



United States Department of Agriculture

Draft Record of Decision for the Flagstaff Watershed Protection Project

Coconino National Forest Coconino County, Arizona



Forest
Service

Southwest
Region

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June 2015

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Draft Record of Decision

Coconino National Forest Coconino Counties, Arizona

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Abstract: This document describes a draft decision based on the Coconino National Forest Flagstaff Watershed Protection Project Environmental Impact Statement. Information on the alternatives considered, justification for the chosen alternative, and details regarding the decision and future implementation are discussed.

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Introduction

General Location

The analysis area contains two distinct areas: the Dry Lake Hills (DLH) portion, which is north of Flagstaff, AZ, and the Mormon Mountain (MM) portion, which is south of Flagstaff (Figure 1). The DLH area is roughly bound by the City of Flagstaff to the south, Kachina Peaks Wilderness to the north, the watershed boundary to the east, and a closed forest road (FR 6275) to the west. The MM portion is located west of Forest Highway 3 (Lake Mary Road) and northwest of Mormon Lake and Mormon Lake Village, on the upper slopes of Mormon Mountain, and is generally bound by FR 132D to the north and FR 648 to the south.

Figure 1 shows the project area locations relative to the watersheds in which they are located. The yellow and orange areas depict the areas analyzed in the Flagstaff Watershed Protection Project (FWPP) Environmental Impact Statement (EIS) for treatment.

The FWPP project area is of high scenic, cultural, wildlife, and recreational value. Public use of the project area is very heavy, with many heavily-used trails (for both motorized and non-motorized use), camping areas, and rock climbing areas. The area also has religious significance to several Native American tribes in the region.

Overlap between the Four Forest Restoration Initiative (4FRI) project area and the FWPP area is present; those areas that were originally analyzed by the 4FRI DEIS were included in FWPP planning effort to address additional treatment options (such as treatments on steep slopes) and were not carried forward into the 4FRI FEIS or Record of Decision. The Mount Elden/Dry Lake Hills (MEDL) Recreation Planning Project is also underway and overlaps a majority of the project area within the Dry Lake Hills.

Approximately 1,872 acres within the general project boundary are already covered under previous NEPA decisions: Jack Smith/Schultz (2009) and Eastside (2007) Fuels Reduction and Forest Health Restoration Projects. The treatable areas covered under those decisions are either currently being implemented or will be implemented in the near future. For example, the Orion Task Order (from the Jack Smith/Schultz Decision, 2009) is within the project boundary and is anticipated to be treated under the 4FRI contract; those areas of overlap are included within the cumulative effects analysis within Chapter 3 of the FEIS. Some areas within the Jack Smith/Schultz project area were either determined to be untreatable by ground-based equipment or were designated as No Treatment during that planning effort due to steep slopes and accessibility issues; those areas were reanalyzed in the FWPP EIS.

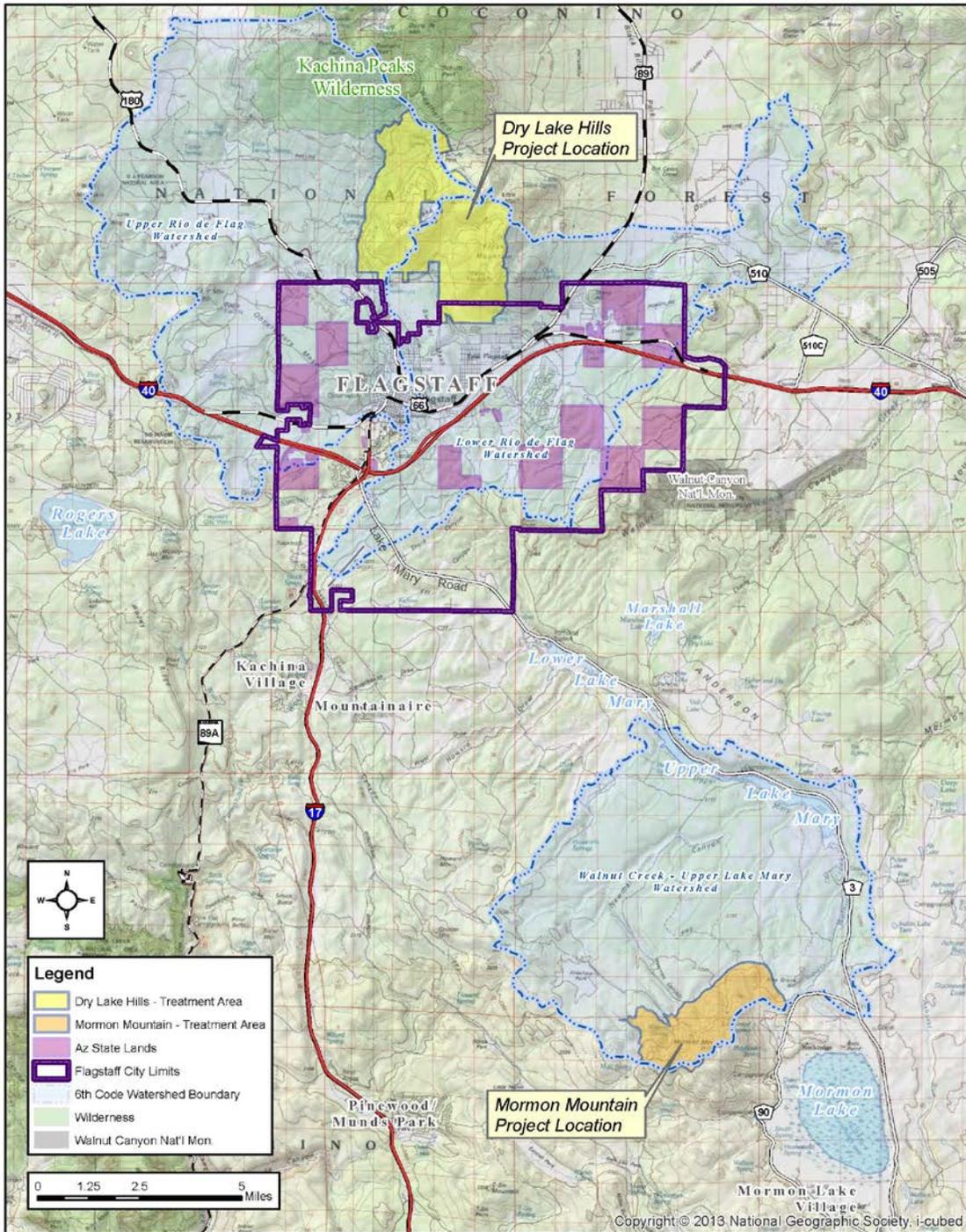


Figure 1: Vicinity map of the project area¹

¹ Ownership of a few parcels of Arizona State Lands has changed to the City of Flagstaff since this map was created. This does not affect the National Forest or management thereof.

Background

The City of Flagstaff has seen first-hand the devastating impacts of fire and post-fire flooding following the 2010 Schultz Fire on the east side of the San Francisco Peaks. The cost of fire suppression was approximately \$10 million; however, the actual cost of the fire is many times greater than that figure. Many of those additional costs have been associated with severe, repeated flooding following the fire, with flows originating on the National Forest and traveling into semi-rural residential areas just outside the city limits. Almost five years after the actual wildfire, the Forest Service and Coconino County continue to work on mitigating the threat of flooding in those areas.

After the 2010 Schultz Fire and subsequent flooding events, the Ecological Restoration Institute (ERI) of Northern Arizona University put together a study called A Full Cost Accounting of the 2010 Schultz Fire, which detailed not only the cost of wildfire suppression, but also those costs associated with loss of property value and specific flood damage to property (2013). According to this study, the total impact of the Schultz Fire was estimated at between \$133 million and \$147 million. This is considered a conservative estimate as it “excludes measures such as volunteer work by nonprofits; destruction of recreation areas, timber, and archaeological sites; physical and mental health costs; the degraded viewshed (beyond effects on property values); and the long-term impacts to the region’s amenity-based economy” (ERI 2013).

During the November 2012 elections, residents of Flagstaff passed a \$10 million bond with approximately 74 percent approval to support forest treatments within these two watersheds on the Coconino National Forest and also on State of Arizona lands. Identified on the ballot as the “Forest Health and Water Supply Protection Project,” the planning effort on the National Forest segment is now known as the “Flagstaff Watershed Protection Project (FWPP).”

In 2014, the Rural Policy Institute (RPI) of Northern Arizona University conducted a study that estimated the potential financial damages mitigated by the implementation of FWPP (October 2014). This study, known as the Flagstaff Watershed Protection Project Cost Avoidance Study (or Cost Avoidance Study), found that between the two treatment areas, financial damages potentially prevented range from \$573 million to \$1.2 billion.

Similar treatments may occur on approximately 3,000 acres of State of Arizona lands or on private lands, including an approximately 140-acre parcel in the middle of the Dry Lake Hills owned by the Navajo Nation, as part of the overarching project funded through the City bond; however these activities are not included in this Record of Decision nor in the FWPP EIS planning effort as it pertains strictly to those actions proposed on the National Forest. The implementation of watershed protection treatments on the National Forest System lands does not depend on the implementation of treatments on adjacent lands under other ownership, or vice versa.

Purpose and Need

From the start, the primary purpose of the Flagstaff Watershed Protection Project (FWPP) has been to reduce the potential for high severity wildfire and subsequent flooding in two key watersheds near Flagstaff, Arizona: in the Dry Lake Hills portion of the Rio de Flag Watershed and the Mormon Mountain portion of the Walnut Creek-Upper Lake Mary Watershed (see Figure 1). There is a need to reduce the fire hazard and post-fire flooding that would likely damage the drinking water infrastructure south of town and which could also cause extensive damage to

residential and commercial areas should a high-intensity wildfire occur in mountainous areas that make-up the Upper Lake Mary and Rio de Flag watersheds.

More specifically, there is a need to reduce the potential for crown fire and high intensity surface fire, to reduce the likelihood of human-caused ignitions, and to increase the ability of fire suppression crews to control a wildfire occurring within the project area. Many of the treatments included in this decision will also move the project area closer to the historic range of variability in their desired condition to reduce the potential for severe wildfire.

In order to accomplish these goals, there is a need to amend the Forest Plan to allow mechanical treatment on slopes greater than 40 percent and a need to amend the Forest Plan to better align treatments within the FWPP Mexican spotted owl habitats with the Mexican Spotted Owl Recovery Plan, First Revision (USDI FWS, 2012).

The purpose and need for the project focused on “reducing the potential for high severity wildfire and subsequent flooding” in order to streamline the necessary analysis and to maintain consistency with public messaging. This more focused purpose and need allowed us to move through the planning process more quickly and with more transparency to the Flagstaff public who supported the city bond to fund treatments. They are the reason we’re able to move forward with planning and, when the planning process is complete with the final decision, treatment of these two critical watersheds.

Decision and Rationale

My Decision

This draft record of decision (ROD) documents my decision and rationale for the actions I am authorizing under the FWPP Environmental Impact Statement analysis process. This decision reflects many hours of dedicated time by not only the interdisciplinary team of specialists, but also by our partners and public. The high level of engagement by individuals, groups, agencies, Tribes, and local governments combined with the environmental analysis were all important and necessary components for me to make an informed decision (see the Public Involvement section of this document as well as the extensive Response to Comments document within the project record). I appreciate the time, energy, ingenuity and viewpoints that were contributed by so many to shape and inform a wide range of options that have been considered for this decision. As the draft EIS (DEIS) did not contain a preferred alternative in order to allow for more collaboration and insight by all interested parties, that input has been instrumental in the development of this decision.

Based on my review of the environmental effects disclosed in the Final Environmental Impact Statement (FEIS), the Coconino Land Management Plan (Forest Plan), the project record and in consideration of comments received on the draft EIS, I have decided to implement a blended decision, which includes components of all three action alternatives: Alternative 2: Proposed Action with Cable Logging; Alternative 3: Proposed Action without Cable Logging; and Alternative 4: Minimal Treatment. This decision authorizes treatment on approximately 8,667 acres (see Table 2) and includes two Forest Plan amendments under the 2012 Planning Rule (36 CFR 219.13(b)(3)). The amendments are summarized in the Forest Plan amendment section below and detailed in Appendix A of the FEIS. This decision also includes the establishment of a permanent campfire closure order in the DLH portion of the project area.

This blending is based on the concept of using traditional ground-based equipment wherever possible, helicopter logging in the areas of greater visual and wildlife concern, and cable logging where visual impacts, effects on the Mexican spotted owl, and large tree retention issues are less significant (Figure 2 and Figure 3). Concepts from Alternative 4 (minimal treatment) were incorporated where possible, but this is predominantly a blend between Alternatives 2 and 3 in order to treat the most acres and affect the most change in the potential for severe wildfire effects. The Mormon Mountain portion of this decision is the Alternative 3 version, which includes 2,320 acres of traditional ground based equipment, 73 acres of steep slope equipment harvesting, 180 acres of hand thinning, and 402 acres of burn only.

The decision takes into account comments and concerns brought forth on the Draft Environmental Impact Statement, published July 3, 2014 for the 45-day comment period, including concerns involving cable logging within MSO habitat and within the viewshed of Flagstaff, and the removal of large and old trees as a result of that harvesting method. The Modified Large Tree Retention Strategy from Alternative 4 is incorporated into this decision, as are the design features and mitigation measures related to all three of the action alternatives (see Appendix B for the full list of design features).

This decision does not incorporate or adopt any new recreation trails, nor does it include the protection of non-forest system trails (e.g. user-created trails) during implementation activities. While I understand the concern of many local recreationists on this subject, such activities are outside the scope of FWPP and are more appropriate for consideration under the Mount Elden –

Dry Lake Hills Recreation Planning Project, which overlaps the Dry Lake Hills portion of FWPP and included in the cumulative effects analysis discussed in Chapter 3 of the FEIS. I fully commit to an intensive public awareness effort throughout the FWPP implementation process, including working with our partners to ensure the location and need for temporary closures are communicated early and often.

There is a need for a comprehensive recreation analysis of the Mount Elden/Dry Lake Hills area, especially after FWPP is implemented and more fire resilient ecosystems are established. I acknowledge and support the need to take that step toward a more sustainable recreation system within the Dry Lake Hills through the National Environmental Policy Act to continue improvement of recreational access and opportunities and the protection of forest resources for current and future generations.

The decision reflects the public responses to the DEIS, consultation with agencies, and further environmental analysis. My decision incorporates components analyzed and described in each of the action alternatives (2, 3, and 4). These components are within the range of those described in the FEIS (see “Alternatives Considered in Detail” in the FEIS) and the effects of the decision are within the range of effects described in the FEIS.

The following sections provide more detail on the different components of the decision.

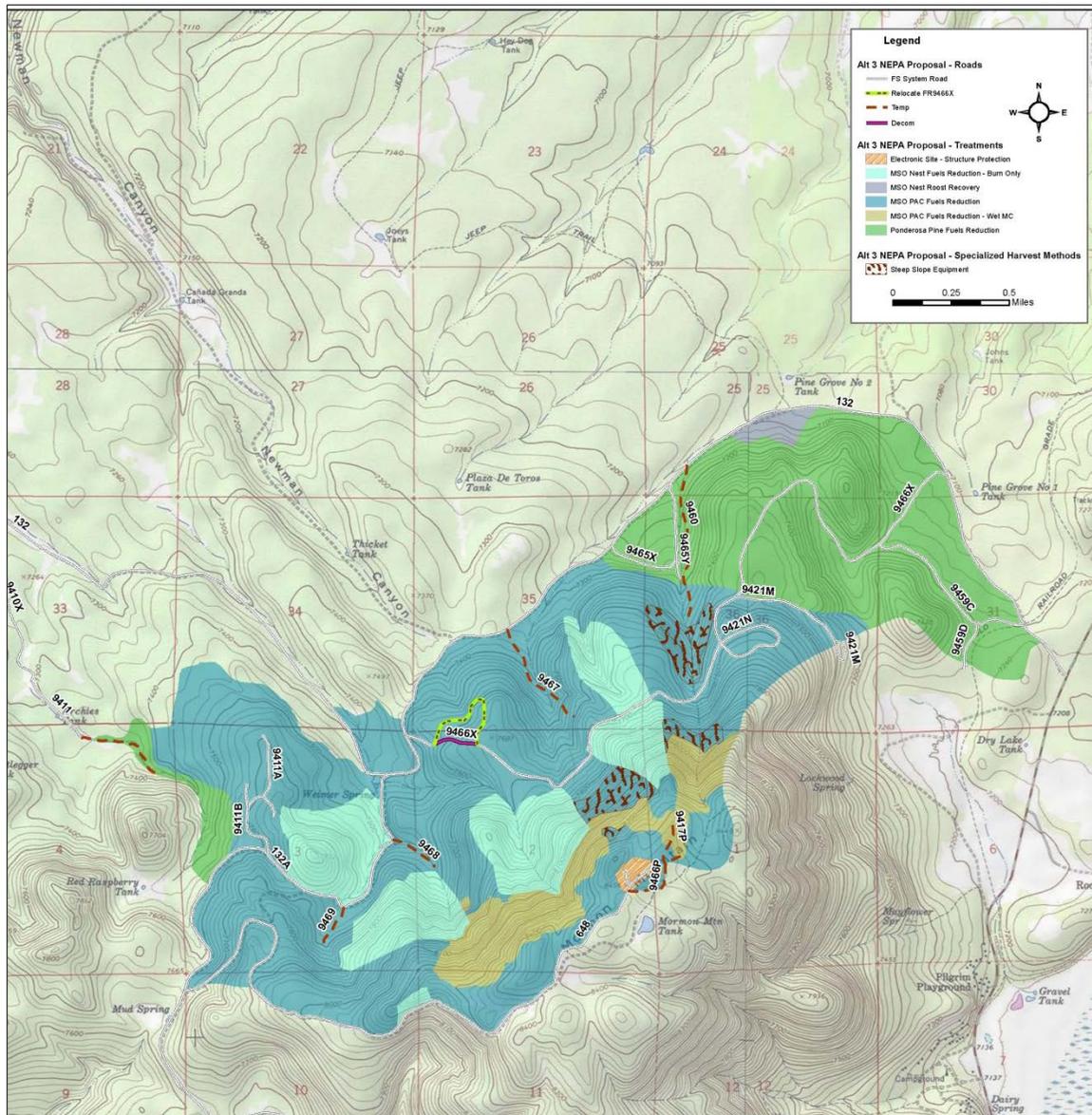


Figure 3: Decision Treatment Map, Mormon Mountain

Treatment of Steep Slopes

Helicopter logging will be utilized for removing cut material on approximately 556 acres within the Dry Lake Hills portion. This includes steep slopes within Mexican spotted owl protected activity centers (MSO PACs) and those areas visible from the City of Flagstaff. No helicopter logging will occur on Mormon Mountain.

Cable logging will be utilized to remove cut material on approximately 414 acres within the Dry Lake Hills, the majority of which will be by excaline (300 acres) and the rest will be skyline (114 acres). Excaline corridors will be shorter (typically less than 300 feet in length) than skyline corridors and a machine known as a jammer could also be used, which will remove the need for corridors that would require the removal of all trees within them. No cable logging will occur on

Mormon Mountain. Descriptions of the harvesting methods are provided in Chapter 2 of the FEIS.

