



Forest Service  
U.S. DEPARTMENT OF AGRICULTURE

MB-R3-04-37  
Southwestern Region

August 2022  
Apache-Sitgreaves, Coconino, and Tonto National Forests

# 4FRI Rim Country Project

## Final Environmental Impact Statement

### Errata



Cover photo: Storm on the Rim, Apache-Sitgreaves National Forests

We make every effort to create documents that are accessible to individuals of all abilities; however, limitations with our word processing programs may prevent some parts of this document from being readable by computer-assisted reading devices. If you need assistance with any part of this document, please contact the Coconino National Forest at: (928) 527-3600.

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (for example, Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [How to File a Program Discrimination Complaint](#) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: [program.intake@usda.gov](mailto:program.intake@usda.gov).

USDA is an equal opportunity provider, employer, and lender.

# Contents

Introduction.....	1
How to Navigate This Errata .....	1
Chapter 2.....	1
Chapter 3.....	3
References.....	9
Appendix C – Design Features, Best Management Practices, Mitigation, and Conservation Measures....	12
Appendix D – Implementation Plan for Alternatives 2 and 3.....	13
Appendix E – Monitoring and Adaptive Management Plan.....	20
Appendix H – Response to Comments .....	21

# 4FRI Rim Country Project Final Environmental Impact Statement Errata Document

## Introduction

The Rim Country Project Draft Record of Decision and the Final Environmental Impact Statement (FEIS) were released on March 18<sup>th</sup>, 2022. This errata sheet documents corrections to the text of the March 18<sup>th</sup> published FEIS, and should be reviewed along with the FEIS. These corrections reflect instructions provided by the Deputy Regional Forester in the three responses to objections dated July 18<sup>th</sup>, 2022, and additional clarifications. These corrections are consistent with the direction given in Forest Service Handbook 1909.15, Chapter 10, Section 18. There are no changes to the project or significant new circumstances identified in this errata sheet that affect the analysis and conclusions in the Rim Country Project FEIS, therefore, a supplement to or revision of the FEIS is not needed. These changes also apply to the Rim Country Project specialist reports.

## How to Navigate This Errata

The following errata is broken out by chapters and appendices. The errata applies to Chapters 2 and 3, the References, and Appendices A, C, D, E, and H of the Final Environmental Impact Statement. The errata outlines the FEIS volume, chapter or appendix, section, and the page number where the change applies. In most cases, additions are outlined in bold. However, due to formatting, some changes are outlined in gray highlights, or there is no formatting. Each errata section outlines the specific additions’ formatting.

## Chapter 2

- 1. FEIS Volume 1, Chapter 2, Alternative Development (p. 35)** the following paragraph is added as the last paragraph in the *Alternative Development* section and above the *Areas Covered Under Other NEPA Decisions for Inclusion of Restoration Activities* section:

An estimate of 20 years for project completion is strictly an estimate and not to be considered a fixed timeline or represent the validity of the environmental analysis or Record of Decision. This estimate is solely based on the number of acres analyzed for treatment and current industry capacity at the time of the release of the Record of Decision.

**Significance:** The analysis is not affected. The added text provides clarity as to why 20 years was chosen as an estimate.

- 2. FEIS Volume 1, Chapter 2, Elements and Activities Common to Alternatives 2 and 3, Implementation Plan, Condition-based Management Approach, Table 14 (p. 40)** the following text outlined in the gray highlights is added to the table:

**Table 14. Condition-based Management Approach for Vegetation and Aquatics and Watershed Restoration Activities: Considerations for prioritizing vegetation and aquatics and watershed restoration activities**

Condition-based Management Approach	Consideration	Description
Vegetation-focused	Wildland Urban Interface and USFS Infrastructure	Wildland-urban interface (WUI) includes those areas of resident populations at imminent risk from wildfire, and human developments having special significance. These areas may include critical communication sites, municipal watersheds, high voltage transmission lines, church camps, scout camps, research facilities, and other structures that, if destroyed by fire, would result in hardship to communities.

Condition-based Management Approach	Consideration	Description
Vegetation-focused	High risk for uncharacteristic fire behavior	These fires result as a consequence of more continuous canopy cover, ladder fuels, and accumulated live and dead woody material.
Vegetation-focused	Candidate or sensitive species	The presence of these species and improving their habitat could increase the prioritization of a project over a site that had none present.
Vegetation-focused	Integrated aquatic and watershed restoration activities	Incorporating aquatic and watershed restoration activities in an area with other restoration treatments whenever possible is one way to create efficiencies with heavy equipment and personnel.
Vegetation-focused	Public, stakeholder, and partner values	Projects that already have partners or interested partners, particularly if funding is available, should be considered.
Aquatic and Watershed	Watershed Condition Framework and priority watersheds.	Areas or activities within existing Watershed Restoration Action Plans can increase opportunities to move watersheds into a higher condition class. Maintaining or improving watershed condition where feasible should be taken into consideration. Projects in priority watersheds should be considered.
Aquatic and Watershed	Projects that improved impaired waters	Projects that improve water quality in ADEQ TMDL (water quality improvement plan) or 303b listed streams.
Aquatic and Watershed	Vegetation restoration activities within the area.	Incorporating aquatic and watershed restoration activities in an area with other restoration treatments whenever possible is one way to create efficiencies with heavy equipment and personnel.
Aquatic and Watershed	Partner Interest	Projects that already have partners or interested partners, particularly if funding is available, should be considered.
Aquatic and Watershed	Benefits to federally listed or candidate species	The presence of these species and improving their habitat could increase the prioritization of a project over a site that had none present.
Aquatic and Watershed	Wet meadows, cienegas, and other similar habitats.	These habitat types store water in upper watersheds and maintain baseflow to other aquatic habitats. They also cool water and can provide for lower stream water temperatures. Maintaining and improving these areas can have great downstream beneficial impacts.
Aquatic and Watershed	Upper watershed vs. lower	Restoration in upper portions of watersheds can have beneficial impacts downstream such as reduced sedimentation, maintaining baseflow, and cooling stream temperatures. They will have a larger range of beneficial impacts than projects lower in a watershed.
Aquatic and Watershed	Issues that are new, easily treated, or could quickly spread.	Newer issues have not yet caused that much damage; restoration treatments of these are more cost and time effective as well as preventing more degradation. Projects such as these are 'low-hanging fruit' when compared to larger or more widespread issues. In addition, new infestations of noxious weeds or aquatic invasive plants are easier to treat early rather than after they spread.
Aquatic and Watershed	Force account, contracted, and partner implementation	All three categories have merit but may have differing financial or oversight costs. These should be considered differently amongst options and assessed. Prioritization may depend upon which category a project occurs in when weighed against workload, capacity, and financial considerations.
Aquatic and Watershed	Process versus form-based projects	Projects that enhance site conditions, but do not restore the processes that create habitat or site conditions are considered form-based. These types of projects can require more maintenance than projects that restore the processes that create and maintain habitat. Projects that restore processes may be more of a priority than those that address a specific issue rather than the larger problem.

**Significance:** The analysis is not affected. The additions provide a guide for project prioritization and provide consistency with the Aquatic and Watershed Condition-based Management Approach.

