS WG requested a summary of WUI treatment acreages by cover type and maps showing the spatial location of these treatments, also by cover type. Some, but not all of this information is currently included in the online visualization tool.

RECOMMENDATION: The SHG recommends that the online tool and FEIS present complete information on the extent and location of WUI treatments and how they influence post-treatment conditions.

KEY ISSUE 3: OLD GROWTH PROTECTION AND LARGE TREE RETENTION

Since the inception of 4FRI, stakeholders have consistently asserted that cutting old growth is contrary to fundamental principles of forest restoration and unacceptable. Protecting existing old-growth and retaining large trees that represent the next cohort of old growth are central to the social license developed for landscape-scale restoration that includes mechanical thinning. The Collaborative Forest Landscape Restoration Program (CFLRP), which funded work done under the 1st EIS, and for which a renewal proposal has been submitted (to include implementation on Rim Country), is likewise very clear about the need to conserve old/mature forest structure. During preparation of the 1st EIS, 4FRI stakeholders invested enormous effort developing a consensus “Old Growth Protection and Large Tree Retention Strategy” (OGPLTRS, see Project Record), which the Forest Service then translated into “Old Tree” and “Large Tree” Implementation Plans included in the FEIS. Our expectation has been that the substance and intent of this foundational stakeholder work will be brought forward into the RC DEIS.

Concerns and Recommendations

1. **CONCERN:** At a minimum, the Rim Country EIS should incorporate old tree protections included in the 1st EIS. The SHG notes that Age Class 3 trees (per Thompson 1940) have been included in the Old Tree Implementation Plan (OTIP, RC DEIS Appendix D) per our previous request. However, those age classes are missing from the accompanying illustration (Figure 94).

RECOMMENDATION: The SHG recommends that the figure be updated to match the text.

2. CONCERN: There is uncertainty in some of the language regarding old tree protection. The OTIP (RC DEIS Appendix D, p. 617) indicates that *“Removal of old trees would be rare. Exceptions would be made for threats to human health and safety, and those rare circumstances where the removal of an old tree is necessary in order to prevent additional habitat degradation.”* The latter portion of this statement could be interpreted as “habitat degradation” caused by old trees.

RECOMMENDATION: The SHG does not believe this is the Forest Service’s intent and recommends that the statement be clarified and include examples of habitat degradation situations requiring old tree removal.

3. CONCERN: The RC DEIS contains at least one statement inconsistent with the stakeholder old tree–large tree document and LTIPs included in the 1st EIS and RC DEIS. The “Modeling Assumptions” section of the Draft Silviculture Report (no pagination), states:

*“Within this project area, the majority of trees that meet the old tree definition are greater than or equal to 18”. On the ground cutting prescriptions will follow the Old Tree Implementation Plan (OTIP) and **trees larger than 18” that do not meet the OTIP criteria may be cut during implementation.**”* [emphasis added].

RECOMMENDATION: This statement should be revised to be consistent with OGPLTRS/OTIP/LTIP and specify how ponderosa pine and other conifer species will be treated.

4. CONCERN: The old tree age criterion included in the 1st 4FRI EIS has not been incorporated in the RC DEIS. Section D (p. 617) of the RC DEIS defines old tree age as: *“Established prior to 1870, predating Euro-American settlement.”*

RECOMMENDATION: The SHG recommends that the Forest Service replace this statement with this language from the 1st EIS: *“Approximately 150 years and older.”*

5. CONCERN: The RC DEIS contains unnecessary language concerning application of the OTIP to subsequent NEPA decisions.

From the OTIP (RC DEIS Appendix D, p. 617):

“This old tree implementation plan will be applied to the Rim Country Environmental Impact Statement Record of Decision and may not apply to subsequent decisions on the same project area or on other areas within Region 3. Subsequent decisions may include an old tree implementation plan that reflects project specific current conditions and the purpose and needs of subsequent projects.”

This statement is beyond the scope of the RC DEIS EIS and inconsistent with NEPA guidance provided by the Forest Service (personal communication to DEIS WG from Katherine Sanchez-Meador).

RECOMMENDATION: Given the sensitivities surrounding harvest of old growth, the SHG recommends that this statement be removed.