Approximately 323 acres will be harvested using specialized steep-slope equipment; approximately 250 acres within the Dry Lake Hills and 73 acres on Mormon Mountain. Hand thinning will occur on a total of 678 acres, and an additional 270 acres of steep sloped areas are deferred from treatment. These areas were proposed for hand thinning and/or burn only under Alternatives 2 and 3, but because of the steepness they are unlikely to be successfully treated due to safety concerns related to felling trees and building piles by hand, and then burning the piles during the winter with snow on the ground.

Table 2 below details the total acres that will be treated and the acres broken down by harvesting method. Prescribed burning will be included across all treated areas (approximately 8,668 acres). Table 3 contains more specific information about the treatment description/objective (e.g. what the cutting prescription will include).

Adaptive Harvesting Matrix

To address concerns with the potential of finding a contractor for these specialized harvesting systems, I am including this Adaptive Harvesting Matrix, which will allow the latitude to substitute harvesting methods that result in less impact to meet the approved forest management goals identified for the treatment area. For example, the analysis of effects in the FEIS show that helicopter logging can result in less impact overall than cable logging, but is often more expensive. If, during project implementation, it is found to be more advantageous to treat an area identified in this decision to be treated with “cable logging” with helicopter logging or hand thinning instead, this will be acceptable and within the scope and range of environmental effects considered in the environmental analysis. This adaptive approach provides flexibility to substitute a less invasive treatment type rather than deferral from treatment in the event a qualified contractor cannot be acquired or other problems are identified. Decisions to modify treatment types shall follow a hierarchy of impacts, moving from the harvesting method with the most effects on resources to those with less. Additional analysis or a revision to the decision will not be required as the fallback harvesting method would have less impact than the original harvesting method and all the harvesting methods were included in the analysis performed for the FWPP EIS. This decision does not authorize a change from a secondary harvesting method to one with more impacts (e.g. from helicopter logging to cable logging). There will be a letter to FWS, for the record, stating what method was chosen/used and the Forest will coordinate with the FWS as we proceed with the action.

Table 1: Adaptive Harvesting Matrix

Original Harvesting Method	Secondary Harvesting Method	Third Harvesting Method
Cable Logging	Helicopter Logging	Hand Thinning
Helicopter Logging	Hand Thinning	
Specialized Steep Slope Equipment	Hand Thinning	

Treatment of MSO Habitat

My decision includes approximately 2,689 acres of treatment within MSO Recovery Habitat, 3,951 acres of treatment within MSO PACs, 120 acres of hand thinning and prescribed burning within the Schultz Creek nest core, and 785 acres of burn only treatment within the remaining seven nest cores. Table 3 includes more information about those treatments, including desired condition ranges. These treatments require an amendment to the Forest Plan, which is summarized below and detailed in Appendix A of the FEIS.

As part of this decision, I also commit to the MSO monitoring plan proposed in the DEIS and finalized through formal consultation with the Fish and Wildlife Service (FWS). Monitoring of these treatments will help inform and guide future management within MSO habitat, and is an important component of FWPP.

Monitoring

This decision also incorporates the monitoring identified within the Final EIS (FEIS) to be either preformed internally (by the USFS) or as in the case of red squirrel monitoring plan, by our federal, state and/or local partners (FWS, Ecological Restoration Institute of Northern Arizona University, Arizona Game and Fish Department, Rocky Mountain Research Station, etc.). I recognize the importance of our partners and volunteers in our monitoring efforts and look forward to continuing these important relationships and efforts.

Design Features tied to protection of Mexican spotted owls and other wildlife, as well as soils and hydrology, scenic resources, recreation, and the retention of old trees and large pre-settlement trees are incorporated into this decision. See Appendix B of this document and Chapter 2 of the FEIS.

Forest Plan Amendments

The Coconino National Forest is currently operating under the 1987 Coconino Land Management Plan, as amended; the Forest is in the process of revising the Forest Plan, with the Record of Decision (ROD) for the revised plan anticipated for release in 2016. The following two project-specific Forest Plan amendments are required as this decision is being signed prior to implementation of the revised Forest Plan. This project is amending the Forest Plan under the 2012 Planning Rule (36 CFR 219.13); the two amendments below are significant per (36 CFR 219.13(b)(3)).

A site (project) specific plan amendment is a one-time variance in Forest Plan direction for the project; Forest Plan direction reverts back to its original language/direction upon completion of the specified project. The language proposed does not apply to any other forest project. The following are summaries of the amendments; more information can be found in Appendix A of this document. The effects of the significant amendments are the same as those analyzed from treating on steep slopes and treating within MSO habitat as disclosed in the EIS.

Amendment 1: The purpose of this amendment will be to facilitate treatment in high-priority locations such as Mexican spotted owl occupied habitat to prevent high-severity wildfire. This is based on language in the Mexican Spotted Owl Recovery Plan (2012), which states, “[wildfires] result in the most significant alteration of owl habitat and hence, have the greatest potential for loss of habitat” (USDI 2012). The current Forest Plan adopted language from the previous MSO Recovery Plan (USDI 1995). For this project, the Forest Plan amendment utilizes some of the more updated management direction in the revised recovery plan where it is different than what is

currently included in the Forest Plan. More information about this amendment can be found in Appendix A.

Amendment 2: The current Forest Plan restricts the use of mechanical equipment to slopes less than 40 percent. Amendment 2 removes the restrictive language related to 40 percent slopes and also the language identifying slopes above 40 percent as inoperable in order to allow mechanical harvesting on slopes greater than 40 percent within the project area.

Table 2: Summary of treated acres and harvesting methods across the project area

Project Area	Treated Acres*	Harvesting by Helicopter	Harvesting by Cable Logging	Specialized Steep Slope Equipment	Traditional Ground Based	Hand Thinning	Burn Only	No Treatment	Total Project Acres
Dry Lake Hills	5,692 acres	566 acres	414 acres <i>114 acres skyline 300 acres excaline</i>	250 acres	3,497 acres	498 acres	468 acres	1,876 acres	7,569 acres
Mormon Mountain	2,975 acres	0 acres	0 acres	73 acres	2,320 acres	180 acres	402 acres	0 acres	2,975 acres
Total	8,668 acres	556 acres	414 acres	323 acres	5,817 acres	678 acres	870 acres	1,876 acres	10,544 acres

*Totals may differ slightly due to rounding errors

Table 3: Treatment Descriptions, Objectives, Acres and Harvesting Systems for the Decision

Treatment Type	Treatment Description/Objective	Acres
Ponderosa Pine Fuels Reduction (Northern Goshawk LOPFA ² Areas)	These treatments areas are outside of MSO PACs and northern goshawk PFAs and nest cores. Mechanical treatment designed to develop uneven-aged structure and a mosaic of openings and tree groups of varying sizes. Openings will occupy approximately 20 percent of the treatment area. Tree groups will vary in shape, size, density, and number: generally from 0.05 – 0.7 acres in size with residual group basal areas of 20-80 ft ² per acre and 2-40 trees per group.	1865 – Dry Lake Hills (DLH) 766 – Mormon Mountain (MM)
Ponderosa Pine Fuels Reduction – Hand Thinning (Northern Goshawk LOPFA Areas)	This treatment includes steep areas that have low tree density and/or are dominated by smaller diameter trees where the purpose and need can be met through hand felling treatments. Where practical and feasible, treatments will be designed to develop uneven-aged structure and a mosaic of tree groups of varying sizes similar to the treatment described above.	81 - DLH
Mixed Conifer Fuels Reduction (MSO Recovery Areas)	These treatment areas include dry mixed conifer areas outside of MSO PACs, replacement nest/roost habitat, and northern goshawk PFAs and nest cores, but include MSO recovery habitat. Mechanical treatment designed to develop uneven-aged structure and a mosaic of openings and tree groups of varying sizes. Trees above 24” dbh will not be cut. Openings will occupy about 10-20 percent of the treatment area. Tree	1141 - DLH

² LOPFA – Landscapes outside of goshawk post-fledging family areas (as referenced in the Forest Plan)

Treatment Type	Treatment Description/Objective	Acres
	groups will vary in shape, size, density, and number: generally less than one acre in size with residual group basal areas of 30-90 ft ² per acre and 2-50 trees per group	
MSO PAC Fuels Reduction - Wet Mixed Conifer	In this treatment, dead and down material will be piled for burning to reduce the heavy fuel loading and allow for lower-intensity prescribed burning. Piles will be placed in openings to the extent possible to reduce fire damage to large trees. In addition, mechanical treatment will create small openings within aspen stands to promote regeneration.	180 - MM
MSO PAC Fuels Reduction	Mechanical treatment to create a diversity of patch sizes with minimum patch size of 2.5 acres. Provide for 10 percent openings across treatment areas from 0.1 – 2.5 acres in size. Maintain a minimum of 40 percent canopy cover in pine/pine-oak and 60 percent in mixed conifer. Post-treatment, trees greater than 16” dbh will contribute at least 50 percent of the stand basal area per MSO Recovery Plan Desired Conditions (2012). Trees above 18” dbh will not be cut except if necessary for cable corridor locations.	1195 – DLH 1592 - MM
MSO PAC Fuels Reduction – Hand Thinning	This treatment includes steep areas which have low density and dominated by smaller trees or are in areas not conducive to specialized steep slope equipment or cable or helicopter yarding operations. Treatments where feasible will treat stand similar to the MSO PAC treatment described from above. Otherwise treatments will be thin from below to reduce density and fuel ladders.	202 – DLH

Treatment Type	Treatment Description/Objective	Acres
MSO Nest Fuels Reduction -Hand Thinning	Hand thinning up to 5” dbh will occur within 80 % of the Schultz Creek nest core in coordination with the US Fish and Wildlife Service (122 acres, DLH). Approximately 20% of the nest core will be deferred from treatment in order to maintain denser patches for habitat. Residual basal area will be a minimum of 110 ft ² , and treatment will maintain a minimum of 60% canopy cover in mixed conifer. This nest core will also receive the prescribed burning treatment described below.	122 – DLH
MSO Nest Fuels Reduction - Burn Only	In all nest cores other than the Schultz Creek nest core, treatment will consist of low-intensity burning only. Dead and down material in MSO nest cores will be piled by hand and burned.	261 – DLH 402 – MM
MSO Recovery Nest/Roost -Hand Thinning	Hand thinning up to 9” dbh will occur on 72 acres in DLH under this treatment, and dead trees less than 12” dbh and down material will be cut and piled by hand for prescribed burning.	72 - DLH
MSO Recovery Nest/Roost - Burn Only	Thirty-seven acres of Nest/Roost Replacement Recovery habitat will be prescribed burned only (no hand thinning). Snag retention guidelines identified in the Forest Plan will still be followed (see Design Features – Snags). Treatments will be designed to move the stands towards minimum desired conditions: Residual basal area of 110 ft ² in ponderosa pine, and 120 ft ² in mixed conifer; canopy cover of 40 percent in pine/pine-oak and 60 percent in mixed conifer; 12 trees per acre greater than 18” diameter; trees from 12-18” dbh will comprise over 30 percent of stand BA, and trees greater than 18” dbh will comprise an additional 30% of BA.	37 - DLH
MSO Recovery Nest/Roost– Mechanical Thinning	Mechanical treatment will remove ponderosa pine in a variety of size classes; however, no trees greater than 18” dbh will be cut. Treatments will	22 - MM

Treatment Type	Treatment Description/Objective	Acres
	be designed to maintain a minimum residual basal area of 110 ft ² ; canopy cover of 40 percent with 12 trees per acre greater than 18" diameter; trees from 12-18" dbh will comprise over 30 percent of stand BA, and trees greater than 18 inches will comprise an additional 30% of BA. No oak will be cut.	
Northern Goshawk Post Fledging Areas (PFA) Fuels Reduction	Uneven-age mechanical treatment designed to develop uneven-aged structure and a mosaic of tree groups of varying sizes. Openings will occupy 20 percent of the treatment area. Tree groups will vary in shape, size, density, and number: generally from 0.05 – 0.7 acres in size with residual group basal areas of up to 30-90 ft ² per acre and 2-40 trees per group	359 - DLH
Northern Goshawk Nest Fuels Reduction	Mechanical treatment designed to develop northern goshawk nest stand conditions consisting of a contiguous over-story of large trees. Forest Plan guidelines for canopy cover will be met: canopy cover will vary from 50 to 70 percent.	100 - DLH
Aspen Treatment	A variety of different treatments will be used to promote and protect aspen health and regeneration, including the removal of post settlement conifers within 100 feet of aspen clones, prescribed fire, ripping, planting, fencing and/or cutting of aspen to stimulate root suckering.	22 – DLH
Grassland Restoration	Mechanical treatment to remove encroaching post-settlement conifers and restore the pre-settlement tree density and patterns.	60 – DLH
Burn Only	Burn only treatment will remove excessive fuel loading in areas which were previously burned by the Radio Fire.	171 - DLH

Treatment Type	Treatment Description/Objective	Acres
Electronic Site – Structure Protection	These sites are occupied by telecommunication facilities, and will be treated to provide a sufficient defensible space around these structures from a wildland fire. Individual trees that are determined to contribute to wildfire hazard or pose a hazard to the electronic sites will be removed. The remainder of the sites will receive a thin from below to approximately 20 – 40 ft ² basal area with the purpose of raising the crown base height and leaving the largest and most fire resistant trees.	6 – DLH 12 - MM
No Treatment (No New Analysis)	These acres include non-treatable areas, including rock faces and boulder fields, and the Orion Timber Sale (approximately 837 acres). Though the Timber Sale is within the project boundary, the treatments for that area were analyzed and authorized under the Jack Smith Schultz Fuels Reduction and Forest Health Restoration Project Decision Notice/Finding of No Significant Impact (2008). No additional treatments within the Timber Sale area are proposed under this decision.	1876 - DLH

Table 4: Harvesting Methods for Dry Lake Hills

Treatment Type	Ground-based	Hand Cut/Piled	Helicopter	Cable Logging	Burn Only	Steep Slope Equipment	TOTAL
Ponderosa Pine Fuels Reduction	1613			242		10	1865
Ponderosa Pine Fuels Reduction – Hand Thinning		81					81
Mixed Conifer Fuels Reduction	626		299	126		90	1141
MSO PAC	793		267			135	1195

Treatment Type	Ground-based	Hand Cut/Piled	Helicopter	Cable Logging	Burn Only	Steep Slope Equipment	TOTAL
Fuels Reduction							
MSO PAC Fuels Reduction – Hand Thinning		202					202
MSO Nest Fuels Reduction		122			261		383
MSO Nest/Roost Recovery		72			37		109
Goshawk PFA Fuels Reduction	299			45		15	359
Goshawk Nest Fuels Reduction	100						100
Aspen Treatment		22					22
Grassland Restoration	60						60
Burn Only					171		171
Electronic Site-Structure Protection	6						6
No Treatment/No New Analysis	-	-	-		-	-	1876
TOTAL	3497	499	566	413	469	250	7570

Table 5: Harvesting Methods for Mormon Mountain

Treatment Type	Ground-based	Hand Cut/Piled	Burn Only	Steep Slope Machinery	TOTAL
Ponderosa Pine Fuels Reduction	766				767
MSO PAC Fuels Reduction	1519			73	1592
MSO PAC Fuels Reduction – Wet Mixed Conifer		180			180
MSO Nest Fuels Reduction			402		402
MSO Nest/Roost Recovery	22				22

Treatment Type	Ground-based	Hand Cut/Piled	Burn Only	Steep Slope Machinery	TOTAL
Electronic Site-Structure Protection	12				12
TOTAL	2321	180	402	73	2,975

Required Transportation System

Forest Service contractors have the right to legally use public roads within and outside of the project area, subject to regulation by the public entity charged with jurisdiction of that roadway. In order to move timber from the project area to processing facilities, it will be necessary for heavy trucks to use public roads through a portion of the city of Flagstaff. The Forest Service may only restrict haul routes or timing of routes used by contractors on the National Forest in order to provide for public safety. The Forest Service cannot dictate the routes the contractor uses once they leave the forest. The routes here are only potential options that could be used.

Truck volume will increase throughout the FWPP treatment period. Approximately 14,000 total (including treatments in DLH and MM areas) truck trips are expected to result from activities authorized by this decision, which equals roughly 2,800 truck trips per year (see following section on Haul Routes for more information).

Dry Lake Hills

System haul roads within the project area	18.07 miles
System haul roads outside the project area	14.33 miles
New temporary haul roads constructed	11.67 miles
Temporary roads on existing road prisms	2.75 miles
Temporary roads rehabilitated post-treatment	14.43 miles
Relocated system road used as haul road	1.58 miles
System roads decommissioned	4.19 miles

Mormon Mountain

System haul roads within the project area	16.46 miles
System haul roads outside the project area	18.13 miles
New temporary haul roads constructed	0.0 miles
Temporary roads on existing road prisms	2.52 miles
Temporary roads rehabilitated post-treatment	2.52 miles
Relocated system road used for hauling	0.53 miles
System roads decommissioned	0.19 miles

Haul Routes -Dry Lake Hills

This project will utilize several primary haul routes for log trucks and chip vans (Figure 4). The following roads will be utilized as haul routes to remove material cut in the Dry Lake Hills portion of the project:

- FR 557 (Elden Lookout Road)
- FR 420 (Schultz Pass Road)
- FR 556 (Elden Springs Road)
- FR 522 (Freidlein Prairie Road)

- FR 516 (Snowbowl Road)