**3. FEIS Volume 1, Alternatives Considered in Detail, Alternative 2 – The Modified Proposed Action, Proposed Activities (p. 56)** the following bolded text is added to the bulleted list of proposed activities:

---

- Implement approximately 7,300 acres of mechanical treatment and prescribed fire and approximately 9,600 acres of prescribed fire only in eight IRAs (See Chapter 3, IRA section for information on treatments by IRA). **Mechanical treatments in IRAs will only occur in identified areas (See Appendix – A Maps) and are spatially fixed. Treatments include:**
  - **Approximately 6,287 acres of hand thinning and prescribed fire**
  - **Approximately 572 acres of comprehensive restoration mechanical thinning and prescribed fire**
  - **Approximately 439 acres of upland vegetation mechanical thinning and prescribed fire**
  - **Approximately 9,600 acres of prescribed fire only**
  - **Approximately 33.5 miles of general stream restoration**
  - **Approximately 0.07 miles of heavy mechanical stream restoration**
  - **Approximately 0.58 miles of road decommissioning**

**Significance:** The analysis is not affected. This is not significant because the number of acres proposed for treatment falls within the range of effects analyzed. The modifications assign specific mechanical treatment types (chain saw thinning vs. conventional ground-based harvest systems) to IRA acres that are spatially fixed. Mechanical treatments will not occur outside of areas identified in this analysis (IRA Specialist Report Appendix A – Maps). The impacts would be lesser than what was previously stated because less mechanical thinning using conventional ground-based harvest systems would occur. These changes reflect spatially explicit assignments of mechanical treatments, rather than a condition-based management approach for treatment assignment that could include hand thinning, comprehensive restoration, and upland vegetation treatment.

**4. FEIS Volume 1, Alternatives Considered in Detail, Alternative 3 – Focused Restoration, Proposed Activities (p. 63)** the following bolded text is added to the bulleted list of proposed activities:

---

- Implement approximately 1,760 acres of mechanical treatment and prescribed fire and approximately 6,320 acres of prescribed fire only in eight inventoried roadless areas (see chapter 3, inventoried roadless area section for information on treatments by inventoried roadless area, **and IRA Specialist Report Appendix A - Maps**).

## Chapter 3

**1. FEIS Volume 2, Air Quality, Affected Environment (p. 11)** the following section is added after the *Smoke Emissions – Greenhouse Gas Emissions* section:

---

### Radioactive Emissions

In northern Arizona, there are several types of radioactive elements. Most of these are naturally occurring, such as radon, potassium, and thorium. Northern Arizona also has rich deposits of uranium, which can and have been used for commercial purposes. In addition, northern Arizona, like much of the world, also has traces of man-made radioactive material, primarily from weapons testing conducted in the Cold War era. These radioactive elements include cesium and strontium. When a fire burns through an area, it may re-suspend radioactive particles present in

forest surface fuels (Hejl et al., 2012). Some are naturally occurring chemicals that have always been present at some level in wildfire smoke and some have resulted from the weapons testing that occurred in the mid-20th century. Implementation of prescribed burning would comply with the Federal Clean Air Act and at the state level with the Arizona Department of Environmental Quality's regulations that require the project to not cause exceedances of the National and State Ambient Air Quality Standards. At the level of exposure the public is subjected to as a result of prescribed fire treatments, radionuclides do not pose as great a risk as wildfire. Radioactive material that may be carried in the smoke plume carries a risk of human health concerns of less than 1 chance in 10 million ((personal communication Graham 2012-2014) and Risk Assessment Corporation, (2002)) and the greatest health risk is from breathing high concentrations of particulate matter in the smoke.

Communication with the Environmental Protection Agency (personal communication Gerdes 2012 - 2014; Graham 2012-2014), and studies (see below) that addressed these emissions indicate that radioactive isotopes and other undesirable chemicals are present in wildfire emissions. Studies have shown that the levels of radioactive material that could be released in a prescribed burn or wildfire are very low and do not present a health risk. The following is a review of the literature discussing the public health concern related to radionuclide emissions from fires:

During the Cerro Grande fire of 2000, there was considerable public concern regarding the potential release of radionuclides from fires burning on lands managed by the Los Alamos National Laboratory (LANL). The following risk summary is from the 2002 Summary Report Analysis of Exposure and Risks to the Public from Radionuclides and Chemicals Released by the Cerro Grande Fire at Los Alamos (Risk Assessment Corporation, 2002):

“The primary health risks during the Cerro Grande fire were associated with breathing materials released into the air. It was estimated the risk of cancer from breathing any LANL-derived chemical or radioactive material that may have been carried in the smoke plume to be less than 1 chance in 10 million. Potential exposures in the surrounding communities to LANL-derived chemicals that are not carcinogenic were about 10 times lower than acceptable intakes established by the U.S. Environmental Protection Agency (EPA). The risk of cancer from breathing chemicals and radioactive materials in and on the natural vegetation that burned in the Cerro Grande Fire was greater than that from LANL-derived materials, but still less than 1 chance in 1 million. The vegetation that burned contained naturally occurring chemicals and radioactive materials and fallout produced during atmospheric tests of nuclear weapons. These materials and the risks they posed are present during any forest fire. The evidence suggests that some adverse health effects did result from breathing high concentrations of particulate matter in the smoke. Such exposures are associated with any forest fire. Deposition of LANL-derived chemicals and radioactive materials from the smoke plume to the soil was minimal.”

Schollnberger et al., 2002 found that radiation doses from inhaled airborne radionuclides to individuals inside and outside the Los Alamos area from the Cerro Grande fire were likely very small, and health effects would be unlikely.

Following the Cerro Grande fire that burned through the city of Los Alamos and the Los Alamos National Laboratory (LANL) in New Mexico in 2000, the US Environmental Protection Agency (EPA), New Mexico Environment Department (NMED), and LANL partnered with Department of Energy to operate radiological monitoring systems as well as to initiate several studies to assess the impacts of the fire. The results of these efforts with regard to air quality and human health impact indicated that radionuclides originating from the LANL site during the Cerro Grande Fire were restricted to naturally occurring radionuclides.

LANL, the Department of Energy, and NMED-monitored radionuclide concentrations in smoke from the Las Conchas fire that burned through the Los Alamos area in the summer of 2011 and reported no significant detection levels (Michelotti et al., 2013).

A collaborative research effort was carried out between the U.S. Environmental Protection Agency and the U.S. Forest Service to simulate emissions in laboratory fires of pine needles and duff doped with nonradioactive cesium (Cs) (Hao et al., 2018). Following a radiological release event, nuclear power plant incident, improvised nuclear device, nuclear testing site, or hazardous waste site a wide area may be contaminated by radiological materials, including significant forest areas. There is a potential for emissions of radionuclides such as cesium-137 from a wildfire over a radionuclide-contaminated forest. The paper reports on a laboratory simulation study of a wildfire with two types of biomass doped with nonradioactive cesium. This simulation suggests that only 1 to 2.5 percent of the cesium in the biomass would be emitted from the wildfire, while the rest would reside in the residual ash. In the study, pine needles were the only contributor to the air emissions of cesium; duff was not a source of cesium emissions. In the study, cesium emitted from the simulated wildfire was concentrated in particle sizes larger than 10 micrometers (Hao et al. 2018). Laboratory testing of wildfire combustion suggests Cs fate is largely associated with ash (>99%) rather than air emissions. Hao (2018) confirms that cesium and other radionuclides that would be emitted by the Rim Country Project would not reach unsafe levels.