6. CONCERN: The RC DEIS should expressly prohibit harvest of old and large young ponderosa pine trees to “mitigate” dwarf mistletoe infection. This issue was brought to the forefront by a recent timber sale in the 4FRI CFLRP footprint (Little Creek TS, Apache-Sitgreaves NF), where extensive harvest of old and large ponderosa pine trees occurred, ostensibly to address forest health issues from dwarf mistletoe infection. As communicated in the April 27, 2017 letter to Forest Supervisor Best (see Project Record), the SHG considers such practices inconsistent with the best available science, 4FRI stakeholder expectations, and the social license that has taken more than a decade to develop. We note and appreciate that the RC DEIS Implementation Plan (Section D, p. 617) states that “*old trees would not be cut for forest health reasons.*”

RECOMMENDATION: The SHG recommends that this language be carried forward into the FEIS.

KEY ISSUE 4: MANAGEMENT OF PONDEROSA PINE DWARF MISTLETOE

Over the past two years, the 4FRI Planning Team and SHG have had ongoing conversations about management of dwarf mistletoe, particularly in ponderosa pine, which the Forest Service has articulated as representing a significant threat to forest health on the RC DEIS footprint. The 4FRI Planning Team had originally proposed extremely aggressive “mitigation” treatments, including even-aged management, on a large portion of the RC DEIS planning area having estimated high levels of dwarf mistletoe. Following several meetings and field trips, the SHG submitted a letter to the Forest Service (dated April 4, 2017), which stated that the Forest Service had not presented a compelling case that dwarf mistletoe infections in ponderosa pine on the planning area were significantly outside the natural range of variability and presented a meaningful obstacle to restoration. We asserted that restoration treatments followed by prescribed fire at regular intervals should be sufficient to meet objectives. The mistletoe management approach in the RC DEIS has been refined somewhat; however, it remains a core element of the Mechanical Treatment Flexible Toolbox. The SHG feels that this emphasis is misplaced and inappropriate for a project ostensibly focused on ecological restoration rather than sustained-yield timber production. We also note that the RC DEIS does not clearly distinguish between dwarf mistletoe infections and associated treatments in ponderosa pine and mistletoes that occur in other conifer tree species.

Concerns and Recommendations

1. CONCERN: Dwarf mistletoe is a high-level decision variable in the Mechanical Treatments Flexible Toolbox. This creates a perception that managing this endemic, natural disturbance agent is a restoration priority—an approach that is at odds with the best available science and stakeholder perspectives. Consistent application of this element of the Flexible Toolbox is unlikely, given the apparent subjectivity of rating stand-level mistletoe infection. For example, during collaborative field trips held by the SHG and Forest Service, it was evident that perceptions of what constitutes a “severe” infection vary considerably across Forests/Districts.

RECOMMENDATION: The SHG recommends that the Forest Service remove dwarf mistletoe as a decision variable in the Mechanical Treatments Flexible Toolbox.

2. CONCERN: The RC DEIS should incorporate the best available science applicable to management of ponderosa pine dwarf mistletoe. The RC DEIS cites some, but not all of the current science relevant to this issue.

RECOMMENDATION: A list of pertinent references is provided in Appendix III. The SHG recommends that this information be incorporated into the FEIS, with a clear explanation of the scientific basis for the proposed treatment approach.

3. CONCERN: The initially proposed 55–70% Interspace dwarf mistletoe treatments are not supported by the best available science and contrary to SHG perspectives. Following a request from the SHG, the 4FRI Executive Board agreed to remove these treatments from the RC DEIS (letter to SHG dated September 12, 2019, see Project Record).

RECOMMENDATION: The SHG appreciates this modification and recommends it be carried forward into the FEIS and ROD.

4. CONCERN: The DEIS does not differentiate between ponderosa pine dwarf mistletoe and other mistletoes. In discussions with the 4FRI Planning Team, the SHG has emphasized that ponderosa pine dwarf mistletoe is but one member of that group of parasitic plants present on the RC DEIS planning area, each of which can have differing effects on host trees and cannot be treated alike from a management perspective.

RECOMMENDATION: The SHG recommends that the Forest Service clarify differences between the ecology and management of mistletoes in the FEIS.

5. CONCERN: The Mechanical Treatment Flexible Toolbox includes mechanical treatment of ponderosa pine stands with “severe” dwarf mistletoe infection. This approach is not supported by the best available science and contrary to stakeholder expectations. The SHG has previously recommended that such stands be deferred from mechanical treatment or

designated as “burn only.” In discussions with the 4FRI Planning Team, the Forest Service has indicated that both options are covered under the RC DEIS, though not explicitly stated.