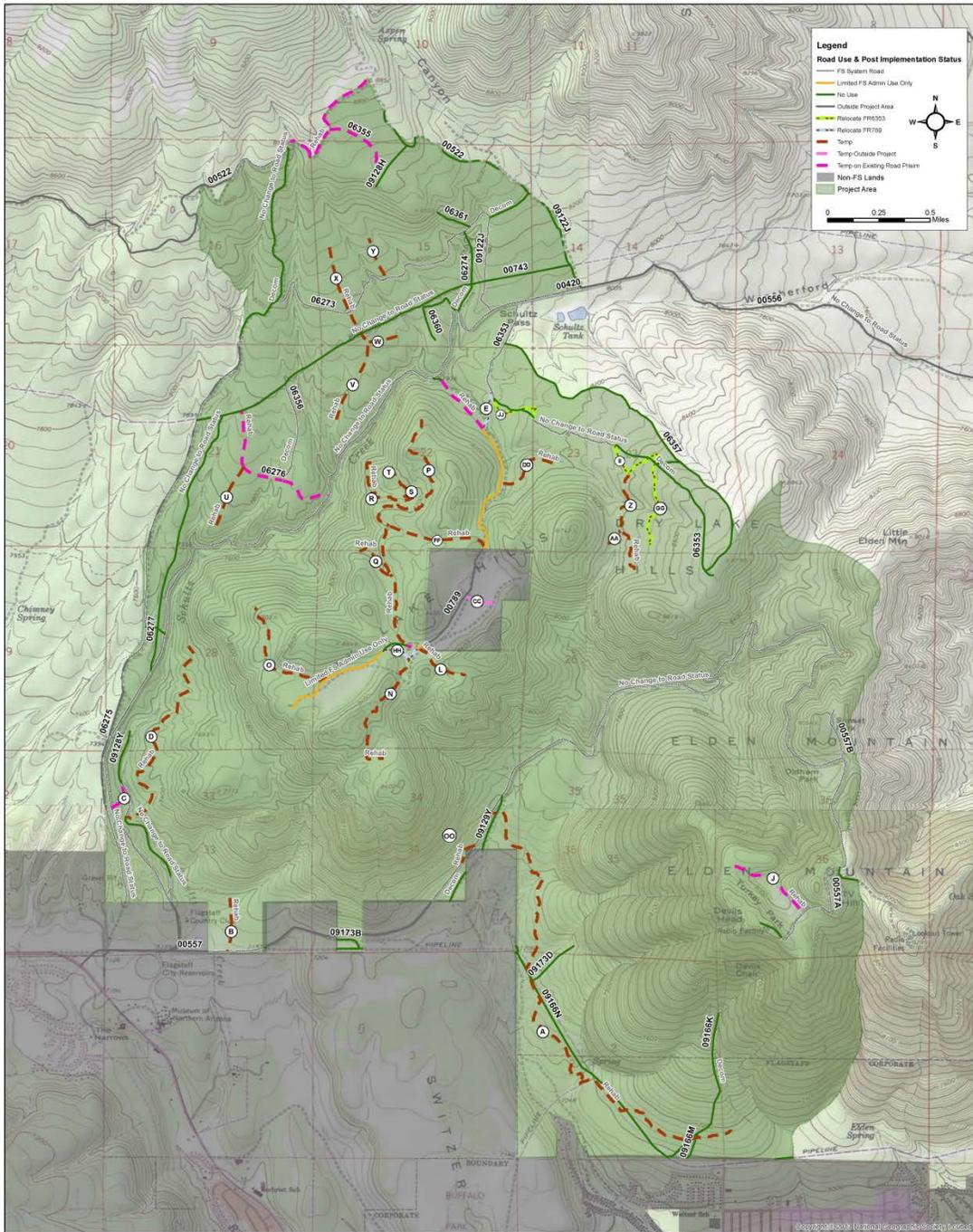


Figure 4: Required Transportation System for the Dry Lake Hills

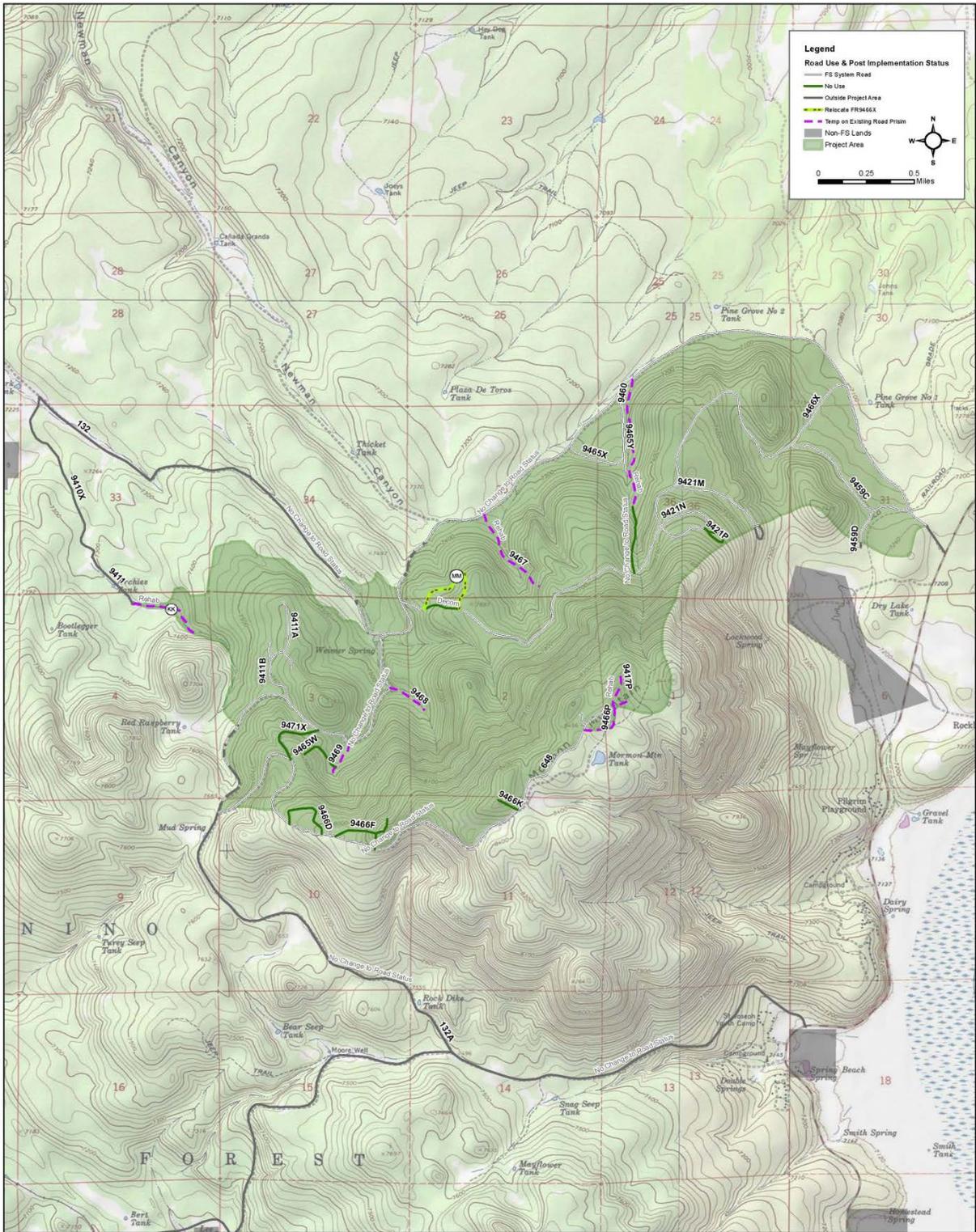


Figure 5: Required Transportation System for Mormon Mountain

All of the timber removed from Mount Elden and the timber from the lower, flatter slopes to the west of Mount Elden will use FR 557 to its junction with FR 420 and then enter State Highway 180. Approximately 3,800 truckloads will use this route.

Nearly all of the area between FR 557 and FR 420 as well as a portion of the project north of FR 420 will either be hauled on FR 420 to Highway 180 or on FR 556 to Highway 89. Approximately 5,200 truckloads will use these routes.

The very northern portion of the Dry Lake Hills area will be hauled on FR 522 to FR 516 and then onto Highway 180. Approximately 200 truckloads will use this route.

Trucks that haul onto Highway 180 will most likely use N. Switzer Canyon Road to reach east Route 66. These loads will use Ponderosa Parkway and E. Butler Ave to enter Interstate 40 at the east Butler Ave interchange, exit 198. Trucks hauling to Highway 89 will likely use East Route 66 to Country Club Drive and enter Interstate 40 at the Country Club interchange, exit 201. However, as mentioned previously, these are potential route options; the Forest Service cannot dictate where the contractor(s) go once they leave the National Forest.

Haul Routes - Mormon Mountain

Timber hauled from the Mormon Mountain portion of the project area could be either hauled to Interstate 17 at Munds Park via FR 240 or onto Highway 3 (Lake Mary Road) via County Road 90. Both of these routes will utilize FR 132, 132A, 648 and 240 as well as County Road 90. See Figure 5. Approximately 4,700 truckloads will use these routes.

Campfire Closure Order

This decision establishes a permanent campfire restriction order in the DLH portion of the project area to limit the potential for human-caused wildfire.

Temporary Closure Orders

There may be a need to temporarily close portions of the project area to the public during implementation due to safety concerns related to heavy machinery on steep slopes and log hauling and equipment on and/or adjacent to roads and trails, as well as prescribed burning activities. The closures could apply to the area being treated as well as the truck haul routes in use and any trails within or immediately adjacent to the treatment area. The closures will likely be short in duration and specific to the area where machines are operating. For harvesting units, area closures may last up to approximately one year; for prescribed burning areas, closures may last from one to five days. After timber cutting and removal are completed, the closure order will be lifted and the public will be able to access the area again. The closures will be communicated with the public prior to their taking affect, and reroutes of affected trails (where possible) will be identified and communicated as well.

Large Tree Retention Strategy

This decision incorporates a modified Large Tree Retention Strategy (LTRS) based on that which was included in Alternative 4. The design features to protect old and large trees are included (see Appendix B), and the Forest Service will retain all decision-making authority regarding treatment prescriptions within the project area. Large post-settlement trees will be retained throughout the project area except:

1. As necessary to meet community protection and public safety goals (e.g. in WUI areas adjacent to communities)
2. When best available science identifies sites where ecological restoration and biodiversity objectives cannot otherwise be met; specifically in the case of FWPP, within stand openings and in heavily-stocked stands with high basal area generated by a preponderance of large, young trees.

The modified LTRS applies to a small portion of the project area – approximately 766 acres of ponderosa pine in the MM portion—as the DLH portion will fall under the first point noted above. The original LTRS was developed specifically for ponderosa pine and so does not apply to mixed conifer areas; however, large and old trees will also be retained where possible within mixed conifer areas (see Design Features). As the MM portion does not fit within Number 1 above because of its distance from the City of Flagstaff, the LTRS will only pertain to the ponderosa pine Gambel oak forests outside of MSO PACs on MM.

Most of the other “exception” categories listed in the LTRS are not relevant for the MM portion of FWPP discussed above, including:

- Seeps and Springs
- Riparian
- Wet Meadows
- Encroached Grasslands
- Aspen Forest and Woodland

As not every acre of the relevant MM portion was surveyed (see Methodology section of Forest Structure and Health in Chapter 3 of the FEIS), it is possible that the 766 acres of ponderosa pine might contain primarily small-diameter (less than 16 inches dbh) trees, which will not fit within an exception category under the original LTRS. As stated in the Forest Structure and Health methodology section:

The modeling assumptions attempt to meet the spirit of the Large Tree Retention Strategy (LTRS) within the limitations of a non-spatially explicit model. On the ground cutting prescriptions for Alternatives 2 and 3 would follow components of the LTRS that have been incorporated into the design features of this EIS. Alternative 4 would include more specific limitations on large tree removal per the modified LTRS and related Design Features discussed in this FEIS (p. 198)

Because of this, as long as the purpose and need of fire hazard reduction can still be met, the decision incorporates the following additional Design Features for the Northern Goshawk habitat within LOPFA on MM:

- To meet the desired condition of increasing the more fire-resilient VSS 5 and 6 age class, tree retention within groups will focus on existing large trees (generally, trees within the dominate and codominant crown position).
- Tree groups, on average, will range in size from 0.1 to 1 acre; sites with a preponderance of large trees and highly productive microsites will have larger average group sizes (0.25 to 1 acre). Overall, average group size will vary within this range depending on fuel loading, site quality and topography, existing stand structure, and pre-settlement tree evidence.

- Stands with a preponderance of large trees will be managed for greater residual canopy cover and density of large young trees while still meeting the purpose and need of reduced wildfire hazard. Residual stand structure will be managed toward the higher end of the natural range of variability for ponderosa pine in the stands that meet these conditions (see Table 6). This will be accomplished by focusing treatments towards the higher end of the natural range of variability, managing for larger group sizes (see below), and/or retaining additional large trees.
- Regeneration openings (group selection) will account for 10 to 20 percent of tree groups. The percentage will vary within this range depending on current VSS distribution. They will average 0.25 to 2 acres with an average of approximately 1 acre and be no wider than 200 feet. Where stand structure dictates, establish regeneration openings by removing groups of trees of VSS3 and smaller diameter VSS4.

Table 6: Ranges of reference conditions for ponderosa pine forests in the Southwestern United States from studies detailed in RMRS-GTR-310 (2013).

Forest attribute	Ponderosa pine
Trees / acre	11.7-124
Basal area (ft ² / acre)	22.1-89.3
Spatial patterns	Grouped or random
Number of trees / group	2-72
Size of groups (acres)	0.003-0.72
Number of groups / acre	6-7

Economics

This decision will cost approximately \$8,011,548 to implement; a comparison of costs between alternatives and this decision is provided in Table 7 below. This estimation includes the following costs: surveying and marking cultural sites, marking and cruising timber, road construction, road rehabilitation, road maintenance, preparing contracts, project administration, harvesting trees, hand thinning and prescribed burning. This estimate does not include the cost of preparing the Environmental Impact Statement for the project. The gross value of timber is subtracted from the gross cost of implementation to provide the net implementation cost (below). More details about the analysis, including methodology and assumptions, are included in the Economics section of Chapter 3 in the FEIS.

Table 7: Comparison of costs per alternative

	<i>Alternative 1</i>	<i>Alternative 2</i>	<i>Alternative 3</i>	<i>Alternative 4</i>	<i>Decision</i>
<i>Cultural Resource Survey Cost</i>	\$102,000 ³	\$104,160	\$103,820	\$103,780	\$104,160
<i>Sale Preparation Cost</i>	\$0	\$871,080	\$874,440	\$640,680	\$872,160
<i>Sale</i>	\$0	\$355,450	\$356,850	\$263,200	\$355,900

³ Cost of archaeological surveys already completed for the project.

	<i>Alternative 1</i>	<i>Alternative 2</i>	<i>Alternative 3</i>	<i>Alternative 4</i>	<i>Decision</i>
<i>Administration Cost</i>					
<i>Temp Road Construction and Rehabilitation</i>	\$0	\$220,903	\$149,532	\$138,819	\$176,089
<i>Construction of Relocated System Roads Cost</i>	\$0	\$18,659	\$18,659	\$18,659	\$18,659
<i>Road Rehabilitation Cost</i>	\$0	\$56,194	\$56,194	\$56,194	\$56,194
<i>Hand Thinning</i>	\$0	\$719,100	\$707,200	\$372,300	\$739,500
<i>Prescribed Burning</i>	\$0	\$5,251,296	\$5,251,296	\$3,027,250	\$5,251,296
<i>Costs of Implementation, (not including net timber value)</i>	\$102,000	\$7,596,842.00	\$7,517,991.00	\$4,620,882.00	\$7,573,958
<i>Net Timber Value</i>	\$0	+\$274,908	-\$992,747	+\$539,823	-\$437,590
Total Implementation Cost (Net Timber Value minus Cost of Implementation)	\$102,000	\$7,319,774	\$8,508,918	\$4,079,279	\$8,011,548

Rationale for the Decision

I make this decision to meet the purpose and need of FWPP while achieving the best balance of the social, economic, and environmental interests and effects. This decision is based on compliance with law, regulation and policy; consultation with regulatory agencies; consultation with interested tribes; and a review of the project record. I have thoroughly examined relevant scientific information and I will explain my rationale for the decision in the following sections. The Flagstaff Watershed Protection Project FEIS documents the analysis and conclusions upon which this decision is based.

Meets the Purpose and Need

This decision meets the purpose and need for the project by reducing the potential for high severity fire and subsequent flooding on approximately 57 percent of the project area under the No Action Alternative to approximately 7 percent. Modeling indicates that after treatment, approximately two percent of the Dry Lake Hills and 18 percent of the Mormon Mountain area

would be at risk for *extreme* fire hazard, compared to 67 and 75 percent (respectively) under the No Action Alternative (see Table 8 and Table 9). Under Schultz Fire conditions, modeling shows that after treatment, the Dry Lake Hills would likely experience active crown fire on 745 acres, passive crown fire on 99 acres, and surface fire on 6,591 acres (see Table 10). On Mormon Mountain, crown fire potential modeling shows active crown fire on 63 acres, passive crown fire on 329 acres, and surface fire on 2,577 acres (Table 11). Table 10 and Table 11 compare these modeled outputs with those modeled for existing conditions (the No Action Alternative).

Table 8: Fire Hazard Post-Treatment, Dry Lake Hills

Existing Fire Hazard (No Action)	Acres	Percent	Post Treatment Fire Hazard	Acres	Percent
Extreme	2,582	67%	Extreme	91	2%
Very High	72	4%	Very High	268	8%
High	613	15%	High	510	13%
Moderate	470	12%	Moderate	1,930	50%
Low	100	2%	Low	1,036	27%

Table 9: Fire Hazard Post-Treatment, Mormon Mountain

Existing Fire Hazard	Acres	Percent	Post Treatment Fire Hazard	Acres	Percent
Extreme	2,089	75%	Extreme	526	18%
Very High	197	8%	Very High	10	1%
High	273	10%	High	273	9%
Moderate	174	6%	Moderate	736	26%
Low	51	1%	Low	1,284	46%

Table 10: Crown Fire Potential under Schultz Fire Weather Conditions, Dry Lake Hills

Crown Fire Type	Existing Crown Fire Potential (Schultz conditions)	Decision, Dry Lake Hills (Schultz conditions)
Active	3,832 acres	745 acres
Passive	749 acres	99 acres
Surface	2,881 acres	6,591 acres

Table 11: Crown Fire Potential under Schultz Fire Weather Conditions, Mormon Mountain

Crown Fire Type	Existing Crown Fire Potential (Schultz Conditions)	Decision, Mormon Mountain (Schultz conditions)
Active	2,068 acres	63 acres
Passive	725 acres	329 acres
Surface	176 acres	2,577 acres

This decision will also result in reducing the post-fire predicted peak discharge associated with a 100-year storm event by approximately 60 percent as compared to the No Action Alternative.

The projected soil burn severity of a wildfire burning under Schultz Fire weather conditions will also be reduced after implementation of this decision, so that only eight percent of the DLH and one percent of MM are predicted to experience high soil burn severity; under the No Action, those numbers are 39 percent for DLH and 62 percent for MM. See the soil burn severity maps on the following pages (Figure 6 and Figure 7) and Table 13 to compare modeled outcomes for each of the alternatives analyzed in the FEIS as well as this decision.

This decision meets the purpose and need; incorporates public input on the selection of harvesting methods, protection of large and old trees, and deferment of certain areas on steep slopes; and includes the Large Tree Retention Strategy as modified in the FEIS.