Baker et al., 2021 modeled emissions from a large hypothetical wildfire in a wildland-urban interface (WUI) impacted by a hypothetical radiological release event. “While ambient concentrations tended to be highest near the fire, the highest population committed effective dose equivalent by inhalation to an adult from <sup>137</sup>Cs over an hour was downwind where wind flows moved smoke to high population areas. Seasonal variations in meteorology (wind flows) can result in differential population impacts even in the same metropolitan area. Modeled post-incident ambient levels of <sup>137</sup>Cs both near these wildfires and further downwind in nearby urban areas were well below levels that would necessitate population evacuation or warrant other protective action recommendations such as shelter-in-place. These results suggest that 1) the modeling system captures local- to regional-scale transport and levels of PM<sub>2.5</sub> from wildfire and 2) first responders and downwind population would not be expected to be at elevated risk from the initial inhalation exposure of <sup>137</sup>Cs re-emission and are more likely to have negative health impacts from other pollutants (e.g., carbon monoxide and total PM<sub>2.5</sub> mass) emitted by wildfire (Adetona et al., 2013) rather than legacy radioactive <sup>137</sup>Cs emitted at levels similar to this assessment.”

Evangelidou and Eckhardt, 2020 and Talerko et al., 2021 assessed the emissions from the unprecedented April 2020 wildfires in the Chernobyl Exclusion Zone and examined their dispersion and impact on the population. The assessment detailed that all doses of radionuclides are radiologically insignificant and no health impact on the European population is expected from the April 2020 fires.

A study that included Lockett Meadow, an area near Flagstaff, AZ, found levels of radioactive materials in the soil were no different than background levels, and would provide no added human health risk (Ketterer et al., 2004).

**Significance:** The additional literature review does not change the conclusions in the analysis that prescribed fire treatments would not result in health effects from the re-suspension of radioactive particles. A radioactive emissions analysis was present within the DEIS and was inadvertently deleted. Additional literature updates include the best available science.

2. **FEIS Volume 2, Cultural Resources, Assumptions and Methodology (pp. 47-48)** the following bolded text is added to the last paragraph on page 47 into page 48, and text is deleted:
- 

**Original:** The Programmatic Agreement would guide the analysis for the remaining activities proposed in the Rim Country EIS. The one exception would be road improvement and decommissioning. Some Forest roads are known to cross archaeological sites and they often have exposed artifacts and cultural features in the roadbeds. Improving or decommissioning roads could involve some level of mechanical work such as grading or ripping roadbeds. The forests, in consultation with the Arizona SHPO and tribes, developed a road plating protocol. This protocol outlines procedures for “plating” or covering the portions of sites within roadbeds that have remaining features or intact cultural deposits. This would help to protect intact cultural remains in the roads from blading or other types of maintenance or decommissioning activities.

**Errata:** The Programmatic Agreement would guide the analysis for the remaining activities proposed in the Rim Country EIS. One **example** would be road improvement and decommissioning. **In some cases, roads could be decommissioned separately or unrelated to vegetation treatments. In these cases, the procedures in the main body of the Programmatic Agreement, and not Appendix J of the Programmatic Agreement would apply.** Some Forest roads are known to cross archaeological sites and they often have exposed artifacts and cultural features in the roadbeds. Improving or decommissioning roads could involve some level of mechanical work such as grading or ripping roadbeds. The forests, in consultation with the Arizona SHPO and tribes, developed a road plating protocol. This protocol outlines procedures for “plating” or covering the portions of sites within roadbeds that have remaining features or intact cultural deposits. This would help to protect intact cultural remains in the roads from blading or other types of maintenance or decommissioning activities.

**Significance:** The added text provides clarity as to the relationship of when the main body of the Programmatic Agreement between the Southwestern Region of the Forest Service, the Arizona, New Mexico, Texas and Oklahoma State Historic Preservation Offices and the Advisory Council on Historic Preservation or Appendix J of the Programmatic Agreement would apply in project implementation and does not change the analysis.

3. **FEIS Volume 2, Cultural Resources, Assumptions and Methodology, Phased Section 106 Compliance (p. 48)** the following bolded text is added to the first paragraph in the *Phased Section 106 Compliance* section:
- 

Because of the size of the undertaking, implementation would be phased over several years **in individual project areas that would be defined by the Forest Service Ranger District completing the restoration activities. The assigned restoration activities and project size would vary by the individual project.** Appendix J, reviewed by the Arizona, New Mexico, Texas, and Oklahoma SHPOs, the ACHP, and tribes, allows for the phasing of compliance with Section 106 of the National Historic Preservation Act of 1966. Appendix J of the Programmatic Agreement and the Rim Country Sampling Strategy (Hangan 2021), developed in consultation with tribes and the Arizona SHPO, describes the methods to be used to achieve a no adverse effect determination for the Rim Country analysis as a whole, while providing a strategy for a phased Section 106 evaluation for individual task orders. Individual task orders, or undertakings, would be inventoried when each specific project area is identified. A Section 106 report would be produced for each proposed individual undertaking, and all consultation with the Arizona SHPO and appropriate tribes would be completed prior to implementing the task order.

**Significance:** The added sentence provides additional clarity between the terms project area and analysis area and does not change the analysis.

**4. FEIS Volume 2, Socioeconomics, Affected Environment, Environmental Justice (pp. 67-68)** the following bolded text is added to the paragraphs in the Environmental Justice section:

**Apache**, Coconino, Gila, and Navajo Counties have high concentrations of American Indian residents, due to the large share of tribal lands in these three counties. The majority of land in Navajo County is tribal land. Yavapai County also contains tribal lands, though the areas are quite small. <sup>12</sup> As a result, environmental justice issues are more likely to occur in Coconino, Gila, and Navajo Counties than Yavapai County. However, a finding of low racial or ethnic diversity does not eliminate the need to consider potential disproportionate impacts of Forest Service management actions. A county may have a low overall concentration of minority residents, but still have areas with a high concentration of minority residents who could be adversely affected by management actions.

**Apache**, Gila, and Navajo Counties have meaningfully greater <sup>13</sup> shares of people living in poverty than the state overall. More than one-fifth of Gila County residents, ~~and~~ more than one-quarter of Navajo County, and 33.5% of Apache County residents live in poverty.

~~Based on the minority status and poverty data presented above,~~ **Apache**, Coconino, Gila, and Navajo counties appear most at risk for environmental justice issues. The largest minority group in these counties— American Indians—also experiences a very high poverty rate. Between one-third and one-half of American Indians in the planning area counties live in poverty (U.S. Census Bureau 2016a).