RECOMMENDATION: The SHG recommends that the FEIS/Implementation Plan clearly identify deferral or burn only as preferred options for ponderosa pine stands with “severe” levels of dwarf mistletoe.

KEY ISSUE 5: DESCRIPTION OF PRE-TREATMENT CONDITIONS

In comparison to the 1st EIS area, which was predominately ponderosa pine, the Rim Country planning area has a number of other forest cover types targeted for treatment, including mixed-conifer/frequent fire, mixed-conifer with aspen, and ponderosa pine-evergreen oak. The SHG understands the complexity this adds to the RC DEIS and has recommended that the document more fully address diversity of the planning area.

Concerns and Recommendations

1. CONCERN: The RC DEIS should be more specific with respect to existing conditions and treatment allocation for target cover types present on the planning area. Stakeholders have emphasized this need in previous discussions with the 4FRI Planning Team, requesting a tabular summary and spatial representation of treatment allocation across cover types. Some of the spatial information is now available in an online visualization tool, which we appreciate.

RECOMMENDATION: The SHG recommends that the online tool be completed and a tabular summary made available to stakeholders and then included in the FEIS.

2. CONCERN: The RC DEIS should include spatial representation of WUIs in the planning area, overlaid by cover type and proposed treatments. The SHG had previously requested that this information be added to the online visualization tool. We appreciate the Forest Service’s attention to this request, but note that only some of this information is currently presented.

RECOMMENDATION: The SHG recommends that the complete information be made available online, with a tabular summary made available to stakeholders and then included in the FEIS.

3. CONCERN: Protection of stands with a preponderance of large, young trees (SPLYT). Conservation of these stands is a high priority to stakeholders and a critical component of collaborative agreement. At the outset of the RC DEIS process, the SHG and Forest Service devoted considerable collaborative effort developing a methodology to identify and map these stands. The selected approach was formally adopted by the SHG, communicated to the Forest Service (see SHG Position Statement dated October 13, 2017) and appears in the RC DEIS (Section D, p. 638). However, following personnel changes on the 4FRI Planning

Team, the Forest Service informed stakeholders that this approach is not viable for implementers in the field, who must verify stand conditions (including the presence or absence of SPLYT characteristics) prior to treatment assignment via the Flexible Toolbox.

RECOMMENDATION: The SHG recommends that the Forest Service develop a replacement SPLYT methodology that leverages work already completed (e.g., stand mapping and field assessments by stakeholders and the Forest Service). This second iteration should be done collaboratively and in the field, with participation by Forest Service personnel who will use the final product.

KEY ISSUE 6: COLLABORATIVE ROLE IN IMPLEMENTATION

As a CFLRP project, the Forest Service is mandated to facilitate stakeholder engagement in all phases of 4FRI, from planning through implementation. However, since completion of the 1st 4FRI EIS, stakeholders have had limited engagement in implementation of restoration projects. The SHG has a formal Multi-Party Monitoring Board (MPMB); however, that group is largely focused on long-term data collection to assess ecosystem responses to restoration treatments (effects monitoring). In discussions with the 4FRI Planning Team, we have acknowledged mutual interest in formal collaboration during implementation, in order to facilitate shared learning about treatment outcomes, assist the Forest Service with outreach to field personnel, and inform adaptive management.

Concerns and Recommendations

1. CONCERN: There is uncertainty about the degree to which treatment outcomes will comport with CFLRP requirements and stakeholder expectations. As articulated in these comments, the SHG is concerned with various aspects of implementation on Rim Country—e.g., retention of old and large trees, management of dwarf mistletoe in ponderosa pine, conservation of SPLYT stands, and application of the Flexible Toolboxes. Our expectation is that these actions will reflect stakeholder expectations and occur in a manner that is predictable, reliable, and repeatable. The SHG feels this need is best addressed by more effective coordination among Forest Service staff on the Planning Team and at Forest/District level, and by creating a formal mechanism for collaborative engagement during implementation.

RECOMMENDATION: The SHG recommends that the Forest Service work with stakeholders to develop an appropriate framework for this. A recent, informative example is attached in Appendix V (Spruce Beetle Epidemic-Aspen Decline EIS, Grand Mesa, Uncompahgre, and Gunnison National Forest).

2. CONCERN: The framework for stakeholder engagement should to be memorialized in a manner that is binding and ensures follow-through. The DEIS WG and 4FRI Planning Team have discussed and concur on this need.