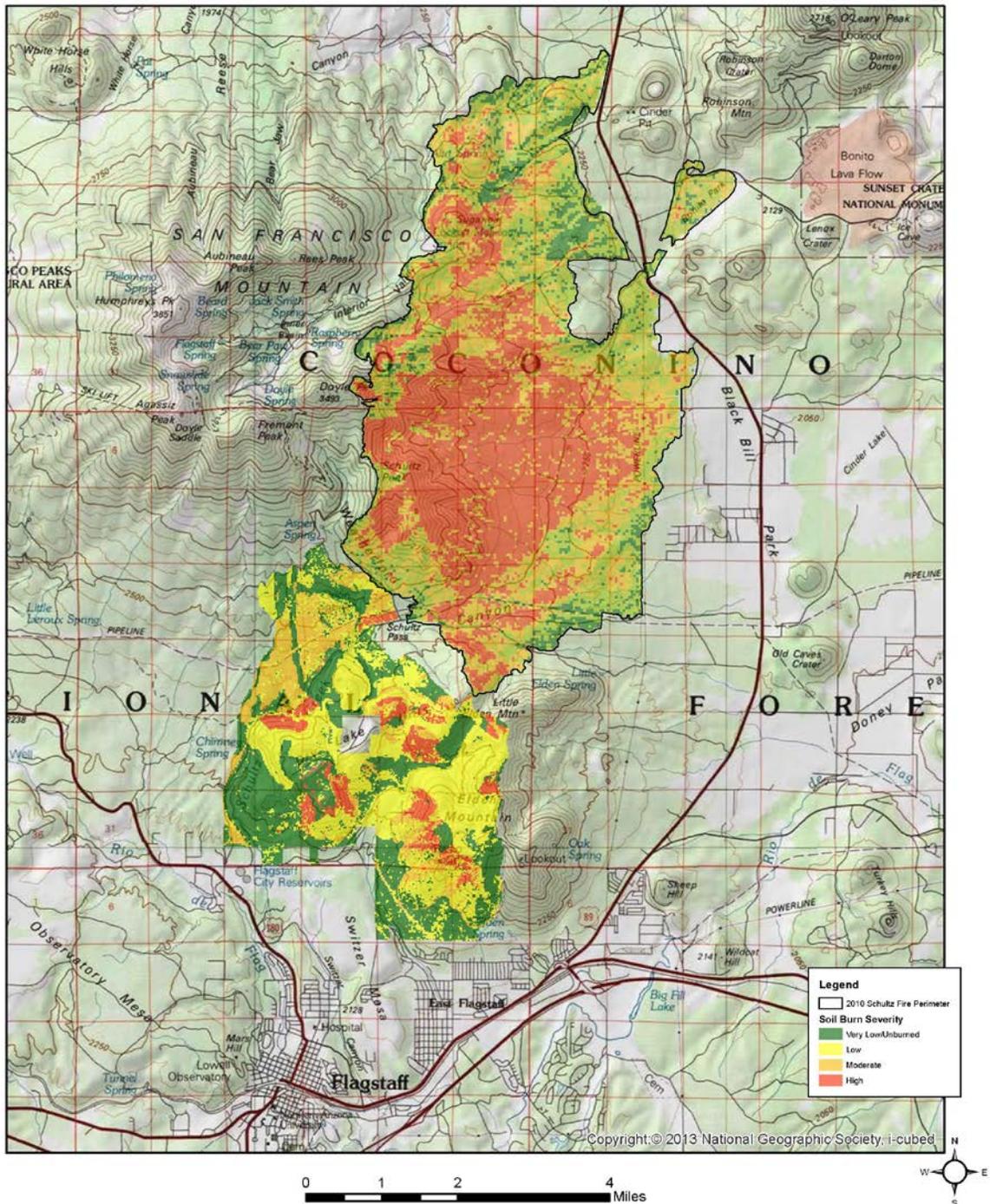


Figure 6: Predicted Soil Burn Severity for the Dry Lake Hills under the Decision

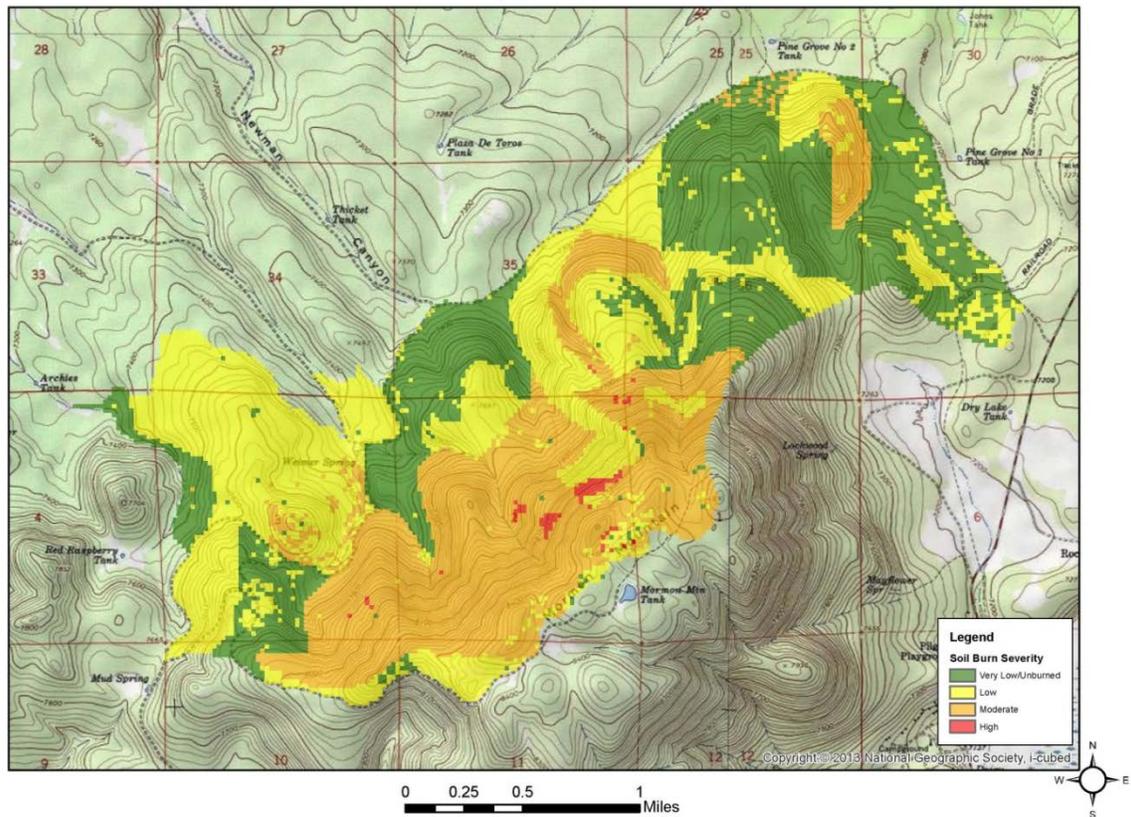


Figure 7: Predicted Soil Burn Severity for Mormon Mountain under the Decision

Table 12: Comparison of Alternatives⁴

Actions	Alternative 1 – No Treatment	Decision	Alternative 2 – Proposed Action with Cable Logging	Alternative 3 – Proposed Action without Cable Logging	Alternative 4 – Minimal Treatment
Total Treatment Acres	Jack Smith Schultz/Eastside ⁵	8,669 acres <i>5,694 acres DLH</i> <i>2,975 acres MM</i>	8,937 acres <i>5,963 acres DLH</i> <i>2,975 acres MM</i>	8,937 acres <i>5,963 acres DLH</i> <i>2,975 acres MM</i>	5,802 acres <i>3,459 acres DLH</i> <i>2,343 acres MM</i>
Percentage of Total Project Area to be Treated	0%	82% <i>75% DLH</i> <i>100% MM</i>	85% <i>79% DLH</i> <i>100% MM</i>	85% <i>79% DLH</i> <i>100% MM</i>	55% <i>46% DLH</i> <i>79% MM</i>
Acres to be Helicopter Logged	0 acres	566 acres <i>566 acres DLH</i> <i>0 acres MM</i>	0 acres	973 acres <i>973 acres DLH</i> <i>0 acres MM</i>	0 acres
Acres to be Cable Logged	0 acres	414 acres <i>414 acres DLH</i> <i>0 acres MM</i>	1,291 acres <i>1,185 acres DLH</i> <i>106 acres MM</i>	0 acres	0 acres
Acres to be treated by Specialized Steep Slope Equipment	0 acres	323 acres <i>250 acres DLH</i> <i>73 acres MM</i>	0 acres	346 acres <i>273 acres DLH</i> <i>73 acres MM</i>	0 acres
Acres to be Hand Thinned	0 acres	678 acres <i>498 acres DLH</i> <i>180 acres MM</i>	846 acres <i>699 acres DLH</i> <i>147 acres MM</i>	832 acres <i>652 acres DLH</i> <i>180 acres MM</i>	438 acres <i>438 acres DLH</i> <i>0 acres MM</i>
Acres to be Prescribed Burned	0 acres	8,669 acres <i>5,694 acres DLH</i> <i>2,975 acres MM</i>	8,937 acres <i>5,963 acres DLH</i> <i>2,975 acres MM</i>	8,937 acres <i>5,963 acres DLH</i> <i>2,975 acres MM</i>	5,802 acres <i>3,459 acres DLH</i> <i>2,343 acres MM</i>
Campfire Closure Order	No	Yes	Yes	Yes	Yes

⁴ Acres are approximate and may vary slightly from other tables and discussions due to rounding

⁵ Past projects with acreages within the FWPP boundary that could be implemented

Actions	Alternative 1 – No Treatment	Decision	Alternative 2 – Proposed Action with Cable Logging	Alternative 3 – Proposed Action without Cable Logging	Alternative 4 – Minimal Treatment
Forest Plan Amendments	No	Yes 1. Related to MSO 2. Mechanical Treatment on slopes >40%	Yes 1. Related to MSO 2. Mechanical Treatment on slopes >40%	Yes 1. Related to MSO 2. Mechanical Treatment on slopes >40%	Yes 1. Related to MSO 2. Mechanical Treatment on slopes >40%
Treatments in MSO Nest Cores	No	Yes, hand thinning 122 acres and prescribed burning all (785 acres total)	Yes, hand thinning 122 acres and prescribed burning all (785 acres total)	Yes, hand thinning 122 acres and prescribed burning all (785 acres total)	Yes, hand thinning and prescribed burning of 122 acres total.
Acres Treated by Cable Logging within MSO PACs ⁶	0	0 acres	465 acres	0 acres	0 acres
Acres Treated by Helicopter Logging within MSO PACs ⁷	0	267 acres	0 acres	267 acres	0 acres
Total Temp Roads Mileage	0 miles	16.95 miles <i>14.43 DLH</i> <i>2.52 MM</i>	21.20 miles <i>17.61 DLH</i> <i>3.59 MM</i>	15.39 miles <i>12.87 DLH</i> <i>2.52 MM</i>	12.92 miles <i>10.40 DLH</i> <i>2.52 MM</i>
Temp Road Mileage within MSO PACs	0 miles	4.7 miles	4.7 miles	3.1 miles	3.1 miles
System Road Decommissioning	0 miles	4.38 Miles	4.38 Miles	4.38 Miles	4.38 Miles

⁶ Indicates acres where all snags would have to be removed for safety purposes.

⁷ Indicates acres where all snags would have to be removed for safety purposes

Table 13: Comparison of Effects between Alternatives

Actions	Alternative 1 – No Treatment	Decision	Alternative 2 – Proposed Action with Cable Logging	Alternative 3 – Proposed Action without Cable Logging	Alternative 4 – Minimal Treatment
Percentage of Project Area predicted to have active crown fire post-treatment	57% Total 51% DLH 70% MM	8% Total 10% DLH 2% MM	7% Total 9% DLH 2% MM	7% Total 9% DLH 2% MM	28% Total 32% DLH 19% MM
Percentage of MSO PAC acreage predicted to have active crown fire post-treatment	65% of PACs 65% DLH 66% MM	9% of PACs 18% DLH 1% MM	9% of PACs 17% DLH 1% MM	9% of PACs 17% DLH 1% MM	31% of PACs 37% DLH 25% MM
Percentage of project area predicted to have high soil burn severity in simulated wildfire post-treatment	39% DLH 62% MM	8% DLH 1% MM	8% DLH 1% MM	8% DLH 1% MM	30% DLH 17% MM
Anticipated discharge (cfs) within DLH after a simulated wildfire, during Schultz Rain Event ⁸	2,014 cfs	804 cfs	804 cfs	804 cfs	1,409 cfs
Total sediment delivery (tons) after simulated wildfire ⁹	14,912 tons DLH 2,445 tons MM	8,277 tons DLH 1,432 tons MM	8,277 tons DLH 1,432 tons MM	8,277 tons DLH 1,432 MM	12,977 tons DLH 1,551 MM

⁸ Schultz rain event equates to the rain event on July 20, 2010, which produced approximately 1.78 inches in 45 minutes over the area impacted by the Schultz fire. Estimate is only for DLH as there no flow data for MM to inform modeling .

⁹ In first year after simulated wildfire

Actions	Alternative 1 – No Treatment	Decision	Alternative 2 – Proposed Action with Cable Logging	Alternative 3 – Proposed Action without Cable Logging	Alternative 4 – Minimal Treatment
Projected length of treatment effectiveness ¹⁰	n/a	<p>The silviculture analysis documents that after 40 years, the majority of the areas that would be mechanically treated or hand thinned would have Basal Areas, Canopy covers, and trees per acres that are lower than the current conditions.</p> <p>In area of burn only treatment effectiveness last between 20 and 40 years before Basal Areas and Canopy Cover return to or exceed pre-treatment conditions.</p>	<p>The silviculture analysis documents that after 40 years, the majority of the areas that would be mechanically treated or hand thinned would have Basal Areas, Canopy covers, and trees per acres that are lower than the current conditions.</p> <p>In area of burn only treatment effectiveness last between 20 and 40 years before Basal Areas and Canopy Cover return to or exceed pre-treatment conditions.</p>	<p>The silviculture analysis documents that after 40 years, the majority of the areas that would be mechanically treated or hand thinned would have Basal Areas, Canopy covers, and trees per acres that are lower than the current conditions.</p> <p>In area of burn only treatment effectiveness last between 20 and 40 years before Basal Areas and Canopy Cover return to or exceed pre-treatment conditions.</p>	<p>The silviculture analysis documents that after 40 years, the majority of the areas that would be mechanically treated or hand thinned would have Basal Areas, Canopy covers, and trees per acres that are lower than the current conditions.</p> <p>In area of burn only treatment effectiveness last between 20 and 40 years before Basal Areas and Canopy Cover return to or exceed pre-treatment conditions.</p>

¹⁰ Refers to the duration of time before additional mechanical thinning would be needed to restore post-treatment conditions. This does not include maintenance burning, which is anticipated to extend the effectiveness of treatments.

Actions	Alternative 1 – No Treatment	Decision	Alternative 2 – Proposed Action with Cable Logging	Alternative 3 – Proposed Action without Cable Logging	Alternative 4 – Minimal Treatment
Total number of trees >18” dbh within cable logging corridors to be removed in MSO PACs	0	0	132 Total <i>108 DLH</i> <i>24 MM</i>	0	0
Number of Trees >24” dbh within cable logging corridors to be removed in MSO Recovery Habitat	0	0	206 Total <i>206 DLH</i> <i>0 MM</i>	0	0
Acres of treatment where all snags have to be removed for safety within MSO PACs	0	267 acres	391 acres	267 acres	0 acres
Temp Road Mileage within MSO PACs	0 miles	4.7 miles	4.7 miles	3.1 miles	3.1 miles
Road Decommissioning	0 miles	4.38 miles	4.38 miles	4.38 miles	4.38 miles

Actions	Alternative 1 – No Treatment	Decision	Alternative 2 – Proposed Action with Cable Logging	Alternative 3 – Proposed Action without Cable Logging	Alternative 4 – Minimal Treatment
Overall effects to MSO	No Impact	May have impacts to breeding owls as treatments could occur within PACs during the breeding season for up to two years; areas treated by helicopter would affect quality of critical habitat in the short-term through the removal of snags. Long-term benefits would include reduction in the potential for high-severity wildfire.	May have impacts to breeding owls as treatments could occur within PACs during the breeding season for up to two years. Areas treated by cable logging would affect quality of critical habitat in the short-term through the removal of snags. Long-term benefits would include reduction in the potential for high-severity wildfire.	May have impacts to breeding owls as treatments could occur within PACs during the breeding season for up to two years; areas treated by helicopter would affect quality of critical habitat in the short-term through the removal of snags. Long-term benefits would include reduction in the potential for high-severity wildfire.	May have impacts to breeding owls as treatments could occur within PACs during the breeding season for up to two years. The project activities may affect, but are not likely to adversely affect MSO critical habitat due to the lack of having to remove habitat components (such as snags) for safety requirements or harvesting operations (e.g. cable corridors).
Total Implementation Cost (Net Timber Value minus Cost of Implementation)	\$102,000 (cost of archaeological surveys completed)	\$8,011,548	\$7,323,094	\$8,512,238	\$4,082,599

Best Available Science

My decision is based on consideration of the best available science. The record contains a thorough review of relevant scientific information and relevant opposing views and, where appropriate, acknowledges incomplete or unavailable information, scientific uncertainty and risk.

Specifically, the extensive literature cited by specialists, listed in the FEIS, shows that relevant literature has been reviewed and considered in preparing the EIS. The record shows that literature cited by the public during the comment period has been reviewed and considered as appropriate.

Consideration of Unavoidable Adverse Effects

Overall, this decision considers the trade-offs between short-term adverse effects (i.e., environmental harm) and long-term benefits. Implementation of this decision will result in some unavoidable short-term adverse effects on a threatened species and its critical habitat, scenery values (short term, related to viewshed), soil and water resources (short term, related to compaction during treatment), recreation access, and air quality (short term, during prescribed fire activities). However, the selected alternative includes design features (Appendix B) that will reduce these adverse effects to the extent practicable while still achieving project objectives. In addition, the potential effects of not doing anything outweigh the short term effects to forest resources.

My decision considered all comments received during scoping periods, workshops, public meetings, field trips, and the formal notice and comment period. This decision considers the input received from the public and our partners throughout the process. We recognize that there is a range of public opinion regarding the harvesting methods analyzed, particularly in the Dry Lake Hills. However, I have concluded that this decision is an informed one that best meets the project's purpose and need while balancing the diversity of public input. This decision will move the project area toward desired conditions and considers and discloses the environmental consequences (both positive and negative) of the selected actions. Monitoring of the effects on not only the Mexican spotted owl and its habitat components, but also other mixed conifer species (including the red squirrel) will help inform other future projects. As stated by the USFWS in the final Biological Opinion, "FWPP gives us a unique opportunity to learn about treatment effects to the Mexican spotted owl and its habitat" (USFWS 2015).

Public Involvement

FWPP has been listed on the Coconino National Forest Schedule of Proposed Actions (SOPA) since January, 2013. Throughout the project's proposed action development and the scoping period, the FWPP interdisciplinary team (IDT) met with interested parties, agencies and Tribes, including the Arizona Department of Game and Fish, the United States Fish and Wildlife Service, the Ecological Restoration Institute of Northern Arizona University, and environmental groups to discuss the proposed action.

Scoping

The formal 30-day public scoping period began with the publication of the Notice of Intent (NOI) to prepare an Environmental Impact Statement in the Federal Register on April 11, 2013, and ended May 13, 2013. The NOI referenced the public open house for May 1, 2013 hosted by the Forest Service and noted that the Greater Flagstaff Forests Partnership (GFFP) would be hosting meetings on behalf of the City of Flagstaff, and provided information about the external project website (www.flagstaffwatershedprotection.org).

Scoping letters, including a link to the proposed action on the Coconino National Forest website, were sent as hard copies to 606 individuals, including permittees, property owners, and state and local agencies. Thirteen personalized letters to tribal contacts were mailed simultaneously, and included hard copies of maps and the proposed action. An additional 157 cover letters with links to more detailed project information were sent to email contacts. Chapter 4 of the EIS lists the agencies, organizations, and tribes who received copies. The project record contains the comprehensive list of all those listed above and the individuals who were contacted.