The conditions described in this section underscore the importance of evaluating environmental justice consequences. The economic data suggest that **Apache and** Navajo counties are both the most underserved county (in terms of economic opportunities) and also reliant on forest-related employment in the study area. Therefore, **Apache and** Navajo counties may be particularly influenced by economic changes related to 4FRI. The potential for disproportionately high and adverse impacts on minority and low-income individuals due to Forest Service management actions are evaluated in the environmental consequences section of this document.

**Significance:** The addition of Apache County in the paragraphs is consistent with the Socioeconomics Specialist Report. The additions are not new information but are added for consistency between the specialist report and FEIS. Apache County was inadvertently left out of this section of the FEIS.

**5. FEIS Volume 2, Range, Environmental Consequences, Effects Common to Both Action Alternatives (p. 87)** the following bolded text is added to the 1<sup>st</sup> full paragraph on the page, and text is deleted:

---

**Original:** The increase in forage within treatment areas would improve allotment conditions and allow for more flexibility in grazing management systems. Livestock distribution would improve because forage is more available in uplands. An increase in pasture graze periods would allow for additional pasture rest or deferment in other pastures within an individual allotment.

**Errata:** The increase in forage within treatment areas would improve allotment conditions and allow for more flexibility in grazing management systems. **While this project does not propose**

**to increase total livestock numbers or change the seasons-of-use beyond those previously authorized, there could be secondary benefits related to livestock management.** Livestock distribution could improve because forage **could be** more available in uplands, **potentially reducing grazing impacts to riparian areas.** **Timing and rotation of pasture use within an allotment may gain flexibility by allowing for pasture rest or deferment where needed, due to potential increased availability of forage in treated pastures.** **Additionally, livestock could be utilizing a lower percentage of the total produced forage on the allotment, thus reducing the overall potential impacts of grazing.**

**Significance:** The additions provide additional clarification to the potential benefits of project implementation to grazing management systems.

**6. FEIS Volume 2, Range, Environmental Consequences, Effects Common to Both Action Alternatives (p. 88) the following sentence is deleted:**

---

Stream and riparian area restoration would have a long-term benefit to livestock grazing management by increasing forage and by improving bank stability.

**Significance:** The errata (#5 directly above) includes impacts to riparian areas.

**7. FEIS Volume 2, Inventoried Roadless Areas, Environmental Consequences, Assumptions (pp. 161-162) the following bolded bulleted items are added, deleted, or modified from the bulleted list of assumptions:**

---

- **Slopes of 40% or more would receive hand thinning mechanical treatments where assigned.**
- **Mechanical treatments in IRAs will only occur in the identified areas and will be spatially fixed (see IRA Specialist Report Appendix A - Maps).**
- **Mechanical treatments in IRAs are broken out by hand thinning, comprehensive restoration, and upland vegetation treatments (See Appendix G - Glossary term mechanical treatments). Hand thinning treatments are typically completed with a chainsaw. Upland vegetation treatments are typically conducted using heavy equipment (conventional ground-based harvest systems). Comprehensive treatments could be a combination of hand thinning and the use of heavy equipment.**
- The Rim Country Project would use a condition-based management approach for **upland vegetation** mechanical and aquatic treatments within IRAs. Condition-based management ensures that the right treatment is applied to the right location to meet desired conditions most effectively. The approach does not assign specific treatments to specific areas, but rather assigns treatments to a set of conditions that occur on the landscape. Appendix D of the FEIS contains the Rim Country Implementation Plan. The plan outlines procedures for condition-based management and the old and large tree implementation plans. IRAs would be evaluated for resource protection considerations when activities are within IRAs **to be consistent with the 2001 Roadless Area Conservation Rule Exception Criteria (Appendix D, Implementation Plan Checklist and Section D, Decision Tree Modifiers), a requirement of additional notification and approvals including line officer approval and coordination with the Regional Inventoried Roadless Area Lead (Appendix D, Implementation Plan Checklist), and incorporation design features (Appendix C). Treatments in Inventoried Roadless Areas shall be designed to maintain the overall roadless character of inventoried roadless areas.** Additionally, in accordance with the Old and Large Tree Implementation Plans (Appendix

D), removal of old and large trees would be rare. Exceptions for removal of old and large trees are outlined in the plans, however exceptions for removal of old trees would be rare.

- Deleted bulleted item:
  - ~~The amendment exception for treatment of slopes over 40 percent is incorporated into the analysis.~~

**Significance:** The added and deleted text provides additional clarity on the reclassification assignments of mechanical treatments in Inventoried Roadless Areas and does not change the analysis conclusions. Mechanical treatments on slopes over 40 percent would be hand thinning treatments and would not include timber harvest, therefore the amendment exception does not apply to the treatments outlined to occur in IRAs.

**8. FEIS Volume 2, Inventoried Roadless Areas, Environmental Consequences, Alternative 2 – Modified Proposed Action, Table 48 (p. 172) is modified in its entirety as follows:**

**Table 48. Proposed treatments within IRAs for Alternative 2**

Inventoried Roadless Area	Mechanical Treatment: Upland Vegetation Mechanical Thinning and Prescribed Fire (acres)	Mechanical Treatment: Comprehensive Restoration Mechanical Thinning and Prescribed Fire (acres)	Mechanical Treatment: Hand Thinning and Prescribed Fire (acres)	Prescribed Fire Only (acres)	General Stream Restoration (miles)	Heavy Mechanical Stream Restoration (miles)	Road Decommissioning (miles)
Chevelon Canyon	104	17	251	4,816	1.35	0.01	-
Leonard Canyon	335	94	296	1,083	10.14	-	-
Barbershop Canyon	-	156	305	850	12.13	-	-
East Clear Creek	-	204	348	1,058	9.79	0.06	-
Jacks Canyon	-	79	1,090	548	-	-	-
Hellsgate	-	2	336	-	0.11	-	-
Mazatzal	-	-	316	-	-	-	0.50
Sierra Ancha Wilderness Contiguous	-	20	3,346	1,247	-	-	0.08
<b>Grand Total</b>	<b>439</b>	<b>572</b>	<b>6,287</b>	<b>9,602</b>	<b>33.52</b>	<b>0.07</b>	<b>0.58</b>

**Significance:** The change provides additional clarity on the reclassification assignments of mechanical treatments in Inventoried Roadless Areas and does not change the analysis conclusions.