RECOMMENDATION: The Forest Service agreed to research this question and provide appropriate guidance, that the SHG recommends be carried forward with appropriate placement in the FEIS.

3. CONCERN: Collaborative implementation should be bolstered by mechanisms outside the RC DEIS. It was suggested that the 4FRI Memorandum of Understanding could be revised to meet this need.

RECOMMENDATION: The SHG concurs and commits to working with the Forest Service and other partners on a potential revision of the MOU.

KEY ISSUE 7: ADAPTIVE MANAGEMENT AND MONITORING

Science-driven monitoring and adaptive management are key requirements under CFLRP and a high priority for 4FRI stakeholders. The SHG has been actively engaged in this process since initiation of the 1st EIS, under auspices of the Multi-Party Monitoring Board (MPMB). The MPMB has worked closely with the 4FRI Monitoring Coordinator to develop a new plan for the RC DEIS planning area and looks forward to continued collaboration refining the questions and approach for Rim Country. We have identified nine key concerns that should be addressed and then included in the FEIS.

Concerns and Recommendations

1. CONCERN: The Rim Country Monitoring Plan (RC DEIS Appendix E) should be updated to reflect work completed since the 1st EIS and improvements in monitoring design.

RECOMMENDATION: The SHG recommends the following modifications:

- Monitoring questions, indicators, triggers, and thresholds should be completed and/or updated as needed—a process that can be informed by the living monitoring document maintained by the MPMB.
- Vague wording in this section (e.g., the term “appropriate”) should be clarified with necessary context, sideboards, and direction.
- The Monitoring Plan should incorporate information from 4FRI monitoring reports including, but not limited to Hjerpe and Mottek-Lucas (2018) as well as relevant information from the RC DEIS Specialist Report (“Socioeconomic Environmental Consequences”).
- Monitoring efforts in treated areas (e.g., groundwater assessment (p. 792) should include control and pre-treatment data collection in a BACI (Before-After-Control-Impact) design to support the strongest inference.
- The Monitoring Plan will need to be updated to reflect openness metrics (and associated assessments on the 1st EIS area) being developed in collaboration with the SHG.

- Indicators (e.g., spatial metrics, forest structure, and wildlife variables) should be measured at the same scale whenever possible.

2. CONCERN: The relationship between Monitoring Plans in the 1st EIS and Rim Country needs to be clarified. The FEIS should clearly state that the Rim Country Monitoring Plan does not apply to the 1st EIS area, but rather complements it. It is also important to indicate that some indicators overlap both EIS areas, but others are unique to Rim Country.

RECOMMENDATION: The SHG recommends that the text in RC DEIS Appendix E (p. 663) be modified accordingly.

3. CONCERN: Forest cover types, tree species, and structural components currently listed in the RC DEIS Monitoring Plan are specific to the 1st 4FRI EIS.

RECOMMENDATION: The SHG recommends that this section be updated to reflect the Rim Country planning area. This should include additional descriptions and justification in RC DEIS Appendix E (p. 674–675) for mixed-conifer and other forest types, and adjustment of indicators, thresholds, and triggers for mixed-conifer (including monitoring of species proportions, diameter distributions, and spatial distribution of trees).

4. CONCERN: The relationship between implementation, implementation monitoring, and treatment effectiveness needs is not clearly articulated in the RC DEIS Monitoring Plan. These components need to be effectively integrated in the Monitoring Plan.

RECOMMENDATION: The SHG recommends that RC DEIS Appendix E be expanded to articulate implementation tracking requirements, and indicate how this information will be linked to effectiveness monitoring when developing adaptive management recommendations. This could be presented in a table of similar theme as Table 130, that lists specific tracking metrics for effectiveness monitoring across Districts/Forests, which could then be reviewed with monitoring results to produce adaptive recommendations.

5. CONCERN: The RC DEIS Monitoring Plan should leverage the best available technology and tools. There have been a number of significant advancements since completion of the 1st 4FRI EIS.

RECOMMENDATION: The SHG recommends that the Monitoring Plan be updated to include the following:

- Fire Hazard Index (FHI), a new modeling approach used in the RC DEIS analysis of fire effects, but only loosely referenced in the Monitoring Plan.

- Various technologies and products that could be used to monitor tree age structure, spatial aggregation, canopy openness, patch size, patch configuration, patch density, and patch evenness, as well as the frequency and scale (e.g., UAV based imagery on a project basis).
- Quantification of snags using LiDAR data.