A press release was issued from the Coconino National Forest on April 10, 2013 and a public open house on the proposed action was held on May 1 to provide more information on potential activities, funding sources, and collaboration with the city. Notices regarding the meetings were posted on the Coconino National Forest website and the Flagstaff Watershed Protection Project external website.

Approximately 19 people attended the public meeting. Throughout April 2013, the City of Flagstaff hosted three outreach meetings targeted at specific interest groups, including recreation user groups, adjacent land owners in the Mount Elden area, and other interest groups. The Forest Service hosted an additional public meeting on August 24, 2013 geared toward the primarily-seasonal residents of Mormon Lake. Twenty residents attended the meeting, held at the Mormon Lake Fire Station, and primarily voiced concerns about dust abatement and ensuring Best Management Practices are followed during implementation.

In response to scoping, 25 submissions were received from the public, which contained a total of 144 comments (see the Scoping Summary document in the project record). The following issues were identified in scoping comments and were used to determine the scope of the analysis and develop alternatives to the proposed action:

1. Restoration versus Fire Hazard Reduction Issue: A common public concern voiced during scoping was the importance and sustainability of restoring ecosystems versus a purely fire-hazard reduction approach to treatment. There is concern that a fire-hazard reduction approach would result in unnecessarily departing from historical conditions that could be more sustainable long term.

2. **Mixed Conifer Issue:** Several comments included concerns about different aspects of treatments in mixed conifer including what was perceived to be a proposal to change the Fire Regime of mixed conifer areas, the potential for vegetation conversion, and the differences between wet and dry mixed conifer vegetation types and treatments.

Several comments also voiced concerns over treatments proposed in mixed conifer vegetation types due to its relative rarity and importance to wildlife.

3. **Conservation of Large (16" dbh+) Trees Issue:** some comments indicated that the Forest Service should adopt project-level restrictions to minimize the cutting of trees greater than 16 inches dbh.
4. **Monitoring Issue:** Several comments included concerns over the lack of monitoring for anything other than the Mexican spotted owl and thus the potential to not know the effects of treatments on other wildlife and habitats.
5. **Snag Retention and Creation Issue:** There is some concern over the loss of snags due to cable logging and also the effectiveness and viability of snags created through girdling and topping healthy trees compared to snags created through natural processes.
6. **Prescribed Burning/Maintenance Issue:** Public comments showed concern over proposed exclusion of prescribed burning in areas with mixed conifer on steep slopes due to the effectiveness and importance of prescribed fire. Concerns over whether maintenance burning would be included and what the intervals would be for the different fire regimes also arose during the scoping period.
7. **Significance of Forest Plan Amendments Issue:** The public voiced a concern about the significance of the proposed Forest Plan amendments included in one more of the alternatives due to the impact of these amendments on wildlife species including the northern goshawk and the Mexican spotted owl.
8. **Visual Effects Issue:** The IDT identified a concern about potential effects on scenic resources as a result of implementation due to the highly-valued view sheds contained within the project area.

In addition to the issues identified above, a number of issues identified from public scoping were addressed through Design Features incorporated into one or more of the alternatives. Chapter 2 of the FEIS contains more information about Design Features. A description of issues relevant to the proposed action and how they were each addressed appears in the FEIS in Chapter 1.

Publication of the Draft Environmental Impact Statement

On July 3, 2014 we published a draft environmental impact statement (DEIS) and the Federal Register published a notice of availability. This date began the 45-day comment period for public input. The DEIS included three action alternatives and the no action alternative. The DEIS summarized information from specialist reports on the potential effects of each alternative to fire and fuels, air quality, forest structure and health, soil and water resources, wildlife, scenery, economics, invasive plant species, sensitive plants, recreation and heritage. In anticipation of most people not having the time to read the entire DEIS, various shortened versions were provided, including a Reader's Guide and a Summary with Comparison Tables, pulled from

Chapters 1 and 2 of the DEIS. Numerous outreach events were also held during the comment period, including two open houses (held July 17 and 22), two presentations and field visits with neighborhoods abutting the project area, a meeting with the Mormon Lake community, and meetings with special interest groups including Flagstaff Biking Organization and the Ecological Restoration Institute. In addition, information was disseminated through local media outlets, including KNAU and the Arizona Daily Sun. The FS Project Manager was also available for questions throughout the comment period, and offered to meet with interested individuals at their convenience (see email from August 11, 2014 in the Project Record). A Map Packet was made available on the Forest Service project website, along with copies of individual specialist reports, and an external website was developed in order for the public to more easily access information about the project (www.flagstaffwatershedprotection.org). Interactive Google Earth project maps were posted on the external website to allow the public to more easily determine locations of proposed treatments, temporary roads, and harvesting systems.

Response to DEIS, and Changes from Draft to Final

We received 107 submissions during the comment period with 530 individual comments within those submissions. I appreciate the time, energy, and passion expressed by all who shared their interests, views, and concerns. Three main themes emerged from the comments received on the DEIS:

1. Impacts from cable logging
 - a. Erosion
 - b. Unknown since it's not common in southwest
 - c. Visual
2. Implementation/Monitoring
 - a. Forest Service oversight of contractor(s) (including marking, tree selection, and during harvesting)
 - b. Monitoring tied to wildlife, treatment effectiveness, noxious weeds and soil impacts
 - c. Maintenance (and how to finance)
3. Recreation
 - a. Effects on trails (system and non-system)
 - b. Overlap with the Mount Elden/Dry Lake Hills Recreation Planning Project
 - c. Area closures/safety concerns/duration during implementation
 - d. Temp road to trail conversions
 - e. Public outreach

Many of the comments (and additional information provided after the release of the DEIS) resulted in modifications to the alternatives and changes to the analysis of potential effects. The comments provided a framework for further analysis the interdisciplinary team included in the FEIS, and, ultimately, contributed to my decision. Responses were provided for each of those comments or concern areas. The extensive response to comments (available online and summarized in the EIS) describes how each comment was addressed in the EIS analysis.

In addition to responding to comments in the EIS, the IDT made a number of changes to the FEIS based on comments and meetings with the public and partners. The main changes between the draft and final EIS include:

- Inclusion of a Socio-Economics section to address public comments related to project impacts on local economies and communities.
- Change in location of the temporary road proposed south of Mount Elden and north of the private property boundary.
- More detailed information in the Scenery section about cable logging examples both in the southwest and in other areas with similar ecosystems, such as eastern Montana.
- Modifications to Design Features, including:
 - Adding a monitoring component to the snag creation design feature to aid in determining the effectiveness.
 - Adding a design feature to protect caves and karst, and sink holes
 - Clarification on the protection of existing forest system trails during implementation
 - Addition of design features related to protection of MSO

In addition, an Implementation Plan has been developed to assist in communicating the steps necessary to implement a forest thinning project (e.g. timber preparation, contracting, contract oversight); how design features will be executed; and how the treatments will likely be phased.

Coordination with Federal, State, and County Organizations

In addition to the formal public involvement process; my staff met with federal and state agencies and county officials on a number of occasions to solicit input and inform the alternatives. As mentioned previously, the City of Flagstaff had a representative on the IDT, and we routinely provided updates and briefings on the status of not only the planning effort, but also the implementation of road maintenance, hand thinning and prescribed burning within the FWPP boundary (covered under previous NEPA – see the General Location section for more information).

For example, my staff met with and worked side-by-side with the Fish and Wildlife Service (FWS) on a number of occasions to discuss treatments within MSO habitat and to develop design features and mitigation measures to reduce potential impacts. We also worked very closely with FWS to draft a MSO Monitoring Plan, which was finalized during the formal consultation process (AESO/SE 02EAAZ00-2013-F-0190).

My staff also met with Arizona Game and Fish Department (AZGFD) to discuss concerns and options for treatments within mixed conifer habitat and the potential effects on non-listed species, such as the red squirrel.

Alternatives Analyzed in Detail

Alternative 1: No Action

National Environmental Policy Act (NEPA) regulations require the no action alternative to be included as a baseline for comparison to all action alternatives. Under this alternative, no new areas would be treated in the FWPP area. Implementation of previous NEPA decisions, including Jack Smith Schultz and the Eastside Fuels Reduction and Forest Health Restoration projects could continue. For the Environmental Impact Statement, specialists analyzed the impacts of a modeled wildfire occurring under existing conditions as a basis of comparison between effects.

Alternative 2: Proposed Action with Cable Logging Emphasis on Steep Slopes

Alternative 2 emphasizes the use of cable logging wherever plausible to remove cut material on steep slopes. Under this alternative, treatments would include mechanical and hand thinning as well as prescribed fire on the remaining acres (approximately 8,938 acres). Both Forest Plan amendments would be necessary for this alternative.

Mechanical tree thinning up to 18 inches dbh would occur within Mexican spotted owl protected activity centers (MSO PACs) with a desired condition of trees greater than 16 inches dbh contributing more than 50 percent of the stand basal area and maintaining a minimum of 40 percent canopy cover in pine-oak and 60 percent in mixed conifer per the MSO Recovery Plan (2012, pp. 276-277), followed by prescribed burning. Hand thinning up to 5 inches dbh in approximately 80 percent of the Schultz Creek Nest Core and prescribed burning in all nest cores would occur. In addition, hand thinning up to 9 inches dbh in the DLH, mechanical thinning up to 24 inches dbh on MM, and prescribed burning at both areas would also occur within MSO nest/roost habitat in coordination with the US Fish and Wildlife Service (FWS) to reduce the potential for high severity wildfire. No cable logging would occur within MSO nest cores and no temporary roads would be located within MSO nest cores. Some treatments proposed within occupied PACs may need to occur during the breeding season (March 1-August 31) and would be coordinated with FWS. Treatments in nest cores would not occur during the breeding season.

Prescribed fire would include initial pile burning to remove slash accumulated through harvesting, followed by broadcast burning. In areas where fuel loading allows, broadcast burning may occur prior to thinning. Maintenance burning may occur every five to seven years following implementation in order to maintain lower fuel loading levels and to restore a frequent, low-severity fire regime. Mixed conifer on steep slopes may only receive one broadcast burn through the life of the project due to the difficulty of implementation in these fuel types and terrain, and also because the historic Fire Return Interval in some vegetation types is historically longer than the life of this project. Prescribed burning techniques in wet mixed conifer would target accumulated dead and down material rather than using broadcast burning ignition patterns. Other slash removal options as described in the Implementation Methods section of the FEIS could also be used in lieu of burning, including biomass removal.

Alternative 3: Proposed Action without Cable Logging

Alternative 3 would be similar to Alternative 2 in that the described treatments would be the same; however this alternative addresses visual concerns and distribution of snags and large trees due to the absence of proposed cable corridors. Under Alternative 3, treatments would utilize ground-based harvesting across the majority of the project area, with helicopter logging for

critical areas that are too steep, rocky, or inaccessible to be treated by steep slope ground-based equipment. No cable logging would occur under this alternative, which would reduce the need to remove some large trees and snags on steep slopes and also the need to create corridors. The enclosed cabs of steep-slope machinery precludes the need to remove hazard trees, and though areas proposed for treatment by helicopter would still need to have hazard trees removed, the distribution of snags and large trees could be factored into treatment placement more easily. Both Forest Plan amendments would be necessary for this alternative.

Alternative 4: Minimal Treatment Approach

This alternative would be similar to Alternatives 2 and 3; however the purpose of Alternative 4 is to implement the minimum amount of treatment necessary to meet the purpose and need.

Treatments are proposed for those areas with dense fuel loading where topography aligns with dominant winds and the probability of severe effects to soil resources from a wildfire is greater, based on FLAM MAP 5.0 modeling of both fire behavior and fire spread under Schultz fire weather conditions. Specifically, factors considered include: fire hazard rating, potential damage to soils (from high severity fire and also harvesting methods), MSO habitat, and the type of harvesting methods necessary to affect change.

Under Alternative 4, approximately 3,459 acres along the base of Dry Lake Hills and Mount Elden and the upper, flatter tops would receive basically the same treatments proposed in Alternatives 2 and 3, though under this alternative more areas are proposed for hand thinning and prescribed burning instead of cable or helicopter logging in order to reduce the potential impacts from temporary road network associated with those harvesting methods (roughly 46 percent of the DLH project area). Both Forest Plan amendments would be necessary for this alternative. Additionally, treatments are focused on the area south and east of FR420; the portion of the project area between FR420 and the Kachina Peaks Wilderness would still be treated but under the constraints of the analysis and decision for the Jack Smith Schultz Fuels Reduction and Forest Health Restoration Project. Thus, no new analysis would be performed for those areas under this alternative.

The Spruce Avenue Wash was identified as a high priority area due to the fuel loading, topography, size and also its location relative to the City of Flagstaff and MSO PACs. The portion of the Mount Elden MSO PAC within the Spruce Avenue Wash would also be treated under the same parameters described in Alternatives 2 and 3. The Schultz Creek MSO PAC and nest core were identified in conjunction with the FWS as high priority areas, and would also receive the same treatment described for Alternatives 2 and 3.

For MM, treatments would occur on 2,343 acres. The same methodology used for treatment placements in the DLH area was applied to MM to determine where to focus treatments. Under Alternative 4, the wet mixed conifer belt and MSO nest cores would not be treated, (roughly 21 percent of the MM area); however treatments would occur below and above that belt.

Areas not included in this alternative would be designated as No Treatment. All treated acres would include prescribed burning in the manner described under Alternative 2: initially pile burning to remove slash accumulated through harvesting, followed by broadcast burning. Maintenance burning in ponderosa pine may occur every five to seven years following implementation in order to maintain lower fuel loading levels and to restore a frequent, low-severity fire regime. Mixed conifer on steep slopes may only receive one broadcast burn through the life of the project due to the difficulty of implementation in these fuel types and terrain, and also because the historic Fire Return Interval may be longer than the life of this project. Other slash removal options as described in the Implementation Methods section of the FEIS could also be used in lieu of burning, including biomass removal.

Alternative 4 incorporates the goal of retaining large young trees and old trees within the project area through a modified the Large Tree Retention Strategy (LTRS), which is detailed in Chapter 2 of the FEIS.

Alternatives Considered But Eliminated from Detailed Study

The National Environmental Policy Act requires Federal agencies to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR §1502.14). Public comments received in response to the proposed action provided suggestions for alternative methods for achieving the purpose and need. The following two alternatives identified through scoping comments were discussed by the IDT and determined to not meet the purpose and need for the project.

Alternative 5: No Temporary Road Use or Forest Plan Amendments & Hand Thinning Only

This alternative would involve hand thinning only with no amendments to the Forest Plan, and would utilize existing, open roads only. No new temporary roads would be constructed and no existing, closed roads would be utilized. Under this alternative achieving the desired conditions of reduced high-severity wildfire and achieving a sustainable forest structure would not be possible due to: the preponderance of trees greater than 9 inches dbh, (the standard limit for hand thinning treatments), the safety concerns and feasibility of hand felling and piling larger trees on steep rocky slopes, the inability to remove cut material which would leave an overabundance of fuels on the ground, and the subsequent need for extensive hand piling and burning on steep slopes.

Alternative 6: Kachina Peaks Wilderness

This alternative would include expanding the DLH portion of the project area to include treating in the Kachina Peaks Wilderness. While portion of the wilderness could potentially benefit from treatments that reduce the potential for uncharacteristically large, high-severity wildfire, the inaccessibility, high fuel loadings, and rough terrain of the area would require road development and treatment of an extent that would clearly be in conflict with the objectives of a designated Wilderness area. Namely, that of maintaining wilderness in such a manner that “ecosystems are unaffected by human manipulation and influences so that plants and animals develop and respond to natural forces” (FSM 2320.2(2)).

Environmentally Preferred Alternative

The NEPA implementing regulations (Section 1505.2) require that the alternative(s) that best promotes national environmental policy as expressed in NEPA, Section 101, be identified in the decision as the “environmentally preferable alternative” or alternatives. This is ordinarily “the alternative that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources” (FSH 1909.15, 05).

The environmentally preferable alternative is not necessarily the alternative that would be implemented, and it does not have to meet the underlying need for the project. It does, however, have to cause the least damage to the biological and physical environment and best protect, preserve, and enhance historical, cultural, and natural resources.

For this plan, I believe the decision is the environmentally preferable alternative. In comparison with the other alternatives, this alternative represents the greatest reduction in severe wildfire hazard while also protecting valuable ecosystem service components through the targeted use of helicopter logging within MSO protected habitat and within the viewshed of Flagstaff rather than cable logging or no treatment. This alternative will also result in the increased retention and protection of large trees through incorporation of the Large Tree Retention Strategy and the use of helicopter logging on a greater acreage than under Alternative 2. The decision defers cable logging within MSO protected activity centers, which results in fewer temporary roads within that habitat and thus fewer acres of disturbance than under Alternative 2. While Alternative 4 would have the least direct impact to forest resources, it would also leave large areas vulnerable to uncharacteristic wildfire.

Findings Required by Law and Regulation

The EIS has been prepared in accordance with the following laws and regulations:

Clean Air Act of 1970

The Clean Air Act of 1970 and its amendments provide for protecting and enhancing the nation's air resources. The Federal and State ambient air quality standards are not expected to be exceeded as a result of implementing this decision. This action is consistent with the Clean Air Act.

Clean Water Act

The Clean Water Act, as amended, regulates dredging and filling freshwater and coastal wetlands. Section 404 (33 USC 1344) of the Clean Water Act prohibits discharging dredged or fill material into waters (including wetlands) of the United States without first obtaining a permit from the U.S. Army Corps of Engineers. Wetlands are regulated in accordance with federal Non-Tidal Wetlands Regulations (Sections 401 and 404). No dredging or filling is part of this action and no permits are required. In addition, my decision will improve conditions with respect to sedimentation of State-listed impaired streams (FEIS, Chapter 3, Soil and Water Resources section). This project is consistent with the Clean Water Act.

Endangered Species Act of 1973

The Endangered Species Act (ESA) (16 USC 1531 et seq.) requires that any action authorized by a Federal agency does not jeopardize the continued existence of a threatened or endangered species, or result in the destruction or adverse modification of the critical habitat of such species.

The Mexican spotted owl (*Strix occidentalis lucida*) is the only threatened species within the FWPP analysis area. Formal consultation with the US Fish and Wildlife Service (USFWS) under

Section 7 of the Endangered Species Act of 1973, as amended (16 USC 1531 et seq.), was requested by the Forest Service on January 12, 2015 for project effects on the Mexican spotted owl. The analysis for Mexican spotted owl and its critical habitat concluded there is potential for short-term adverse effects to owls. Long-term effects of the project should be beneficial to Mexican spotted owls by enhancing key habitat components for Mexican spotted owl and their prey. The selected alternative may effect, and is likely to adversely affect Mexican spotted owl and its critical habitat (Thompson 2014).

On June 5, 2015, the USFWS issued the final Biological Opinion (BO) (AESO/SE O2EAAZ00-2013-F-0190), which stated that while implementation of the FWPP has the potential to negatively affect the owl and its habitat, the project will not jeopardize the continued existence of the Mexican spotted owl, and will not destroy or adversely modify its designated critical habitat. Incidental take for Mexican spotted owl (per section 9 of the Endangered Species Act) was attributed at the PAC level. The majority of incidental take for actions implemented under the FWPP will be in the form of short-term harassment. The amount of take tiers to (is included within) the amount of take anticipated under the 2012 biological opinion for the Forest Plan, according to the Biological Opinion for FWPP (USDI FWS 2015, pp. 37-39). Conservation recommendations associated with the incidental take were included in the BO. The full Biological Opinion is located within the project record.