**References**

The following references are added to the reference section of the FEIS (pp. 195-238):

Adetona, O., Simpson, C.D., Onstad, G., Naeher, L.P. 2013. Exposure of wildland firefighters

- to carbon monoxide, fine particles, and levoglucosan. *Ann. Occup. Hyg.* 57, 979–991.
- Atomic Heritage Foundation. 2022. Nevada Test Site. <https://www.atomicheritage.org/location/nevada-test-site>. Date Accessed: 7/19/2022
- Baker K., Lee S., Lemieux P., Hudson S., Murphy B., Bash J., Koplitz S., Nguyen T., Hao WM, Baker S., Lincoln E. 2021. Predicting wildfire particulate matter and hypothetical re-emission of radiological Cs-137 contamination incidents. *Sci Total Environ.* 2021 Nov 15;795:148872. doi: 10.1016/j.scitotenv.
- Evangelidou N., Eckhardt S. 2020. Uncovering transport, deposition and impact of radionuclides released after the early spring 2020 wildfires in the Chernobyl Exclusion Zone. *Sci Rep* 10:10655. <https://doi.org/10.1038/s41598-020-67620-3>
- Gerdes, J. 2012. Personal communication email: 1/23/2012-3/11/2014. United States Environmental Protection Agency, Region 9.
- Graham, R. 2012. Personal communication email: 4/25/2012-2/24/2014. United States Environmental Protection Agency, Region 8.
- Hao, W.M.; Baker, S., Lincoln, E., Hudson, S., Lee, S.D., Lemieux, P. 2018. Cesium emissions from laboratory fires. *Journal of the Air and Waste Management Association.* 68(11): 1211-1223
- Hejl A., Ottmar R., Timothy Jannik G., Eddy T., Rathbun S., Commodore A., Pearce J., Naeher L. 2013. Radionuclide activity concentrations in forest surface fuels at the Savannah River Site. *J Environ Manage.* 115:217-26.
- Ketterer, M., Hafer, K., Link, C., Kolwaite, D., & Wilson, J., Mietelski, J. 2004. Resolving global versus local/regional Pu sources in the environment using sector ICP-MS. [https://www.researchgate.net/publication/228678143\\_Resolving\\_global\\_i\\_versus\\_localregional\\_Pu\\_sources\\_in\\_the\\_environment\\_using\\_sector\\_ICP-MS](https://www.researchgate.net/publication/228678143_Resolving_global_i_versus_localregional_Pu_sources_in_the_environment_using_sector_ICP-MS)
- Michelotti, E., Dewart, J., Whicker, J., Eisele, Jr., W., Green, A., McNaughton, M., and Allen, SP. 2013. Comprehensive Air Monitoring Report for Measurements during the Las Conchas Fire at Los Alamos National Laboratory. United States: N. p., 2013. Web. doi:10.2172/1104895
- Risk Assessment Corporation. 2002. Analysis of Exposure and Risks to the Public from Radionuclides and Chemicals Released by the Cerro Grande Fire at Los Alamos. RAC Report No. 5-NMED-2002-FINAL. [http://www.racteam.com/wp-content/uploads/2014/12/Cerro\\_Grande\\_Fire\\_Summary\\_Report.pdf](http://www.racteam.com/wp-content/uploads/2014/12/Cerro_Grande_Fire_Summary_Report.pdf)
- Schöllnberger, H., Aden, J., & Scott, B.R. 2002. Respiratory Tract Deposition Efficiencies: of Effects from Smoke Released in the Cerro Grande Forest Fire. *Journal of aerosol medicine: the official journal of the International Society for Aerosols in Medicine.* 15. 387-99. 10.1089/08942680260473461.
- Talerko, M., Kovalets, I., Lev, T., Igarashi, Y., Romanenko, O. 2021. Simulation study of radionuclide atmospheric transport after wildland fires in the Chernobyl Exclusion Zone in April 2020. *Atmospheric Pollution Research.* 12. 10.1016/j.apr.2021.01.010.

United States Department of Justice (USDOJ). 2022. Radiation Exposure Compensation Act.  
<https://www.justice.gov/civil/common/reca>. Date accessed: 7/19/2022

## Appendix C – Design Features, Best Management Practices, Mitigation, and Conservation Measures

1. **FEIS Volume 2, Appendix C (p. 261)** the following bolded text is added to the 1<sup>st</sup> paragraph:

---

Table C-1 lists design features, best management practices, and mitigation and conservation measures (collectively referred to as design features) that are designed to minimize or avoid effects common to all action alternatives. They are integral parts of the action alternatives that help align proposed activities with land management plan objectives, desired conditions, standards, and guidelines. As such, they have been included in the analysis presented in this FEIS. **Applicable design features for each implementation activity would be identified during the Initial Project Review period, as part of conducting the Implementation Plan Checklist (Appendix D). Depending on their nature, implementation of these design features may take place during project planning, layout, implementation, or post-implementation.** Design features in the table are organized by resource.

**Significance:** The added text provides additional clarity on when the design features in Appendix C would be reviewed and implemented.

2. **FEIS Volume 2, Appendix C: Design Features (p. 307)** the following bolded text is added to design feature WL014, and text is deleted:

---

**Original:** WL014: Survey all potential Mexican spotted owl areas including protected and recovery nest/roost, within the implementation area plus the area 0.5 mile to all habitat up to 0.5 mile beyond the perimeter of the proposed treatment area. Surveys should be conducted for two years, with the second-year survey either the year before or the year of (but prior to) project implementation. If more than five years have elapsed between the last survey year and the initiation of the proposed action, then one additional year of survey will be conducted prior to project implementation.

**Errata:** WL014: Survey all potential Mexican spotted owl areas including protected and recovery **habitat**, within the implementation area plus the area **including any habitat within a 0.5-mile area around the project area, per the USFWS survey protocol**. Surveys should be conducted for two years, with the second-year survey either the year before or the year of (but prior to) project implementation. If more than five years have elapsed between the last survey year and the initiation of the proposed action, then one additional year of survey will be conducted prior to project implementation. **If surveys cannot be completed, the Forest Service will assume owl presence within the project area, plus a buffer of 0.5 miles.**

**Significance:** The added text clarifies that the Forest Service will follow the USFWS Mexican Spotted Owl survey protocol and will assume occupancy unless there is a circumstance where this assumption would not apply (e.g., the area is no longer habitat post-fire).

## Appendix D – Implementation Plan for Alternatives 2 and 3

1. FEIS Volume 2, Appendix D: Implementation Plan, Table D-1. Implementation Plan Checklist, Table D-1 (p. 314) the following highlighted text is deleted or added to the table:

**Table D-1. Implementation Plan Checklist**

Implementation Plan Checklist	Yes	No	N/A
Is treatment consistent with the Rim Country Project selected alternative and analysis and the applicable Land Management Plan components?			
Have project objectives been developed in an interdisciplinary manner?			
Is the treatment on a line officer approved 5 year plan? (for vegetation/fuels projects only)			
An approved prescribed fire plan: (1) will be completed for all burning units and an ADEQ burn plan (2) will be submitted to the ADEQ for approval. All prescribed fire operations would be coordinated with and approved by the ADEQ prior to burning.			
For thinning operations, are sale prep checklist, sale folder checklist, and sale package complete? Are sales reviewed through a plan-in-hand process and signed off by district interdisciplinary team?			
Are treatment silviculture prescriptions completed and signed? <ul style="list-style-type: none"> <li>• Objectives are consistent with management direction?</li> <li>• Have silviculturists signed off on desired forest conditions in burn plans?</li> </ul>			
Have opportunities for upland and aquatic integration been explored?			
<b>Original:</b> Is treatment consistent with project design features? <b>Errata:</b> Have the applicable design features been identified and are they consistent with the treatment?			
Are wildlife surveys, if necessary, complete? In threatened and endangered species habitat, are the actions consistent with the FWS biological opinion?			
Has the Pre-implementation Compliance Review for the Regional Mexican Spotted Owl Recovery Strategy been completed (see appendix K) and made publicly available as applicable?			
Are botanical surveys, if necessary, complete? Necessary design features (Appendix C) for botany included?			
Are heritage surveys complete?			
Tribal outreach and consultation (if undertaken) complete?			
Is the action consistent with the letter of concurrence from Arizona SHPO?			
Are rights-of-way and land lines located and surveyed in place (if applicable)?			
Are treatments consistent with desired conditions and implementation strategies in the Implementation Plan?			
Has implementation monitoring and adaptive management strategies been documented and used/planned for higher quality outcome?			
For any project work occurring in an IRA: (1) is the treatment plan consistent with the approved 2001 Roadless Area exception criteria indicated in the Rim Country project Regional Forester Brief and (2) has the coordination with the Regional Office IRA Lead occurred (3) have IRA treatments been planned in accordance with the IRA treatment maps (see IRA Specialist Report Appendix A – Maps)?			
Are road packages completed for timber sales?			