6. CONCERN: Scale of the RC DEIS monitoring plans does not match the analysis area.

RECOMMENDATION: The SHG recommends that the scale of the Biophysical and Social and Economic plans be revised as needed throughout the FEIS. This includes inclusion of language in RC DEIS Appendix E indicating that fire analyses are performed at the HUC 6 level.

7. CONCERN: References in the RC DEIS Monitoring Plan should reflect the best available current science.

RECOMMENDATION: The SHG recommends that references in RC DEIS Appendix E be updated. Examples include, but are not limited to:

- Forest thinning and groundwater recharge (O'Donnell 2018, Moreno et al. 2016)
- Canopy openness, soil moisture, and snowpack accumulation (Broxton et al. 2019)
- Scale and grain considerations (Wasserman et al. 2019).
- Climate science (Seager and Vecch 2010, Barnes and Polvani 2013, Lu et al. 2018, Singh et al. 2018, Espinoza et al. 2018, the 2018 National Climate Assessment)
- Human dimensions and economics (Egan and Nielsen 2014, Brown 2015, Esch and Vosick 2016)

8. CONCERN: Additional detail is needed on the adaptive management process.

RECOMMENDATION: The SHG recommends that the Monitoring Plan (RC DEIS Appendix E) more clearly articulate specific steps in the monitoring and adaptive management process (as illustrated in Figure 100) and indicate that decisions will be made in collaboration with the SHG and MPMB.

9. CONCERN: The RC DEIS should more explicitly acknowledge the role of the MPMB.

RECOMMENDATION: The SHG recommends that the FEIS emphasize the collaborative approach to monitoring and adaptive management and add language (e.g., in RC DEIS Appendix E, p. 662) indicating that the 4FRI MPMB is well established and will play a significant role going forward.

KEY ISSUE 8: PREVIOUS ISSUES RESOLVED IN THE PUBLISHED DEIS

1. CONCERN: drift from the intent of CFLRP. Stakeholders were concerned that the drafty-draft RC DEIS did not include key CFLRP language articulating a focus on thinning small diameter trees and protecting large/old-growth trees. The DEIS WG provided recommended language to the 4FRI Planning Team, which was approved by the Executive Board and added to the RC DEIS.

RECOMMENDATION: the SHG appreciates that modification and recommends it be carried forward into the FEIS and ROD.

2. CONCERN: terms and definitions needing clarification or correction. The SHG previously requested that the term "overmature" be removed or placed in appropriate context. While overmature remains in the document, it is with respect to the age classification tables based on cited literature. The definition of overmature used is based also on the cited literature.

RECOMMENDATION: the SHG appreciates changes made in the DEIS and request they be carried forward into the FEIS and ROD.

3. CONCERN: removal of 55-70% interspace treatments used for the management of mistletoe. The SHG asked for removal of 55-70% interspace treatments, listed in an early version of the DEIS, to manage mistletoe. This was a departure from the 1st EIS, and does not meet the intent or goals of the CFLRP. On reception of the SHG official request (see Project Record), the Executive Board removed all treatments above 55% interspace outside of WUI.

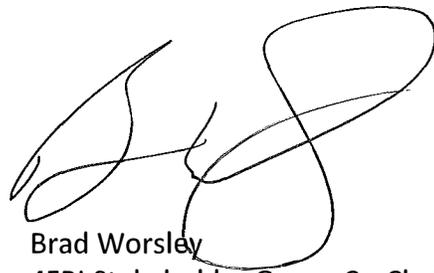
RECOMMENDATION: the SHG appreciates this change made in the DEIS and recommends it be carried forward into the FEIS and ROD.

Thank you for the opportunity to comment. The 4FRI Stakeholder group appreciates the effort it took to develop the Rim Country DEIS; we greatly appreciate the collaborative effort in the last year. We look forward to continuing to work with our USFS partners to complete the Final EIS incorporating recommendations and finalized Stakeholder documents. For any clarification, please contact the 4FRI current co-chairs.