Bald and Golden Eagle Protection Act

All golden and bald eagles, regardless of status, are protected under the Bald and Golden Eagle Protection Act. We requested technical assistance from the USFWS to ensure the intent of the Bald and Golden Eagle Protection Act was met while implementing the actions associated this decision. With the incorporated design features (Appendix B) this decision will not result in take for either species (Thompson 2014). This decision aligns with the direction recommended by the U.S. Fish and Wildlife Service including “Conservation Assessment and Strategy for Bald eagles in Arizona” (Driscoll et. al. 2006) in conjunction with “Bald Eagle National Guidelines” (USDI FWS 2007). This decision aligns with the USFWS-issued “Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols and Other Recommendations in Support of Golden Eagle Management and Permit Issuance” (Pagel et al. 2010).

Forest Service Sensitive Species

Forest Service Sensitive Species within the FWPP action area (project boundary plus 0.5 mile buffer) include the Bald Eagle, Northern goshawk, American peregrine falcon, Navajo Mogollon vole, Allen’s lappet-browed bat, Pale Townsend’s big-eared bat, spotted bat, and the Northern leopard frog. As disclosed in Chapter 3 of the FEIS, project activities associated with this decision may impact individual but are not likely to cause a trend toward listing or loss of viability.

Management Indicator Species

The wildlife section of Chapter 3 in the FEIS contains descriptions of each of the management indicator species (MIS) identified for management areas (MAs) within the analysis area and a discussion of the relationship of the effects of each project alternative on forest-level population and habitat trends for each of these species. MSO protected habitat treatments may include both mixed conifer and ponderosa pine cover types. The MIS analyzed for FWPP include Abert

squirrel, red squirrel, Mexican spotted owl, elk, northern goshawk, pygmy nuthatch, turkey, hairy woodpecker, Red-naped sapsucker, mule deer, Juniper (plain) titmouse, and pronghorn antelope. Actions associated with this decision will not result in changes to MIS forest-wide population or habitat trends.

Migratory Bird Treaty Act and Executive Order 13186

The selected alternative with the design features described in Chapter 2 of the FEIS provides for adequate conservation measures for migratory birds. The migratory bird analysis discloses that thinning and broadcast burning operations activities may lead to loss of egg viability or injury or death to nestlings. Overall, unintentional take of some individual birds may occur. However, no measurable negative effect to any of the bird populations is associated with the selected alternative (FEIS Chapter 3, “Migratory Birds” section).

National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires Federal agencies to complete detailed analyses of proposed actions that significantly affect the quality of the human environment. The Act’s requirement to prepare an environmental analysis is designed to provide decision-makers with a detailed accounting of the likely environmental effects of a proposed action prior to adoption and to inform the public of (and encourage comments on) such effects. The Final EIS analyzes the alternatives and displays the environmental effects in conformance with NEPA standards. The procedural requirements of the NEPA have been followed.

National Forest Management Act

The National Forest Management Act (NFMA) amends the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA) and sets forth the requirements for Land and Resource Management Plans (Forest Plans) for the National Forest System. The project was reviewed against the direction in the current Coconino National Forest Land Management Plan (Forest Plan), as amended (USDA 1987) and 36 CFR 219.17(b)(3). Consistency evaluations are included in each resource report and in Appendix C of the FEIS.

There is a need to amend the Forest Plan to allow implementation of this decision. I have determined that the two amendments are appropriate and project-specific. The amendments are summarized in the “Decision” section of this document under the heading Forest Plan Amendments, with further details and all changes shown in Appendix A.

I have determined that Amendment 1 and 2 are authorized changes to the Forest Plan being made pursuant to 36 CFR 219.13. These plan amendments were included as part of the proposed action to be consistent with the Forest Service NEPA procedures. These amendments include the same scope and scale of the specific activities which they were included to allow exception to in the Forest Plan. The effects of the decision, which includes the same effects of these plan amendments, are fully disclosed in the Final EIS.

This decision does not change any other management requirement in the Forest Plan designed to protect resources. Further, I have determined that the amendments will have no effects on the long-term relationship of goods and services projected by the current Forest Plan nor will they affect the long-term relationship of goods and services projected under the revised Forest Plan,

which is currently in the NEPA process. This amendment does not substantially change desired land conditions as stated in either plan, but provides more specific treatment for the area.

The public was notified at scoping that amendments would be part of this analysis and the decision. The public was advised of the need for the amendments, and their components were described in the DEIS that was issued for public comment. Documentation of the NFMA significance review of amendment components is contained in the project file.

My decision is consistent with Forest Plan goals and objectives, standards and guidelines, as documented in the resource sections in Chapter 3 of the FEIS and in “Rationale for My Decision.” Forest Plan standards are inflexible and require that decisions comply with the standards or the Plan must be amended accordingly.

National Historic Preservation Act of 1966

Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to consider the potential effects of a preferred alternative on historic, architectural, or archaeological resources that are eligible for inclusion on the National Register of Historic Places (NRHP) and to afford the President’s Advisory Council on Historic Preservation an opportunity to comment. Section 110 of the Act requires Federal agencies to identify, evaluate, inventory, and protect NRHP resources on properties they control. Potential effects on archaeological and historic resources have been evaluated in compliance with Section 106 of the NHPA.

The NHPA provides comprehensive direction to Federal agencies to identify, evaluate, treat, protect, and manage historic properties. The NHPA expands the NRHP and it establishes the Advisory Council on Historic Preservation (ACHP) and SHPOs. Section 106 of the NHPA directs all Federal agencies to take into account effects of their undertakings (actions, financial support, and authorizations) on properties included in or eligible for the National Register. The ACHP’s regulations (36 CFR §800) implement Section 106 of the NHPA. Section 110 of the Act sets inventory, nomination, protection, and preservation responsibilities for federally owned and administered historic properties.

The Southwestern Region of the Forest Service developed a programmatic agreement with the State Historic Preservation Office in which the Forest outlined a plan to complete NRHP evaluations prior to project implementation for all unevaluated cultural sites located in the area of potential effect. The Arizona State Historic Preservation Officer (SHPO) has been consulted and on March 5, 2014 concurred with the project’s determination of No Adverse Effect to historic properties (SHPO-2013-1161(118074)).

This commitment under the programmatic agreement satisfies legal requirements for this decision

Other Laws and Executive Orders

Executive Order 11593

Executive Order 11593, entitled Protection and Enhancement of the Cultural Environment, also includes direction about the identification and consideration of historic properties in Federal land management decisions. The order, issued May 13, 1971, directs Federal agencies to inventory cultural resources under their jurisdiction, to nominate to the NRHP all federally owned

properties that meet the criteria, to use due caution until the inventory and nomination processes are completed, and to assure that Federal plans and programs contribute to preservation and enhancement of properties not federally owned. This project considered effects on historic properties as part of the National Historic Preservation Act compliance and thus satisfies the requirements of E.O. 11593.

Executive Order 12898 – Environmental Justice

A specific consideration of equity and fairness in resource decision-making is encompassed in the issue of environmental justice. Executive Order 12898 provides that, “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” This analysis was performed and no adverse impacts are anticipated as a result of any of the alternatives; therefore the decision is also not anticipated to result in any disproportionately high and adverse human health or environmental effects. See the Environmental Justice section of Chapter 3 in the FEIS for a more detailed explanation.

Predecisional Administrative Review Process

This project is subject to the Predecisional Administrative Review Process (Objection Process) pursuant to 36 CFR 218, subparts A and B. The FEIS and draft ROD are available on-line at: www.fs.usda.gov/goto/FWPP. These documents are also available for review at the Flagstaff Ranger District Office at 5075 N Hwy 89, Flagstaff, AZ 86004.

Objections will only be accepted from those who have previously submitted specific written comments regarding the project during scoping or other designated opportunity for public comment in accordance with §218.5(a). Issues raised in objections must be based on previously submitted timely, specific written comments regarding the proposed project unless based on new information arising after the designated comment opportunities.

Objections, including attachments, must be filed via mail, fax, email, hand-delivery, express delivery, or messenger service (Monday through Friday, 8:00 a.m. to 4:30 p.m., excluding holidays) to: Cal Joyner, Regional Forester, 333 Broadway SE, Albuquerque, NM FAX: (505) 842-3292, email to: objections-southwestern-regional-office@fs.fed.us. Electronically filed objections may be submitted by email in word (.doc), rich text format (.rtf), text (.txt), and hypertext markup language (.html).

Objections must be submitted within 45 calendar days following the publication of a legal notice in the Arizona Daily Sun. The publication date in the newspaper of record is the exclusive means for calculating the time to file an objection. Those wishing to object should not rely upon dates or timeframe information provided by any other source. The regulations prohibit extending the time to file an objection.

At a minimum, an objection must include the following (36 CFR 218.8(d)):

1. The objector’s name and address, with a telephone number, if available;

2. A signature or other verification of authorship upon request (a scanned signature for email may be filed with the objection);
3. When multiple names are listed on an objection, identification of the lead objector (verification of the identity of the lead objector shall be provided upon request);
4. The name of the proposed project, the name and title of the Responsible Official, and the name(s) of the National Forest(s) and/or Ranger District(s) on which the proposed project will be implemented;
5. A description of those aspects of the proposed project addressed by the objection, including specific issues related to the proposed project if applicable, how the objector believes the environmental analysis or draft decision specifically violates law, regulation, or policy; suggested remedies that would resolve the objection; supporting reasons for the reviewing officer to consider; and
6. A statement that demonstrates connection between prior specific written comments on the particular proposed project or activity and the content of the objection.

Incorporation of documents by reference is permitted only as provided in §218.8(b). It is the objector's responsibility to ensure timely filing of a written objection with the reviewing officer pursuant to §218.9. All objections are available for public inspection during and after the objection process. The names and addresses of all objectors are similarly part of the FWPP public record.

Effective Date

If no objection is filed, implementation may begin on, but no sooner than the fifth business day following the end of the 45-day objection filing period (36 CFR 218.11). If an objection is filed, implementation may begin immediately following the date of the final decision.

Contacts

For additional information concerning this draft Record of Decision, the Final Environmental Impact Statement, or the objection process please contact:

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Signature



Scott Russell
Acting Forest Supervisor
Coconino National Forest

Date

June 23, 2015

Appendix A: Forest Plan Amendments

The following Forest Plan amendments are being done under the 2012 Planning Rule per 36 CFR 219.17 (b)(2), which requires all Forest Plan amendments initiated after May 9, 2012 to utilize the 2012 Planning Rule.

Amendment 1

Amendment 1 is a specific, one-time variance for managing MSO habitat in the FWPP project area. Once the project is complete, current Forest Plan direction will apply to the project area. The language proposed does not apply to any other forest project.

Amendment 1 Description

Amendment 1 will update the terminology referring to MSO habitat types to reflect that of the 2012 MSO Recovery Plan. Specifically, this amendment will update the definition of protected habitat to exclude pine-oak and mixed conifer forests with slopes greater than 40 percent where timber harvest has not occurred in the last 20 years and instead including these areas as recovery habitat, and change “restricted” habitat to “recovery” habitat.

This amendment will allow mechanical thinning within 10 PACs and recovery habitat to reduce the potential for high-severity wildfire. Amendment 1 will change the treatment diameter limit of 9 inches dbh to 18 inches dbh in ten MSO PACs¹¹, and will allow the removal of larger trees (greater than 18 inches dbh in PACs and 24 inches dbh in recovery habitat).

Amendment 1 will also allow hand thinning in the Schultz Creek nest core up to 5 inches dbh, and prescribed burning treatments within all MSO nest cores. The amendment will remove language referencing monitoring (pre- and post-treatment, population, and habitat); replacement language will defer to a monitoring plan developed specifically for this project by the Forest Service, U.S. Fish and Wildlife Service (FWS), and the Ecological Restoration Institute of Northern Arizona University and finalized through the formal consultation process. The monitoring plan pairs treated and untreated (reference) PACs within and adjacent to the Dry Lake Hills and Mormon Mountain portions of the project, and compares occupancy rates, reproduction rates, and habitat changes. Reference PACs match the environmental conditions in PACs where treatments are proposed, as closely as possible. The monitoring plan will be finalized in conjunction with FWS consultation and so is incorporated by reference here.

The amendment will allow the MSO nest roost recovery area identified within the project area to be treated to meet the minimum habitat requirements for MSO nest roost recovery habitat under the 2012 revised MSO Recovery Plan.

Amendment 1 will also remove timing restrictions on treatments within ten MSO PACs for two breeding seasons in order to more quickly accomplish implementation and to limit the duration of effects on MSO. Treatments will be prioritized to be accomplished within one to two breeding seasons, and will be coordinated with FWS. No one PAC will be treated for more than two breeding seasons. If treatments within a PAC extend beyond the two year timeframe, timing restrictions will apply for the subsequent years (March 1 – August 31).

Timing restrictions will still apply for activities in nest cores, including hand thinning within the Schultz Creek nest core and prescribed burning within all nest cores.

¹¹ Ten PACs within the FWPP boundary: De Toro’s, Lockwood, Moore Well, Mormon Mountain, Mormon Mountain North, Weimer Springs, Schultz Creek, Mount Elden, Orion Spring, and Weatherford 2

Need for Plan Amendment

MSO PAC field reviews, data evaluation, and vegetation simulation modeling indicate that there is a need to mechanically thin trees greater than 9 inches dbh in ten PACs and greater than 24 inches dbh in recovery habitat within the project boundary in order to facilitate treatments to achieve the purpose and need of the FWPP project: to reduce the potential for high-intensity wildfire and subsequent flooding.

There is a need to treat within MSO nest/cores to remove fuels and reduce the potential for ecologically-damaging wildfire as leaving these areas untreated would not meet the purpose and need, and could also hinder the feasibility of prescribed burning in PACs. Lining the core areas would be expensive in terms of time, money, and other resource commitments, and would still leave these areas vulnerable to high-intensity wildfire. There is a need to treat MSO recovery nest/roost replacement habitat to meet the minimum habitat parameters identified in Table C.3 of the 2012 MSO Recovery Plan due to the existing forest structure and to put that habitat on a trajectory toward desired conditions.

There is a need to replace the monitoring language specified in the Forest Plan in order to better incorporate a monitoring plan tiered to the revised MSO Recovery Plan (USFWS 2012) that was developed by the Forest Service and the Fish and Wildlife Service. Monitoring assesses the effectiveness of management actions and provides the adaptive framework needed to develop successful management by assisting in determining the short-term effects of thinning and burning on Mexican spotted owl occupancy and reproduction, and their habitat. The monitoring plan was reviewed as part of the consultation process for treatments planned to occur within PACs.

Edited or added/new text is **bolded** in Table 14. Current Forest Plan direction related to MSO that will not be changed under this amendment is not included below.

Table 14: Amendment 1: Current and Proposed MSO Forest Plan Language

Current Forest Plan Direction	Proposed New Standard or Guideline Language for FWPP
MSO Standards	
No corresponding direction currently exists.	The Flagstaff Watershed Protection Project will comply with the biological opinion and monitoring protocol developed in coordination and consultation with the FWS.
Provide three levels of habitat management – protected, restricted, and other forest and woodland types to achieve a diversity of habitat conditions across the landscape (p. 65).	Provide three levels of habitat management – protected, recovery , and other forest and woodland types to achieve a diversity of habitat conditions across the landscape (p. 65).
Protected areas include delineated protected activity centers; mixed conifer and pine-oak forests with slopes greater than 40% where timber harvest has not occurred in the last 20 years; and reserved lands which include wilderness, research natural areas, wild and scenic rivers, and congressionally recognized wilderness study areas (Coconino NF Forest Plan, p. 65).	Within the Flagstaff Watershed Protection Project boundary, protected areas include delineated protected activity centers; and reserved lands which include wilderness, research natural areas, wild and scenic rivers, and congressionally recognized wilderness study areas. Recovery habitat includes pine-oak and mixed conifer forests on all slopes (Coconino NF Forest Plan, p. 65).

Current Forest Plan Direction	Proposed New Standard or Guideline Language for FWPP
<p>Limit human activity in protected activity centers during the breeding season (Coconino NF Forest Plan, p. 65).</p>	<p>Limit human activity in protected activity centers during the breeding season, except for the following PACs where implementation of treatments may occur the Flagstaff Watershed Protection Project boundary for no more than two breeding seasons: De Toro’s, Lockwood, Moore Well, Mormon Mountain, Mormon Mountain North, Weimer Springs, Schultz Creek, Mount Elden, Orion Spring, and Weatherford 2.</p>
<p>In protected and restricted areas, when activities conducted in conformance with these standards and guidelines may adversely affect other threatened, endangered, or sensitive species or may conflict with other established recovery plans or conservation agreements; consult with US Fish and Wildlife Service to resolve the conflict (Coconino NF Forest Plan, p. 65-1).</p>	<p>In protected and recovery areas, when activities conducted in conformance with these standards and guidelines may adversely affect other threatened, endangered, or sensitive species or may conflict with other established recovery plans or conservation agreements; consult with US Fish and Wildlife Service to resolve the conflict (Coconino NF Forest Plan, p. 65-1).</p>
<p>Monitor changes in owl populations and habitat needed for delisting (Coconino National Forest Plan, page 65-1).</p>	<p>Monitoring of owl populations and habitat within the Flagstaff Watershed Protection Project boundary will follow the monitoring protocol developed and finalized through that project’s consultation with the US Fish and Wildlife Service.</p>
<p>MSO Guidelines</p>	
<p>Harvest fuelwood when it can be done in such a way that effects on the owl are minimized. Manage within the following limitations to minimize effects on the owl (Coconino NF Forest Plan, p. 65-2). Retain key forest species such as oak. Retain key habitat components such as snags and large downed logs.</p> <p>Harvest conifers less than 9 inches in diameter only within those protected activity centers treated to abate fire risk as described below, except for the Clark PAC where trees less than 16 inches diameter will be harvested.</p>	<p>Harvest fuelwood when it can be done in such a way that effects on the owl are minimized. Manage within the following limitations to minimize effects on the owl (Coconino NF Forest Plan, p. 65-2). Retain key forest species such as oak. Retain key habitat components such as snags and large downed logs.</p> <p>Harvest conifers less than 9 inches in diameter only within those protected activity centers treated to abate fire risk as described below, except for the Clark PAC where trees less than 16 inches diameter will be harvested and the following PACs within the Flagstaff Watershed Protection Project boundary, where trees up to 18 inches dbh will be harvested: De Toro’s, Lockwood, Moore Well, Mormon Mountain, Mormon Mountain North, Weimer Springs, Schultz</p>