**Significance:** The added text does not change the analysis. The text adds clarification and reiterates the current Forest Service Region 3 direction.

2. **FEIS Volume 2 Appendix D: Implementation Plan, Section C - Large Tree Implementation Plan, Aspen Stands and Patches (p. 321)** the following bolded text is added to the 3<sup>rd</sup> paragraph in the section:
- 

The lack of fire as a natural disturbance regime in southwestern frequent-fire forests since European settlement has caused much of the aspen dominated lands to cede to conifers (Bartos 2001). Other factors contributing to gradual aspen decline over the past 140 years include reduced regeneration from browsing **by livestock and introduced and native wild ungulates in the absence of natural predators like wolves** (Pearson 1914, Larson 1959, Martin 1965, Jones 1975, Shepperd and Fairweather 1994, Martin 2007). More recently, aerial and ground surveys indicate more rapid decline of aspen, with very high mortality occurring in low and mid-elevation aspen sites. Major factors thought to be causing this rapid decline of aspen include frost events, severe drought, and a host of insects and pathogens (Fairweather et al. 2008) that have served as the “final straws” for already compromised stands.

**Significance:** The added sentence does not change the analysis. The sentence further defines the factors contributing to aspen decline.

3. **FEIS Volume 2, Appendix D Implementation Plan, Section D – Rim Country Condition-based Management Approach, Rim Country EIS Tracking Process (p. 326)** the following bolded text and bulleted list are added to the *Rim Country EIS Tracking Process* section:
- 

#### **Rim Country EIS Tracking Process**

In order to ensure that the acreage and intensity of implemented treatments would be within the scope of the effects analysis, a robust treatment tracking system would be necessary and summarized at the Forest scale. A system would be put in place that would track several key elements of the proposed treatment from the planning process through to implementation. The system would be maintained at the administrative unit scale and in as close to real time as feasible. This system would be used to track the acres of particular treatments implemented and ensure that treatments are not applied on a greater number of acres than were analyzed in the EIS. **Tracking should ensure mileages of road actions do not exceed those allowed by the selected alternative as well as ensure the application of the Appendix C design features for roads actions. For more information on roads, including temporary road construction, road decommissioning, road relocation, and road maintenance, consult the roads section of the aquatic and watershed restoration condition-based management section (Appendix D) below.** At the minimum, this system would track:

- Spatially, area covered proposed for treatment under the Rim Country EIS, including stand ID and treatment type
- Actual assigned treatment post-IDT walkthrough, from the prescription
- Actual cut unit polygon, post layout, including stand ID and treatment type
- **Miles of temporary road built and decommissioned**

**Significance:** The added sentences do not change the analysis. The bullet point adds another minimum requirement for treatment tracking to ensure the miles of temporary roads built do not exceed those analyzed. The addition also refers the reader to the newly added roads section in the Aquatic and Watershed Condition-based management approach, ensuring consistency for road activities between the two approaches.

4. **FEIS Volume 2, Appendix D Implementation Plan, Section D – Rim Country Condition-based Management Approach, Initial Resource Review (p. 328)** the following bolded text is added and the strike-through text is deleted from the *Initial Project Resource Review* section:
- 

**Initial Project Resource Review**

The first step in any project implementation approach would be the initiation of a pre-project review. This would include a review of existing conditions, **NEPA and** land management plan components, federally-listed species recovery plans, and the ~~current land management plan~~ **Rim Country Project** Biological Opinion. A review of the project design features, best management practices, project checklists, and mitigation measures would also occur. **Depending on their nature, implementation of these design features may take place during project planning, layout, implementation, or post-implementation. Consideration of the design features at each step of the process will ensure that the design features are appropriately incorporated into project implementation. A review of the design features, as well as this implementation plan, should take place at every step of implementation.** Additionally, this review process would identify upland vegetation as well as aquatic and watershed focused restoration priorities in the project area. For more information on the integration of these two components of the Rim Country Condition-based Management Approach, see the section below Integration of Aquatic and Upland Management Activities.

**As part of the interdisciplinary review during implementation, while projects are being chosen and design elements being verified, if new information or changed circumstances are discovered, procedures at FSH 1909.15 part 18 would be followed, commonly called a Supplemental Information Report (SIR). The SIR would determine if the new situation is within the scope and range of effects considered in this analysis; if not, a supplement, correction, or new NEPA decision may be required. New information or changed circumstances might include such situations as a large wildfire, other large-scale disturbance events, or a change in special status species lists.**

**Significance:** The added text does not change the analysis. The added text provides additional clarity on when design features and the implementation plan would be reviewed in project implementation. The addition also provides additional information as to Forest Service procedures for changed circumstances or new information.

5. **FEIS Volume 2, Implementation Plan, Condition-based Management Approach for Vegetation-focused Restoration Treatments (p. 330)** the following section in its entirety is added before the *Evaluate Special Management Considerations* section:
- 

**Prioritization**

Upland restoration activities would be prioritized at the forest and district level in coordination with partners and in accordance with applicable agreements. Many considerations could be used to prioritize proposed locations and timing of upland vegetation restoration activities including areas with: wildland urban interface and USFS or USFS permitted infrastructure, highest risk for uncharacteristic fire behavior, important habitat for federally listed, candidate or sensitive species, integrated aquatic and watershed restoration activities, and additional areas that represent public, stakeholder, and partner values.

**Table D.2-errata Condition-based Management Approach for Vegetation Activities: Considerations for prioritizing vegetation restoration activities**

Consideration	Description
Wildland Urban Interface and USFS authorized Infrastructure	Wildland-urban interface (WUI) includes those areas of resident populations at imminent risk from wildfire, and human developments having special significance. These areas may include critical communication sites, municipal watersheds, high voltage transmission lines, church camps, scout camps, research facilities, and other structures that, if destroyed by fire, would result in hardship to communities.
High risk for uncharacteristic fire behavior	These fires result as a consequence of more continuous canopy cover, ladder fuels, and accumulated live and dead woody material.
Candidate or sensitive species	The presence of these species and improving their habitat could increase the prioritization of a project over a site that had none present.
Integrated aquatic and watershed restoration activities	Incorporating aquatic and watershed restoration activities in an area with other restoration treatments whenever possible is one way to create efficiencies with heavy equipment and personnel.
Public, stakeholder, and partner values	Projects that already have partners or interested partners, particularly if funding is available, should be considered.