Sincerely,



Greg Smith
4FRI Stakeholder Group Co-chair



Brad Worsley
4FRI Stakeholder Group Co-Chair

APPENDIX I

RIM COUNTRY DEIS WORK GROUP PARTICIPANTS**

Pascal Berlioux (Co-chair)	Eastern Arizona Counties Organization
Clay Crowder	Arizona Game and Fish Department
Alicyn Gitlin	Sierra Club
Bruce Greco	Apache County
Shaula Hedwall	US Fish and Wildlife Service
Joe Miller	Trout Unlimited
Rob Nelson	Arizona Game and Fish Department
Nathan Rees	Trout Unlimited
Joe Trudeau	Center for Biological Diversity
Steve Rosenstock (Co-chair)	Grand Canyon Trust
Todd Schulke	Center for Biological Diversity
Travis Woolley (Co-chair)	The Nature Conservancy
Amy Waltz (Co-chair)	NAU Ecological Restoration Institute

** affiliation while participating in the work group, may not reflect current status

**APPENDIX II
PRIORITY AQUATIC RESTORATION PROJECTS**

Location Name	Forest/District
<u>Headwater Meadows and Springs</u>	
Alder Creek	Apache-Sitgreaves NF / Black Mesa RD
Beaver Creek (Turkey Crk trib)	" "
Beaver Creek, including Beaver Park	" "
Black Canyon Creek	" "
Brown Creek	" "
Chevelon Canyon Creek	" "
Double Canyon	" "
East Fork Woods Canyon	" "
Fairchild Draw	" "
Gentry Creek	" "
Hart Canyon	" "
Long Tom Cabin	" "
Pius Farm Draw	" "
Thompson Creek	" "
Turkey Creek	" "
Wiggins Crossing	" "
Willow Creek	" "
Woods Canyon Creek	" "
Barbershop Canyon Creek	Coconino NF / Mogollon Rim RD
Bill McClintock Draw	" "
Campbell Spring	" "
Cienega Draw	" "
Coldwater Spring	" "
Crackerbox Canyon Upper E, W	" "
Dane Spring	" "

Dines Tank	"	"
East Clear Creek	"	"
East Clear Creek/Miller Creek Confluence	"	"
East Miller Canyon	"	"
Foster Spring	"	"
General Springs	"	"
Houston Draw	"	"
Immigrant Spring	"	"
Jones Crossing	"	"
Jones Spring	"	"
Kehl Spring	"	"
Leonard Canyon Creek	"	"
Lower Buck Spring	"	"
Merritt Draw	"	"
Miller Canyon	"	"
Miller Canyon	"	"
Pivot Rock Spring	"	"
Potato Lake	"	"
Potato Lake Draw	"	"
Poverty Draw/Poverty Spring	"	"
Quaking Aspen Canyon	"	"
Schneider Spring	"	"
Upper Buck Spring	"	"
West Bear Canyon	"	"
West Fork Leonard Canyon Creek	"	"
Whistling Spring	"	"
Willow Spring	"	"

Bear Springs	Tonto NF / Payson RD
Candy Spring	" "
Foster Spring	" "
Little Green Valley	" "
Pieper Hatchery Spring	" "
Pine Spring	" "
Poison Spring	" "

Streams

Willow Springs Canyon	Apache-Sitgreaves NF / Black Mesa RD
Canyon Creek	Apache-Sitgreaves NF / Black Mesa RD & Tonto NF / Pleasant Valley RD
Show Low Creek	Apache-Sitgreaves NF / Lakeside RD
East Bear Canyon	Coconino NF / Mogollon Rim RD
East Fork Leonard Canyon Creek	" "
General Springs Creek	" "
Webber Creek	Tonto NF / Payson RD
Bray Creek	" "
Sycamore Creek	" "
Chase Creek	" "
Dude Creek	" "
Bonita Creek	" "
Ellison Creek	" "
Horton Creek	" "
Dick Williams Creek	" "
Christopher Creek	" "
Unnamed tributary of Chase Creek	" "
East Verde River	" "
Mail Creek	" "
Pine Creek	" "

East Verde River	" "
Tonto Creek	" "
Gordon Canyon Creek	Tonto NF / Pleasant Valley & Payson RDs
Haigler Creek	Tonto NF / Pleasant Valley RD

Other

Houston Draw	Coconino NF / Mogollon Rim RD
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APPENDIX IV
EXAMPLE FRAMEWORK FOR COLLABORATIVE ENGAGEMENT IN IMPLEMENTATION

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Appendix E:

Public Engagement in Adaptive Implementation

A Process for Adaptive Implementation of the Spruce Beetle Epidemic-
Aspen Decline Management Response EIS



**Grand Mesa, Uncompahgre, and Gunnison National Forest
USDA Forest Service
In cooperation with:
Rocky Mountain Research Station, USDA Forest Service
Colorado Forest Restoration Institute, Colorado State University**