Current Forest Plan Direction	Proposed New Standard or Guideline Language for FWPP
	<p>Creek, Mount Elden, Orion Spring, and Weatherford 2 PACS. Where cable logging occurs, all trees may be removed within cable logging corridors, including those above 18 inches in PACs and above 24 inches in recovery habitat.</p>
<p>Treat fuel accumulations to abate fire risk.</p> <p>–Select for treatment 10% of the protected activity centers where nest sites are known in each recovery unit having high fire risk conditions. Also select another 10% of the protected activity centers where nest sites are known as a paired sample to serve as control areas (Coconino National Forest Plan, page 65-2).</p> <p>–Designate a 100 acre "no treatment" area around the known nest site of each selected protected activity center. Habitat in the no treatment area should be as similar as possible in structure and composition as that found in the activity center.</p> <p>–Use combinations of thinning trees less than 9 inches in diameter (or less than 16 inches in the Clark PAC), mechanical fuel treatment and prescribed fire to abate fire risk in the remainder of the selected protected activity center outside the 100 acre "no treatment" area.</p>	<p>Treat fuel accumulations to abate fire risk.</p> <p>–Select for treatment 10% of the protected activity centers where nest sites are known in each recovery unit having high fire risk conditions. Also select another 10% of the protected activity centers where nest sites are known as a paired sample to serve as control areas (Coconino National Forest Plan, page 65-2).</p> <p>–Designate a 100 acre "no treatment" area around the known nest site of each selected protected activity center. Habitat in the no treatment area should be as similar as possible in structure and composition as that found in the activity center. Within the Flagstaff Watershed Protection Project boundary, allow prescribed hand thinning of trees less than 5 inches dbh in 80% of the Schultz Creek nest core and prescribed burning in the following nest cores within the project boundary outside of the MSO breeding season: De Toro’s, Lockwood, Moore Well, Mormon Mountain, Mormon Mountain North, Weimer Springs, Schultz Creek, Mount Elden, Orion Spring, and Weatherford 2.</p> <p>–Use combinations of thinning trees less than 9 inches in diameter (or less than 16 inches in the Clark PAC), mechanical fuel treatment and prescribed fire to abate fire risk in the remainder of the selected protected activity center outside the 100 acre "no treatment" area except as follows:</p> <p>Use combinations of thinning trees up to 18 inches dbh within : De Toro’s, Lockwood, Moore Well, Mormon Mountain, Mormon Mountain North, Weimer Springs, Schultz Creek, Mount Elden, Orion Spring, and Weatherford 2 PACs, mechanical fuel treatment and prescribed fire to abate fire in the remainder of the selected protected activity</p>

Current Forest Plan Direction	Proposed New Standard or Guideline Language for FWPP
	center outside the 100-acre nest core area.
<p>Treat fuel accumulations to abate fire risk. Pre and post treatment monitoring should be conducted in all protected activity centers treated for fire risk abatement. (See monitoring guidelines) (Coconino National Forest Plan, page 65-2).</p>	<p>Monitoring of owl populations and habitat within the Flagstaff Watershed Protection Project boundary will follow the monitoring protocol developed and finalized through that project’s consultation with the US Fish and Wildlife Service.</p>
<p>Mixed Conifer and Pine-oak Forests (See glossary definition): Manage to ensure a sustained level of owl nest/roost habitat well distributed across the landscape. Create replacement owl nest/roost habitat where appropriate while providing a diversity of stand conditions across the landscape to ensure habitat for a diversity of prey species. The following table displays the minimum percentage of restricted area which should be managed to have nest/roost characteristics. The minimum mixed conifer restricted area includes 10% at 170 basal area and an additional amount of area at 150 basal area. The additional area of 150 basal area is +10% in BR-E and +15% in all other recovery units. The variables are for stand averages and are minimum threshold values and must be met simultaneously. In project design, no stands simultaneously meeting or exceeding the minimum threshold values should be reduced below the threshold values unless a district-wide or larger landscape analysis of restricted areas shows that there is a surplus of restricted area acres simultaneously meeting the threshold values. Management should be designed to create minimum threshold conditions on project areas where there is a deficit of stands simultaneously meeting minimum threshold conditions unless the district-wide or larger landscape analysis shows there is a surplus. This table has been modified to contain only information pertinent to the Coconino NF. (Coconino NF Forest Plan, pp.65-3 to 65-5).</p>	<p>Mixed Conifer and Pine-oak Forests (See glossary definition): Manage to ensure a sustained level of owl nest/roost habitat well distributed across the landscape. Create replacement owl nest/roost habitat where appropriate while providing a diversity of stand conditions across the landscape to ensure habitat for a diversity of prey species.</p> <p>Recovery nest/roost replacement habitat in the Flagstaff Watershed Protection Project will be treated to meet or exceed the minimum habitat desired conditions for MSO recovery nest roost replacement habitat under table C3 in the 2012 revised MSO Recovery Plan. The parameter values are based on stand averages among plots sampled within forest stands. Values in Table C3 are minimums, not targets, with the goal to meet them all simultaneously. . In project design, no stands simultaneously meeting or exceeding the minimum recovery nest roost replacement habitat values should be reduced below these values unless a district-wide or larger landscape analysis of recovery habitat shows that there is a surplus of acres simultaneously meeting these values. Management should be designed to create desired conditions on project areas where there is a deficit of stands simultaneously meeting these desired conditions unless the district-wide or larger landscape analysis shows there is a surplus of recovery habitat acres simultaneously meeting these desired conditions. Management should be designed to create minimum desired conditions on project areas where there is a deficit of stands simultaneously meeting minimum desired conditions unless the district-wide or larger landscape analysis shows there is a surplus. This table has been modified to contain only</p>

Current Forest Plan Direction	Proposed New Standard or Guideline Language for FWPP
	information pertinent to the Coconino NF. (Coconino NF Forest Plan, pp.65-3 to 65-5).

Current Coconino NF Forest Plan Direction Proposed New Standard or Guideline Amendment 2

Amendment 2 Description

Amendment 2 will remove language restricting mechanical equipment to slopes less than 40 percent and language identifying slopes above 40 percent as inoperable. This amendment will allow mechanical harvesting on slopes greater than 40 percent within the project area.

Need for Plan Amendment

It will be necessary to allow for use of specialized mechanical equipment to cut and remove trees on steep slopes to reduce the potential for high-severity wildfire in this project area due to the preponderance of areas with greater than 40 percent slope in the project area. Furthermore, since the Forest Plan was written and amended, mechanized ground-based equipment has progressed to be able to operate on steep slopes more effectively. While this specialized equipment is not commonplace in this region due to the high cost of its use, the approval of the City bond makes the use of such equipment a possibility for this project. In order to be able to utilize such equipment to treat slopes above 40 percent in the project area and meet the purpose and need, this Forest Plan amendment is needed.

Edited or added/new text is **bolded** in Table 15.

Table 15: Amendment 2: Current and Proposed Steep Slope Forest Plan Language

Current Forest Plan Direction	Proposed New Standard or Guideline Language for FWPP
Inoperable Lands: Timber lands, usually greater than 40 percent slope, not meeting the Forest cable logging criteria. See Operable Lands for criteria definition (p. 252).	Inoperable Lands: Timber lands, usually greater than 40 percent slope, not meeting the Forest cable logging criteria and outside of the Flagstaff Watershed Protection Project boundary . See Operable Lands for criteria definition.
Operable Lands: Timbered lands, usually 40 percent slope and greater, meeting the forest cable logging criteria. The cable logging criteria are: cut per acre must be 3 MMBF ¹² or greater; maximum yarding distance not to exceed 1,300 feet (slope distance); volume from contiguous cable logging area must be at least 1 MMBF; sale area must also contain a minimum of 1 MMBF of conventional logging volume, or no less than a 50-50 mix; multi-span yarding is not required, and cable yarding areas must be 300 to 400 acres in size to meet	Operable Lands: Timbered lands, usually 40 percent slope and greater, meeting the forest cable logging criteria or within the Flagstaff Watershed Protection Project boundary . The cable logging criteria for areas outside of the Flagstaff Watershed Protection Project are: cut per acre must be 3 MMBF or greater; maximum yarding distance not to exceed 1,300 feet (slope distance); volume from contiguous cable logging area must be at least 1 MMBF; sale area must also contain a minimum of 1 MMBF of conventional logging volume, or no

¹² MMBF (million board feet): A symbol to indicate one million board feet of wood fiber volume either in log form or after conversion to lumber (Forest Plan, p. 256)

Current Forest Plan Direction	Proposed New Standard or Guideline Language for FWPP
<p>the cut per acre and 1 MMBF requirement (p. 258).</p>	<p>less than a 50-50 mix; multi-span yarding is not required, and cable yarding areas must be 300 to 400 acres in size to meet the cut per acre and 1 MMBF requirement. Within the Flagstaff Watershed Protection Project area, harvesting activities are not confined by the cable logging criteria above, but rather are defined by that project’s NEPA analysis and decision.</p>

Appendix B: Design Features

Design features are required measures or procedures designed to avoid, minimize, and/or mitigate potential adverse impacts from proposed activities. The design features in Table 16 and Table 17 below will be incorporated into project implementation.

Table 16: Design Features Specific to Helicopter and Cable Logging Areas

Specialist Area	Related Resource	Design Feature
Soils/Watershed	Timber Operations	Skid trails and cable yarding corridors will be restored after use by a combination of any or all of the following practices in order to prevent the concentration of runoff in skid trails and to protect exposed soil: reshaping the surface to promote dispersed drainage (i.e., create convex vs. concave cross-section), installation of drainage features such as water bars to shed water, and spreading slash across skid trails and cable yarding corridors to protect areas where mineral soil is exposed. Where skid trails and or cable yarding corridors intersect existing roads or trails, native materials such as logs, slash, and/or boulders will be placed along skid trail or cable corridor to line-of-sight or first 300', whichever is greater.
	Mexican Spotted Owl	<ul style="list-style-type: none"> No cable logging will occur within MSO PACs. No helicopter logging will occur within MSO nest/cores. An implementation guide will be developed in coordination with FWS to minimize the impacts of helicopter operations (i.e. helilanding locations, flight patterns) on nesting MSO and other bird species (peregrines, eagles, northern goshawks, etc.).
Wildlife	Northern Goshawk	Helicopter paths will be reviewed to exclude flights over occupied nest locations during the northern goshawk breeding season.
	Red Squirrels	<ul style="list-style-type: none"> Retain all trees within a 26-foot radius from cache (1/20th acre). Within cable and helicopter units, snags may be felled within the 26-foot radius for safety reasons. Caches will still be protected and live trees will be retained except where cable corridors overlap with that buffer. Additional caches will be protected outside of cable logging units to compensate. Leave snag patch placement will be

Specialist Area	Related Resource	Design Feature
	Snags	<p>coordinated with existing red squirrel caches.</p> <ul style="list-style-type: none"> • In areas where large snags are cut for safety purposes, fallen trees will be left on site as needed for wildlife habitat while still lowering overall fuel loadings to meet desired conditions. • Biologists will identify patches of snags up to 10 acres in size in advance of treatment unit layout in cable and helicopter logging areas. This will allow for the protection of patches of snags at the ecosystem management area level that could serve as a reserve area for areas/acres where we are unable to maintain snags during operations. Patch locations will be identified with consideration for red squirrel caches (see Red Squirrel Design Features above). • Where helicopter logging is used, consider using patch cuts in order to break up fuels. This will allow for the maintenance of snags outside the patches, but will allow for greater removal of trees (live and dead) and operational safety within the patches. • Use logging systems when feasible in sensitive habitats that can meet project objectives and maintain important structural components (e.g., snags, etc.).

Table 17: General Project Design Features

Specialist Area	Related Resource	Design Feature
Silviculture	Old Trees	<p>Emphasize retaining old, pre-settlement trees where possible, particularly within MSO recovery nest/roost habitat. Old trees, as defined by Thomson (1940) for ponderosa pine, and mixed conifer species with fire scars will not be targeted for cutting. However, exceptions may be necessary. An example of this will be removing an old tree to address human health and safety concerns and OSHA regulations where treatments are occurring if these trees are considered to be dangerous. Another instance will be to cut an old tree in order to accommodate the turning radius of a logging truck, rather than relocating an entire road, or if they are located within a cable yarding corridor</p>

Specialist Area	Related Resource	Design Feature
		or temporary road location.
	Large Trees	Post-settlement ponderosa pine trees > 16 inches dbh will be prioritized for protection, but may be removed to restore forest health and to emulate natural vegetation patterns based on current stand conditions, pre-settlement evidences, desired future conditions, or other restoration objectives. Instances where this will occur include: in conifer-encroached aspen stands, encroached grasslands, in heavily stocked stands of large, young trees when the presence of such trees will prevent the re-establishment of sufficient stand openings, when necessary to develop or maintain uneven-aged forest conditions (where desired), and if they are located within a cable yarding corridor or temporary road location.
	Mixed Conifer	Treatments within both dry and wet mixed conifer vegetation types will be site-specific in nature and vary according to the diversity of tree species compositions and locations.
	Juniper & Gambel Oak	<ul style="list-style-type: none"> • Gambel oak will only be cut as necessary to facilitate logging operations (skid trail and landings). • Large mature juniper (“alligator juniper”) and pinyon species will not be cut as part of treatments. Young and mid-aged juniper and pinyon may be cut to reduce fire hazard to surrounding larger trees. • Placement of roads, skid trails and landings will avoid cutting or damaging large alligator junipers and gambel oak where possible.
	Forest Health	Log decks will not be left at the landings or in the treatment areas for such a period that will contribute to an increase in bark beetle populations; typically no longer than 4 weeks if bark beetles are present. Logs and log decks could be left for longer than 4 weeks if no bark beetle activity is detected. Entomologists from the Forest Health Group will be consulted as needed.
Operations	Operational Safety	Danger trees that are present within two tree-lengths of areas where contractors are not enclosed within a Falling Object Protective Structure (FOPS) cab may be removed or felled.

Specialist Area	Related Resource	Design Feature
		These areas include cutting units that require manual falling, cable or helicopter logging units and landings. A danger tree is any tree that presents a hazard to employees due to conditions such as deterioration or damage to the root system, trunk, stem or limbs
	Coordination	Use of haul routes designated either within or adjacent to utility corridors will be coordinated with El Paso Natural Gas Company and/or other appropriate utility companies.
Fire/Fuels	Slash Mats	In areas where slash mats are used to protect soils during harvesting activities, Forest Service fire/fuels personnel will work with the appropriate contract authority to determine if material should be piled and burned post-implementation where slash exceeds 4 inches in depth.
	Fuelwood Gathering	Areas of project-generated slash suitable for fuelwood gathering (outside of MSO PACs, recovery habitat and northern goshawk PFAs) could be identified for public use. Those areas will be identified on the Forest website and on the map accompanying each fuelwood gathering permit.
	Slash Treatment	<ul style="list-style-type: none"> • Limit machine piling of slash within 300 feet of private property boundaries. • Limit hand piling within 50 feet of private property boundaries. • If a market for biomass exists during the time of implementation, biomass removal methods may be utilized in place of pile burning in areas identified for potential ground based harvesting, particularly in areas adjacent to residential property.
Heritage	Site Protection	<ul style="list-style-type: none"> • All fire intolerant sites will be marked for avoidance from prescribed burning and all National Register of Historic Places (NRHP) eligible or unevaluated sites will be protected from ground disturbing activities. • No mechanized thinning will occur within NRHP eligible sites; however hand thinning could occur. These efforts will be coordinated by the District Archaeologist.
	Survey	Temporary roads will be surveyed prior to their construction per the sampling plan submitted and approved by the State Historic Preservation Office (SHPO).

Specialist Area	Related Resource	Design Feature
<p style="text-align: center;">Wildlife</p>	<p style="text-align: center;">Mexican Spotted Owl</p>	<ul style="list-style-type: none"> • MSO surveys will be coordinated with the Fish and Wildlife Service the year of implementation or one year prior to determine occupancy of owls. Surveys include the project area plus ½ mile beyond the perimeter of the project boundary. • The FWPP project boundary lies within the project boundary for 4FRI as well as other forest thinning and burning projects. Flagstaff Ranger District staff will ensure that all proposed treatments are coordinated to ensure that there are not multiple entries into sensitive habitats (such as MSO PACs) that are split between different project boundaries. In doing so, habitat and noise disturbance to these areas will be minimized. • The Forest Service will monitor effects to MSO from the proposed action and report their findings to the FWS. Implementation monitoring will include information such as when or if the project was implemented, whether the project was implemented as analyzed in the site specific BO (including conservation measures, and best management practices), breeding season(s) over which the project occurred, relevant MSO survey information, and any other pertinent information about the project’s effects on the species. Treatment activities within PACs will be assessed through implementation of the monitoring plan designed with FWS. • Treatments will be designed so that thinning activities within each PAC will be completed in one to two breeding seasons. Treatments within MSO PACs may occur during the breeding season for no more than two years; if implementation is not completed at the end of two years, timing restrictions will apply (March 1 – August 31). The Thicket northern goshawk PFA on Mormon Mountain will be treated in conjunction with the PACs it overlaps with the same parameters. • Activities will not occur within MSO occupied nest cores during the breeding

Specialist Area	Related Resource	Design Feature
		<p>season (March 1 – August 31).</p> <ul style="list-style-type: none"> • Initial entry burning and pile burning will primarily occur in PACs during the fall/winter to minimize impacts from smoke on MSO. Maintenance burning within PACs but outside of nest cores could occur during the breeding season. • Prescribed fire will be allowed to enter cores only if it is expected to burn with low fire severity and intensity. Firelines, check-lines, backfiring, and similar fire management tactics will be used to reduce fire effects and to maintain key habitat elements (e.g. hardwoods, large downed logs, snags, and large trees). • In MSO recovery habitat, manage for large oaks by removing conifers up to 18 inches dbh that do not meet the “old tree” definition within 30 feet of oak 10 inches drc or larger • Coordinate burning spatially and temporally to limit smoke effects on nesting owls (March 1 to August 31). • The Forest Service, in coordination with the FWS, shall develop contingency plans in the event of new PACs being established or PAC boundary modifications due to owl movement or habitat changes. Flexibility shall be built into the project (including task orders) so that as owls move or new sites are located, project activities can be modified to accommodate these situations. Minor modifications will be coordinated with FWS. • The Forest Service shall ensure that all contractors associated with thinning and burning activities, transportation of equipment and forest products, research, or restoration activities are briefed on the Mexican spotted owl, know to report sightings and to whom, avoid harassment of the owl, and are informed as to who to contact and what to do if a Mexican spotted owl is incidentally injured, killed, or found injured or dead on the Coconino NF. If an owl fatality is discovered, the FWS Mexican spotted owl lead will be contacted as soon

Specialist Area	Related Resource	Design Feature
Wildlife		<p>as possible.</p> <ul style="list-style-type: none"> The Forest Service shall meet annually with the FWS to discuss the upcoming year’s thinning and burning plans in Mexican spotted owl habitat and review the past year’s thinning and burning activities in owl habitats.
	Northern Goshawk	<ul style="list-style-type: none"> Thinning treatments within PFAs may occur during the northern goshawk breeding season for no more than two years; if implementation is not completed at the end of two years, timing restrictions will apply (March 1 – September 30). The Thicket northern goshawk PFA on Mormon Mountain will be treated in conjunction with the PACs it overlaps with the same parameters as those PACs. Prescribed burn plans in northern goshawk PFAs will be designed and implemented to minimize smoke effects on nesting birds and minimize loss of nest trees.
	Other Wildlife	<ul style="list-style-type: none"> No thinning activities will occur within one-quarter mile of the Devil’s Head peregrine eyrie if occupied during the breeding season (March 1 – August 15). If any of the three bald eagle nests near Mormon Mountain are occupied during the eagle breeding season (March 1- August 1), prescribed burning will only be permitted in the Mormon Mountain project area when ventilation is favorable and in coordination with the wildlife biologist and FWS. Typically nesting status can be confirmed by May. Burn plans within 1/2 mile of golden eagle nest and peregrine falcon eyries will be coordinated with the district wildlife biologist to insure nesting falcons and golden eagles will not be adversely impacted from smoke. Hiding cover will be maintained near dependable waters by not targeting drainages for openings, and through implementation of watershed BMPs. Tanks within ¼ mile of known northern leopard frog sites will be surveyed prior to implementation. If northern leopard frogs