**Significance:** The analysis is not affected by this change. The added section provides a guide for project prioritization and consistency with the Aquatic and Watershed Condition-based Management Approach.

**6. FEIS Volume 2, Appendix D, Implementation Plan, Condition-based Management Approach for Vegetation-focused Restoration Treatments, Treatment Assignment Decision Tree, Decision Tree Modifiers, Inventoried Roadless Areas (p. 337) the following bolded bullet points are added:**

*Inventoried Roadless Areas*

All or portions of eight Inventoried Roadless Areas exist in the project area. Restoration activities within IRAs would be consistent with the 2001 RACR Exception Criteria (see the Inventoried Roadless Area Specialist Report – Regional Forester IRA Briefing Paper), require additional notification and approvals, and incorporate design features (appendix C). Treatments in Inventoried Roadless Areas shall be designed to maintain the overall roadless character of inventoried roadless areas. Additional considerations for management activities in IRAs are listed below:

- Temporary roads shall not be built in Inventoried Roadless Areas. No road realignment or reconstruction is allowed in Inventoried Roadless Areas;
- Strive to make stump heights 8 inches above ground (uphill side) or lower, with 12-inch heights the exception and rarely occurring;
- Slash must be treated or removed;
- Use existing barriers (roads) and natural barriers as control lines whenever possible;
- Cable operations shall not be conducted in Inventoried Roadless Areas.
- **Slopes of 40% or more will receive hand thinning treatments where assigned.**
- **Mechanical treatments in IRAs will only occur in the identified areas and are spatially fixed (see IRA Specialist Report Appendix A - Maps for locations).**

**Significance:** The added text provides consistency with the Inventoried Roadless Area considerations and does not change the analysis conclusions.

7. **FEIS Volume 2, Appendix D, Implementation Plan, Aquatics and Watershed Restoration Condition-based Management (p. 341)** the following section in its entirety is added after the *Aquatics and Watershed Restoration Condition-based Management* section and before the *Introduce Evaluation Methods* section:
- 

### **Roads**

**Temporary Roads:** Temporary roads may be new and/or can occur on existing unauthorized roads to facilitate mechanical treatments. Temporary roads will require concurrent implementation of all applicable design features, best management practices, and mitigation and conservation measures as identified in Appendix C including, but not limited to, SW013, SW021, SW048, SW056, SW057, SW059, SW063, SW069, AQ014, AQ019, BT008, CT001, CT010, NW001-NW008, RM001, RM003, RS001-RS002, RS004-RS006, RS010, RS013, SW017, SW031, SW039, SW040, SW058, SW060, SW062, SW065, SW080, TR001-TR013, WL006, WL010, WL016, WL022, WL025. Per design feature TR008, as a condition of approval for use of a temporary road under any contract involving mechanical thinning, temporary roads would be decommissioned, using any one or combination of appropriate methods (FSM 7734.1, also see TR007), by the purchaser/contractor immediately after mechanical treatments and restoration work are completed.

**Road Decommissioning:** Road decommissioning is defined as: "Activities that result in the stabilization and restoration of unneeded roads to a more natural state" (36 CFR 212.1, FSM 7705 – Transportation System). The Forest Service Manual (7734.1) identifies five levels of treatments for road decommissioning which can achieve the intent of the definition. These include:

- Block entrance
- Revegetation and water barring
- Remove fills and culverts
- Establish drainage ways and remove unstable road shoulders
- Full decommissioning, recontouring and restoring natural slopes

These five treatments provide a wide range of options to stabilize and restore unneeded roads. Depending on ground conditions and road location, restoration may be achieved by a combination of the treatments listed.

National Forest Systems roads that are not open to the public and/or no longer needed for administrative and/or permittee use and unauthorized roads, all of which are not open for public use, could be decommissioned. Any unauthorized roads within the project area on all forests could be decommissioned. Transportation Analysis Process reports and Travel Management decisions for the Apache-Sitgreaves, Coconino, and Tonto National Forests and site-specific on-the-ground evaluations would be adhered to in selecting roads for decommissioning. Roads currently designated as open on a forest's Motor Vehicle Use Map would not be decommissioned or closed under the action alternatives. Roads not identified for decommissioning in the Transportation Analysis Process or Travel Management decisions for the forests would require an additional NEPA analysis for decommissioning.

Roads for decommissioning would be selected during project planning and all applicable design features, best management practices, and mitigation and conservation measures as identified in Appendix C would be implemented during the decommissioning of the roads. The Restoration Assessment Framework (pp. 349-360) would be used for decommissioning activities.

**Road Relocation:** Road relocation is defined as moving an existing road from its current location and relocating it to a new location. When roads are relocated, their former location would be decommissioned. Roads or road segments would be identified for relocation at the time that task orders and other projects are implemented. Roads for relocation would be selected during project planning and all applicable design features, best management practices, and mitigation and conservation measures as identified in Appendix C would be implemented during the relocation. The Restoration Assessment Framework (pp. 349-360) would be used for relocation activities.

**Road Maintenance and Reconstruction:** Road maintenance is defined as, “The upkeep of the entire transportation facility including surface and shoulders, parking and side areas, structures, and such traffic-control devices as are necessary for its safe and efficient utilization. This work includes brushing of roadside vegetation, falling danger trees, road blading, cleaning ditches, cleaning culvert inlets and outlets, etc.” (36 CFR 212.1).

Some roads may require more substantial work outside of road maintenance. These improvements would be done to improve and restore National Forest System roads. Improvements would provide serviceability for project haul vehicles and harvest equipment, as well as proper hydrologic function and stream protection according to applicable best management practices. Actions could include surfacing, clearing, excavation, adding or replacing culverts, constructing drain dips, road widening, or riprap fills.

Roads identified for maintenance or reconstruction would be selected during project planning and all applicable design features, best management practices, and mitigation and conservation measures as identified in Appendix C would be implemented during the activity. The Restoration Assessment Framework (pp. 349-360) could be used for relocation activities.

**Significance:** The analysis is not affected. This section reiterates text that is within the FEIS Volume 2, Chapter 3 Transportation analysis (pp. 93-97). The section also identifies the applicable design features of temporary roads that are within Appendix C. The section clarifies that decommissioning of any roads that have not been identified for decommission in the Transportation Analysis Process or Travel Management decisions for the forests would require additional NEPA analysis.

- 8. FEIS Volume 2, Appendix D: Implementation Plan, Section E - Management Direction, Desired Conditions, and Treatment Design, Mexican Spotted Owl Habitat. Recovery Nesting/Roosting Habitat Mechanical Thin and Burn Treatment Design (p. 365)** delete the sentence “Retain trees greater than 24 inches d.b.h.” from the following section and replace it with the highlighted and bolded text:
- 

*Recovery Nesting/Roosting Habitat Mechanical Thin and Burn Treatment Design*

**Prescribed Burning Objectives and Tactics:**

Prescribed burns will be used to treat fuels and mitigate fuel hazards where and when feasible by increasing tree canopy base height and reducing litter/duff cover and other surface fuel loading. Prescribed fires are designed to maintain and enhance desired recovery nesting/roosting habitat forest structure, tree densities, snag densities, and coarse woody debris levels.