INTRODUCTION AND BACKGROUND

The purpose of this document is to describe activities comprising the adaptive implementation and monitoring framework for the SBEADMR project. The primary goals are to:

- continue the public participation and collaborative learning that occurred during the planning phase, encourage and support the continuation of collaborative workgroup efforts throughout implementation;
- ensure implementation of treatments is responsive to dynamic on-the-ground conditions, new scientific information, and public input;
- demonstrate compliance with management direction specified in the EIS/ROD;
- conduct a transparent adaptive implementation process that keeps the public informed of and involved in treatment unit timing, design, and monitoring;
- ensure integrated engagement of interdisciplinary team members, field personnel, scientists, line officers and the public;
- focus on shared priorities and work to resolve concerns and solve problems related to selection and implementation of SBEADMR treatment units;
- conduct monitoring activities, interpret and share results, adapt implementation practices to improve results and better meet project objectives.

ADAPTIVE IMPLEMENTATION FRAMEWORK

The SBEADMR FEIS/ROD specifies this adaptive implementation framework for defining treatment locations and design, determining monitoring questions, reviewing and evaluating the effects of treatments, and adjusting management towards desired conditions and away from undesirable conditions. These actions will involve public stakeholders, the science team, and forest staff. The public participation and collaboration process that occurred during the planning process was significantly aided by the efforts of a collaborative workgroup of diverse stakeholders. This group has indicated that it would like to continue convening and facilitating collaborative work to assist in applying this adaptive framework. Specific phases and activities are outlined below. The intent is that this adaptive implementation framework will be utilized over a multi-year timeframe (8-12 years).

Stakeholder opportunities to influence SBEADMR implementation are outlined for each step of the process. Opportunities are confined by the sideboards of the selected alternative, as outlined in the Final Environmental Impact Statement (FEIS) and Record of Decision (ROD). Further, the Forest Service retains the authority to make final decisions related to location, extent and types of treatments planned and completed consistent with the FEIS/ ROD. However, if at any-time a stakeholder has a specific question or concern related to any aspect of implementation under SBEADMR, forest staff will respond to stakeholder input to the greatest extent practicable and will provide feedback to stakeholders about how their concerns were addressed. The process outlined here is required by the ROD and stakeholder involvement will be ongoing throughout the life of the project.

Appendix E – Process for Adaptive Implementation of the Spruce Beetle Epidemic –Aspen
Decline Management Response EIS

The adaptive implementation steps will cover pre-implementation treatment planning; post-implementation review; annual monitoring, evaluation, and new science integration; and annual management review with forest leadership team.

Commercial and non-commercial treatments that occur under the authority of the FEIS/ ROD will take up several years to pass through all the phases of implementation. Therefore, at any given time there will be several projects occurring that have passed through different steps of implementation and monitoring. The public will be invited to participate as discussed below.

Appendix E – Process for Adaptive Implementation of the Spruce Beetle Epidemic –Aspen Decline Management Response EIS