Specialist Area	Related Resource	Design Feature
		<p>are detected, a buffer for no treatments (no thinning, no direct ignition) will be identified to protect occupied tanks.</p> <ul style="list-style-type: none"> • Aquatic Management Zones (AMZs) will be established around designated streamcourses and will provide protection for northern leopard frogs by limiting the type of disturbance which could occur within the AMZ. • Primary red squirrel caches will generally be protected at a density of one cache per two acres where current cache numbers allow.
	Snags	<ul style="list-style-type: none"> • Use logging systems when feasible in sensitive habitats that can meet project objectives and maintain important structural components (e.g., snags, etc.). • Protect snags and logs wherever possible through site prep, implementation planning, and ignition techniques to retain within the project area an average of approximately ≥ 2 snags per acre ≥ 18 inches dbh and ≥ 30 ft in height and ≥ 3 logs with ≥ 12 inches mid-point diameter and ≥ 8 ft in length in ponderosa pine and ≥ 3 snags per acre ≥ 18 inches dbh and ≥ 30 ft in height and ≥ 5 logs with ≥ 12 inches mid-point diameter and ≥ 8 ft in length in mixed conifer and spruce-fir • Within the project area, retain an average of approximately ≥ 2 trees per acre ≥ 18 inches dbh with dead tops, cavities, and lightning strikes wherever possible to provide for replacement snags and cavity nesting/foraging habitat • Emphasize retention of snags exhibiting loose bark to provide habitat for roosting bats. • Create snags in key areas (i.e. PACs, recovery nest roost habitat) where monitoring determines a deficit. Trees will be chosen on a case-by-case basis in order to ensure successful recruitment as snags. Created snags, or a subset of, will be monitored over time to determine if the action was successful (i.e. trees decayed but remained standing, etc.).
Wildlife (cont)	Caves, Karst and	Treatment buffers will be designated around

Specialist Area	Related Resource	Design Feature
	Sink Holes	cave entrances, sink hole rims, and drainages leading to these features to protect cave ecosystems (including microclimate, hydrology, and entrance vegetation) and reduce potential disturbance to roosting bats. No direct ignition of fire within buffer.
Botany	Noxious/Invasive Weeds	<p>Best Management Practices as outlined in Appendix B of the “Final Environmental Impact Statement for Integrated Treatment of Noxious or Invasive Weeds” (USDA Forest Service 2005) will be followed to incorporate weed prevention and control into the project. The following features will be incorporated into project implementation and monitoring:</p> <ul style="list-style-type: none"> • Prevent the spread of potential and existing noxious or invasive weeds by vehicles used in management activities by incorporating weed prevention and control into project layout, design, and implementation. • Prior to ground-disturbing activities, survey for and prioritize and implement treatments of noxious or invasive weeds in project operating areas including landings , permanent and temporary roads and roads to be closed or decommissioned. • Avoid existing noxious or invasive weeds during soil disturbing activities when possible. • Clean all off road vehicles, machinery and tools of seeds, soil, vegetative matter, and other debris that could contain or hold seeds prior to entering the project area, when moving from one potentially-infested area to another area, and when leaving the project if the area the equipment was previously operating in has identified noxious weeds, or it is unknown if the area has weeds (e.g. private or other ownership, or areas we have not surveyed). • Fully incorporate the equipment cleaning provisions of the timber sale and/or stewardships contracts into the implementation contract(s) to prevent the introduction or spread of noxious or invasive weeds. • When in areas where known noxious weeds exist, designate turnaround sites for log

Specialist Area	Related Resource	Design Feature
		<p>trucks and other large equipment that are weed free.</p> <ul style="list-style-type: none"> • Manage prescribed fires to promote native species, aid in control of existing weed infestations and prevent spread of existing weeds through coordination with the District Weeds Coordinator. • Place slash piles on previously used locations such as old piling sites, old log deck sites, or other disturbed sites to avoid severe disturbance to additional locations where possible. • Monitor slash pile sites after burning and if found, control noxious or invasive weeds. • Avoid acquiring water for dust abatement from weed-infested areas. • Minimize period from end of project activities to site preparation, revegetation, and contract closure.
	<p>Sensitive Plants</p>	<ul style="list-style-type: none"> • Determine potential occurrences and habitat of Region 3 sensitive plants in potential activity areas when planning for implementation. Identify potential species and survey the area to be treated before implementation. • Mitigate loss of individuals and groups of Rusby milkvetch during management activities by avoiding known population locations. • Construct slash piles at least 10-20 feet away from known populations of Rusby milkvetch where possible. • Avoid constructing mechanical slash piles within known populations of Rusby milkvetch. • Minimize temporary road construction or reconstruction within known populations of Rusby milkvetch. • Minimize construction, reconstruction or log landings within known populations of Rusby milkvetch • Leave tree groups may include Rusby milkvetch populations where practical, using areas not occupied by the plants as openings. • Manage prescribed burns at low to moderate

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		<p>intensity to promote native species and to hinder weed species germination.</p> <ul style="list-style-type: none"> • Monitor the effects of treatment on Region 3 sensitive plants after treatments are completed in areas with known populations.
Soil/Watershed	General	<ul style="list-style-type: none"> • In order to avoid negative effects on soils and water resources, best management practices (BMPs) will be implemented for prescribed fire and mechanical vegetation treatment measures. These resource protection measures are derived mainly from the Soil and Watershed Conservation Practices Handbook (USDA, 1990) and the National Best Management Practices for Water Quality Management on National Forest System Lands, Volume 1: National Core BMP Technical Guide (USDA, 2012). Resource protection measures are implemented to protect soils and minimize nonpoint source pollution as outlined in the intergovernmental agreement between the Arizona Department of Environmental Quality and the Southwest Region (Region 3) of the Forest Service (ADEQ, 2008). BMPs will be incorporated in prescribed fire burn plans and timber harvesting or stewardship contracts.
	Prescribed Fire	<ul style="list-style-type: none"> • Incorporate prescription elements into the prescribed fire plan including such factors as weather, slope, aspect, soils, fuel type and amount, and fuel moisture in order to minimize high soil burn severity. • Consider the spatial distribution and contiguous size of the planned burn area in a watershed during prescription development to reduce the effects of peak flow change on channels.
	Timber Harvesting	<p>At a minimum, all perennial water bodies, wetlands, and areas with riparian ecosystems will be designated as Aquatic Management Zones (AMZs), also called filter strips in the 1987 Coconino National Forest Plan. Those stream channels that support seasonal flow in response to snowmelt and/or seasonal fluctuations in the water table will also be evaluated for potential designation as AMZs. AMZ widths will be adjusted based on the</p>

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		<p>steepness of upgradient hillslopes with the following general guidelines:</p> <ul style="list-style-type: none"> • AMZ width is the distance measured perpendicularly from the outer edges of the streamcourse (i.e., channel bank) or wetland. For stream courses or wetlands with upgradient hillslopes of 35 percent or less, the AMZ width will be 50'. For those with upgradient hillslopes greater than 35 percent, AMZ width will be 100'. As an example, the total width of an AMZ for a streamcourse with an upgradient hillslope exceeding 35 percent will be 200' plus the width of the streamcourse. <p>Equipment/vehicle staging areas, and fuel used for ignition devices will be located outside of AMZs. Ignition of fuels will not be initiated within AMZs. Hand piling and burning of slash within AMZs will be avoided to the extent practicable.</p> <p>Containment lines will be sited and constructed in a manner that minimizes erosion and prevents runoff from directly entering water bodies by consideration of placement relative to the water body(ies) and lay-of-the-land and through construction and maintenance of suitable drainage features such as water bars. To the extent possible, wetlands and riparian areas will be avoided. Where applicable, natural fire breaks such as outcrops will be used in lieu of ground-disturbing containment lines. In general, spacing of water bars will be such that water bars are located at eye level when viewed starting at the bottom of a slope and traversing upward.</p> <p>Staging areas will be kept as small as possible while allowing for safe and efficient operation.</p> <p>Prior to conducting harvesting activities, all AMZs, staging areas (including areas where vehicles are serviced, equipment/chemicals are stored, and/or fuel is dispensed), primary skid trails, cable yarding corridors, temporary roads, and landings will be designated on a map and visibly marked by means of flagging or other suitable measures for approval by the timber</p>

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		<p>sale administrator. Temporary fuel storage tanks will be permitted and installed in accordance with the Office of the State Fire Marshall requirements. If the total oil or oil products storage exceeds 1,320 gallons in containers of 55 gallons or greater, Purchaser shall prepare a Spill Prevention Control and Countermeasures Plan. Such plan shall meet applicable EPA requirements (40 CFR 112), including certification by a registered professional engineer.</p>
		<p>To the extent possible, skid trail design will not include long, straight downhill segments which will concentrate runoff. If it is not operational feasible to avoid a long straight downhill segment, skid trail rehabilitation measures will be applied as soon as skidding is completed on that trail. Cable yarding corridors will be located to efficiently yard materials with the least soil damage. Skidding or cable yarding up or down drainage courses will not be permissible unless, in the case of cable yarding, logs are fully suspended.</p>
		<p>Insofar as safety permits, trees will be felled to angle in the direction of skidding.</p>
		<p>Drainage of roads will be controlled by a variety of methods including but not limited to insloping of the road bed toward an interior drainage ditch with periodic cross drains, outsloping of the road bed, crowning of the road bed, and construction of rolling dips and water lead-off ditches. Drainage from landings and skid trails will be controlled to prevent concentration of runoff.</p>
		<p>Equipment will not be operated when ground conditions are such that excessive damage will result as visually monitored through such indicators as soil rutting.</p>
		<p>Machine piling of logging slash will be done in such a manner as to minimize the construction of new clearings for slash piles through use of natural openings, temporary roads, and landings.</p>
		<p>Skid trails and cable yarding corridors will be restored after use by a combination of any or all of the following practices in order to prevent the concentration of runoff in skid trails and to</p>

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		<p>protect exposed soil: reshaping the surface to promote dispersed drainage (i.e., create convex vs. concave cross-section), installation of drainage features such as water bars to shed water, and spreading slash across skid trails and cable yarding corridors to protect areas where mineral soil is exposed. Where skid trails and or cable yarding corridors intersect existing roads or trails, native materials such as logs, slash, and/or boulders will be placed along skid trail or cable corridor to line-of-sight or first 300', whichever is greater.</p> <p>Temporary roads and landings will be restored after use by a combination of any or all of the following practices in order restore original topography, protect soils, and prevent concentrated runoff: roll berms created during temporary road and/or landing construction back across the disturbed surface to restore original surface topography to the extent practicable, install drainage features such as water bars where needed to prevent runoff from concentrating, and spread slash on areas with exposed mineral soil. Where temporary roads intersect existing roads or trails, native materials such as logs, slash, and/or boulders will be placed along temporary road to line-of-sight or first 300', whichever is greater.</p> <p>Where visual observation indicates that the above methods of erosion protection are inadequate, a certified weed-free mix of native or naturalized grasses will be broadcast evenly over the inadequately protected surface at the rate of 5 pounds per acre after surface scarification.</p>
<p>Recreation</p>	<p>Public Awareness</p>	<ul style="list-style-type: none"> • Inform forest visitors about activities within the project area and make them aware of potential impacts when visiting this part of the forest. Provide information about implementation activities on the Forest website. • Issue news release(s) as appropriate when forest restoration activities are scheduled to occur and how it may affect forest visitation. • If it is necessary to close forest roads during

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		<p>harvesting operations for public safety, notices and signs will be posted at key locations adjacent to and within the project area to inform the public of these closures, in conjunction with issuing news releases as stated above. This may include major FS roads accessing the area, kiosks at trailheads, bulletin boards, electronic sign boards, etc.</p> <ul style="list-style-type: none"> Utilize dust abatement methods during haul of logs on unpaved roads near private land residences during the season when dust is likely and funding is available
	Forest Service Trails	<ul style="list-style-type: none"> Harvesting activities will avoid existing forest system trails¹³, if possible. If it is determined necessary that an existing forest system trail must be used as a temporary road or skid trail, then the trail will be restored to USFS standards post-treatment. It is acceptable to make perpendicular trail crossings. Trail crossing locations will be designated and flagged with input from the District Trails Coordinator or assigned personnel. Crossings of existing forest system trails will be restored to pre-project condition after use. Forest restoration treatments within close proximity (i.e. 100'-200') of existing forest system trails will consider “feathering” the treatment so the visual impacts are more transitional than abrupt and as to not significantly change the character or experience of the trail. Existing forest system trails originally designated for “single track” use (motorized and non-motorized) will be avoided for use as skid trails or temporary roads. Public outreach efforts (e.g. additional signage, postings at trailhead kiosks, maps on the website) will occur prior to treatment to increase public understanding of what trails are within the forest system (and thus will be protected and/or restored) and which are not.

¹³ Existing forest system trails are identified in Chapter 3 of the EIS.

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	Special-Use Events	Coordinated efforts will be made with sponsors of recreational special-use events (i.e. running or mountain biking races) to minimize the impacts on such events within the project area during implementation. Alternative locations will be identified to meet the needs of the special-use event if forest management activities conflict with preferred locations and cannot be resolved through timing.
	High-Use Weekends and Holidays	Efforts will be taken to limit forest treatment activities within the project area during high-use weekends and holidays (i.e. Memorial Day, 4 th of July, Labor Day, etc.); especially in locations where recreation based activities (i.e. trails, trailheads, etc.) occur.
	Hunting Access	Temporary closures of forest roads and/or portions of the project area during implementation will be coordinated with AZGFD during hunting seasons to reduce impacts on hunter and angler access.
	Mt. Elden Environmental Study Area	Measures will be taken to safeguard the trails and interpretive signs/markers within the Mt. Elden Environmental Study Area from forest restoration activities.
	Wilderness	<p>Improve the wilderness boundary marking where forest restoration operations are planned within close proximity (i.e. ¼ mi.) of a wilderness area.</p> <p>Forest restoration treatments within close proximity (i.e. ¼ - ½ mile) to a wilderness area will consider “feathering” the treatment so the visual impacts are more transitional than abrupt.</p>
	Edges of Individual Units	<p>Thinning forest vegetation geometric shapes (such as linear corridors from cable yarding) will be avoided when it does not interfere with implementation feasibility or safety, and high contrast will be avoided between treatment locations. Use the following techniques:</p> <ul style="list-style-type: none"> • Shape and/or feather the edges of treatment areas to avoid abrupt changes between treated and untreated areas. • Where the treatment unit is adjacent to denser forest (treated or untreated), the percent of thinning within the transition zone (150-250 feet) will be progressively reduced toward the denser edges of the unit.

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Scenery		<ul style="list-style-type: none"> • Similarly, where the treatment unit interfaces with an opening (including savannah and grassland treatments, and natural openings) the transition zone will progressively increase toward the open edges of the unit. • Soften edges by thinning adjacent to the existing unit boundaries. Treat up to the edges; do not leave a screen of trees. Favor groups of trees complying with the prescribed treatment that visually connect with the unit’s edge to avoid an abrupt and noticeable change. • Treatment boundaries should extend up and over ridgelines to avoid the “Mohawk” look. • Avoid widely spaced individual trees that are silhouetted along the skylines.
	Unit Marking	<ul style="list-style-type: none"> • Avoid using trails as boundaries especially for different prescribed treatments. • Avoid abrupt changes between treatment units. Use the techniques suggested for edges of treatment units (above). • Where possible, mark trees on the side facing away from roads, trails and developed recreation sites.
	Road, Skid Trail & Landing Construction	<ul style="list-style-type: none"> • Utilize dust abatement methods during haul of logs during the season when dust is likely and funding is available. Priorities will include residential areas, private land and adjacent to recreation sites. Coordinate with Coconino County on the application and timing of application of dust abatement on road segments that have County Maintenance responsibilities. • Utilize existing skid roads and landings to the extent possible. • Log landings, temporary roads, and skid trails should be minimized within sensitive viewsheds such as those next to developed recreation sites, private homes or communities, paved and passenger car level roads and trails. • To hasten recovery and help eliminate unauthorized motorized and non-motorized use of skid trails and temporary roads, use physical measures such as re-contouring,

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		<p>pulling slash and rocks across the line, placing cull logs perpendicular to the route, and disguising entrances.</p> <ul style="list-style-type: none"> • If areas where piles were burned are not naturally restored, it may be necessary to scratch in seed and soil from unburned areas in order to assure vegetative cover
	<p>Cull Logs, Stump Heights & Slash Treatments</p>	<ul style="list-style-type: none"> • Cull logs will not be abandoned on landings. • Use cull logs for closing temporary roads and decommissioning roads, and for closed, undesignated roads if appropriate. • Cull logs may also be suitable to use as down woody material, but must be scattered away from the landings. • Stump heights should be cut as low as possible. • Unless used for erosion control or maintenance of soil productivity, slash on log landings must be treated or removed. • In the seen area immediate foreground of sensitive places (within 300 feet of the centerline of paved or passenger car level roads or trails, or 300 feet from the boundary of a recreation site or private land/communities): <ul style="list-style-type: none"> ○ Where whole tree logging occurs, machine piling may occur to the middle/back of log landings. Prioritize slash burning in these locations within one year or as soon as possible after treatment. • Root wads and other debris in sensitive foreground areas will be removed, buried, burned, or chipped. If materials are buried, locate in previously disturbed areas where possible, such as areas for road obliteration. Beyond sensitive immediate foreground areas, it is acceptable to scatter these or use them to help decommission temporary roads or skid trails. • Place project-generated slash outside of permitted utility line and pipeline rights-of-way; do not interfere with utility corridor management.
	<p>Fire Control Lines</p>	<ul style="list-style-type: none"> • Wherever possible, construct fire lines to reduce the contrast so that they are not

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		<p>noticeable in the middle and background views.</p> <ul style="list-style-type: none"> • Generally restore control lines to a near undisturbed condition in the foregrounds (within 300 feet) of roads, trails, and developed recreation sites with high scenic integrity objectives. • To hasten recovery and help eliminate unauthorized motorized and non-motorized use of control lines, use measures such as re-contouring, pulling slash and rocks across the line, and disguising entrances to non-system roads and trails.
Range	Infrastructure	<ul style="list-style-type: none"> • Protect range infrastructure from prescribed fire (e.g. by lining fence stays). • Upon completion of implementation, cattle guards will be cleaned to pre-implementation condition.
	Implementation	<ul style="list-style-type: none"> • Coordinate implementation activities with range specialists when implementation will impact an active grazing allotment. • Vehicles passing through grazing pastures will close gates upon entering and exiting the area to ensure livestock remain in the correct pasture.