Course woody debris would be managed for 3 to 10 tons per acre, and downed logs greater than 12 inch midpoint diameter would be managed for three or greater per acre. Averages are at the landscape-scale;

Use prescribed burning management to meet desired condition and mitigate fuel hazards with prescribed fire that produces low to moderate-severity fire effects;

Other activities tied to prescribe burning include line preparation which includes fuel breaks. Logical fuel breaks include existing roads; minimal line construction would be used depending on road system density;

Prescribed burning includes following concurrence and consultation advice from FWS.

**Mechanical Thinning Objectives and Tactics:**

Use mechanized equipment to reduce and remove hazardous live and dead fuel loading;

Design tree thinning treatments to meet desired conditions. Retain Gambel oak; remaining species may be felled to meet desired conditions;

Activity and residual slash may be removed, masticated, lopped and scattered or piled to burn in place in coordination with fire/fuels staff;

Where possible, manage for the sustainability of large oaks by removing ladder fuels and overtopping trees;

Snags greater than 18 inches would be managed for two or greater per acre in ponderosa pine and three or greater per acre in mixed conifer. Averages are at the landscape-scale;

**Original:** Retain trees greater than 24 inches d.b.h.

**Errata:** In Recovery Nest/Roost habitat strive to maintain all trees  $\geq 18$  inches dbh except in overriding management situations such as for human safety.

Stands of recovery nesting/roosting habitat that are currently simultaneously meeting conditions in Table C.3 of the Mexican Spotted Owl Recovery Plan should not go below identified levels.

**Significance:** The typo in the FEIS does not change the analysis. Appendix C Design Feature WL002 contains the correct text that was referenced in the analysis.

## Appendix E – Monitoring and Adaptive Management Plan

1. **FEIS Volume 3, Appendix E – Monitoring and Adaptive Management Plan, Adaptive Management Process (pp. 7-8)** the following bolded text is added to the paragraphs:
- 

The 4FRI Rim Country project, like the first 4FRI EIS project, is a long-term forest restoration effort that is unprecedented in scale in the southwestern region of the United States. Implementation of the entire Rim Country project would take place over a period of 20 years or when activities can be funded or completed. This work would occur as the Southwest is experiencing climatic changes, including periods of extended drought and increased temperatures. These changes are lengthening the wildfire season in the Southwest, shifting plant communities, and threatening native biodiversity, among other effects (Gonzalez et al. 2018). Together with the large scale and long duration of the project, this may require modifications of planned treatments before they are implemented **as part of the condition-based management approach described in Section D of Appendix D**. These changes would be in addition to any suggested adaptive management actions identified through monitoring. This MAMP is intended to guide monitoring that can help the Forest Service learn from treatment effects and respond to changing conditions.

**Adaptive management (AM) and condition-based management (CBM) both account for environmental analysis with responsiveness and flexibility; however, with AM, adjustments to management activities occur after their initial implementation and are based on monitoring results. If monitoring reveals that the action is not having its intended effect, it is modified to improve outcomes. With CBM, appropriate management activities are confirmed or modified prior to initial implementation based on field reviews that validate the current location-specific resource conditions. A CBM project can incorporate AM, but it is not required.** Adaptive management refers to a “rigorous approach for learning through deliberately designing and applying management actions as experiments” (Murray and Marmorek 2003). In an adaptive management process, monitoring of indicators prior to and in response to management actions provides information for understanding if those management actions are leading to progress toward desired conditions and/or towards thresholds that should trigger a change in management response.

**Significance:** There is no change to the analysis. The change clarifies the difference between adaptive management and condition-based management.

## Appendix H – Response to Comments

### 1. FEIS Volume 3, Appendix H Response to Comments, Smoke, General Concern, #10 (p. 335) the entire response is modified as follows:

---

The Nevada Test Site, 65 miles north of Las Vegas, was a nuclear weapon test site. Nuclear testing, both atmospheric and underground, occurred here between 1951 and 1992. The U.S. government conducted a total of 1,021 nuclear tests at the site (Atomic Heritage Foundation, 2022). Out of these tests, 100 were atmospheric, and 921 were underground (Atomic Heritage Foundation, 2022). The atmospheric nuclear tests caused concern about potential health effects on the public, and environmental dangers, due to nuclear fallout. As a result, the last atmospheric test occurred on July 17, 1962, at the Nevada Test Site (Atomic Heritage Foundation, 2022). In 1990, Congress passed the Radiation Exposure Compensation Act to make payments to people who met a set of conditions who claimed to have been affected by the fallout from the nuclear tests (USDOJ, 2022). The individuals and communities who were exposed to nuclear fallout are now called “Downwinders.” The Rim Country Project lies within the Radiation Exposure Compensation Act Downwinder Area (USDOJ, 2022). A claimant must establish a physical presence in the Downwinder area for at least two years during the period beginning on January 21, 1951, and ending on October 31, 1958, or for the entire period beginning on June 30, 1962, and ending on July 31, 1962 (USDOJ, 2022). An eligible claimant must also establish a subsequent diagnosis of a specified compensable disease.

According to recent research conducted by Wei Min Hao: Following a radiological release event, nuclear power plant incident, improvised nuclear device, nuclear testing site, or hazardous waste site a wide area may be contaminated by radiological materials, including significant forest areas. There is a potential for emissions of radionuclides such as cesium-137 from a wildfire over a radionuclide-contaminated forest. The paper reports on a laboratory simulation study of a wildfire with two types of biomass doped with nonradioactive cesium. This simulation suggests that only 1 to 2.5 percent of the cesium in the biomass would be emitted from the wildfire, while the rest would reside in the residual ash. In the study, pine needles were the only contributor to the air emissions of cesium; duff was not a source of cesium emissions. In the study, cesium emitted from the simulated wildfire was concentrated in particle sizes larger than 10 micrometers (Hao et al. 2018). Hao (2018) confirms that cesium and other radionuclides that would be emitted by the Rim Country Project would not reach unsafe levels. This research can be found in: Hao et al. 2018. Cesium emissions from laboratory fires. *Journal of The Air and Waste Management Association* 2018, Vol. 68, No. 11, 1211–1223 <https://doi.org/10.1080/10962247.2018.1493001>.

Also see the literature review within the FEIS, Air Quality, Radioactive Emissions section.

The Forest Service is responsible for controlling emissions from prescribed burning on National Forest System lands and the agency is required by law to manage smoke emissions in compliance with Arizona Department of Environmental Quality regulations. See response to smoke general concerns 1, 2, and 5.

**Significance:** The change in the comment response clarifies that the Rim Country Project area is within the Radiation Exposure Compensation Act “downwinder” area. The FEIS Air Quality Affected Environment has been updated with the Radioactive Emissions analysis and updated literature.