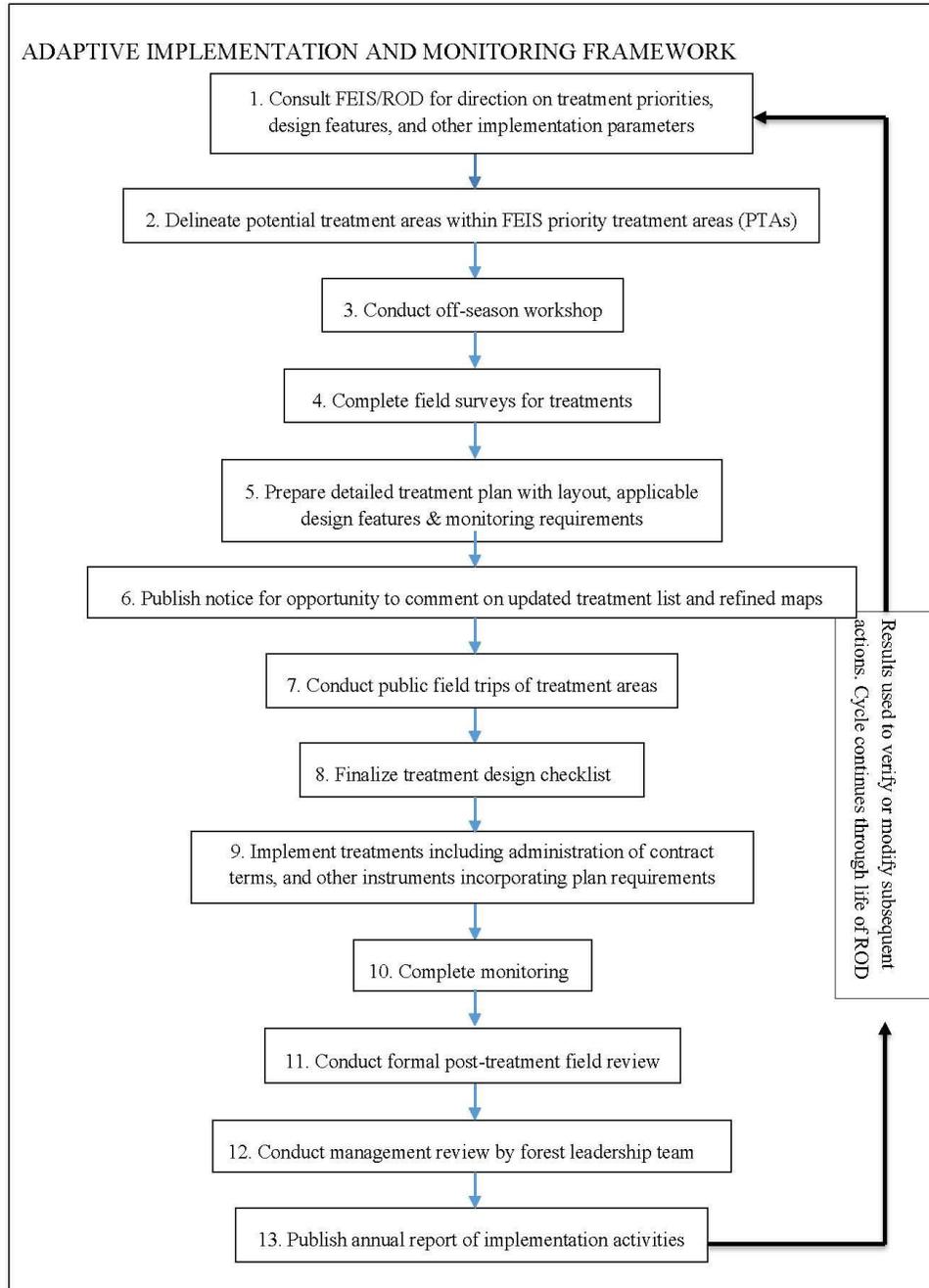


Figure 1. Adaptive implementation and monitoring framework. Details are provided below.

Step 1) Consult the FEIS/ROD for direction on treatment priorities, design features, and other parameters.

The direction in the FEIS/ROD reflects comprehensive public participation and collaborative efforts conducted over a three-year planning period. The public had opportunities to influence all elements of these documents.

Stakeholder Opportunities:

- A. Become familiar with the implementation parameters of the FEIS/ROD to develop an understanding of these limits and requirements and enhance ability to more meaningfully participate in implementation and adaptive management;
- B. Treatment needs outside of the FEIS/ROD would need to be addressed under separate planning efforts.

Step 2) Delineate treatment units within the FEIS priority treatment areas (PTAs).

The priority treatment areas (PTAs) will form the bounds for out-year SBEADMR treatments that become part of the normal Forest Service program of work, including the 5-year timber sale, fuels management, and wildlife habitat programs. Nearer-term treatment units will be delineated with more detail, while out-year treatments may be shown with broader PTA boundaries.

Stakeholder Opportunities:

The forest will share information on the details of proposed treatment units as they become available, thereby enabling the collaborative workgroup (Adaptive Management Group) and all stakeholders the opportunity to learn about implementation activities prior to the subsequent steps. Updated information will be posted on the forest website.

Step 3) Conduct off-season workshop with stakeholders and science team.

Each year a winter or spring workshop will be held with stakeholders, treatment implementation team, and forest leadership team members to discuss implementation program, including:

- Proposed new out-year treatments;
- Report status of treatments already planned/in process of being implemented;
- Findings from the prior-year management review of treatments and the out-year program of work;
- Monitoring results to date and proposed coming-year and out-year multi-party monitoring;
- Evaluation and feedback on potential need for change in implementation or monitoring practices;
- New science and individual studies within the context of the larger body of scientific literature;