

National Park Service
U.S. Department of the Interior



Flagstaff Area National Monuments
Arizona

FIRE MANAGEMENT PLAN

FINDING OF NO SIGNIFICANT IMPACT

The National Park Service (NPS) is proposing to finalize and approve a Fire Management Plan (FMP) for Wupatki National Monument, Sunset Crater Volcano National Monument, and Walnut Canyon National Monument (collectively known as the Flagstaff Area National Monuments). The NPS Management Policies (2006) and Director's Order 18 – Wildland Fire Management – require that each park area with vegetation capable of sustaining fire develop a plan to manage fire on its lands. The Flagstaff Area National Monuments encompass a total of about 41,700 acres, and are located in Coconino County, Arizona, generally northeast to southeast of Flagstaff. Although they are relatively small, their landscapes are diverse, including Colorado Plateau shrublands and grasslands, juniper savanna and woodlands, pinyon-juniper woodlands, ponderosa pine woodlands, Douglas fir-Gamble oak forest, and riparian corridors. At the landscape scale, the monuments are small protected areas within a regional framework of lands primarily managed by the Coconino National Forest. Wildland fires are known to occur and are a natural ecological process in this landscape.

A new FMP is needed to establish fire management strategies that are appropriate and consistent with current policy. In accordance with the National Environmental Policy Act of 1969 (NEPA), the NPS prepared an Environmental Assessment/Assessment of Effect (EA/AEF) for the FMP to provide for public involvement in the planning process, and to examine alternatives and their potential impacts on the environment. Two alternatives were examined: Alternative A - No Action and Alternative B – NPS Preferred. Topics of concern that were identified during scoping and evaluated in the EA/AEF include: geology and soils, vegetation, non-native invasive plant species, wildlife, special status species (including threatened and endangered species), water resources/wetlands/riparian areas, air quality, cultural resources, Native American traditional values, health and safety, park neighbors, visitor experience, park operations, and wilderness character.

After a thorough review of fire management objectives, potential impacts of the alternatives, consideration of public comment, and after consultation with the culturally-

affiliated tribes, the Arizona State Historic Preservation Officer (SHPO), and the U.S. Fish and Wildlife Service (USFWS), Alternative B (NPS Preferred) has been selected for implementation. Alternative B is consistent with Federal policy, which prioritizes public health and safety, protecting at-risk communities and infrastructure, managing for natural historic fire regimes, protecting sensitive resources, and collaborating with other agencies and stakeholders.

This document records: 1) a Finding of No Significant Impact as required by the National Environmental Policy Act of 1969, as amended; and 2) a determination of no impairment as required by the NPS Organic Act of 1916.

PREFERRED ALTERNATIVE

Under Alternative B (NPS Preferred), a FMP would be finalized to guide wildland fire operations and fire-related vegetation/fuels management activities at the Flagstaff Area National Monuments. This alternative provides a range of fire management strategies to meet the following objectives:

- Public health and safety are the highest priorities for all fire management activities.
- Private property, public infrastructure, and NPS facilities are protected from wildland fire.
- The ecological role of fire is restored within fire-dependent vegetation.
- Manual vegetation thinning and prescribed fire treatments mimic the environmental effects of the natural historical fire regime.
- Fire management activities are fully integrated with other NPS operations at the Flagstaff Area National Monuments and with other fire organizations that provide off-site expertise and support.
- Citizens, adjacent land managers, neighbors, partners, and other stakeholders are informed and involved in fire program direction.
- The fire management program at the Flagstaff Area National Monuments is informed by the best available science and technical information.

Fire Management Strategies. The range of fire management strategies that will be implemented under Alternative B (NPS Preferred) includes: suppression of wildland fires using the Appropriate Management Response (AMR); prescribed fire; and manual thinning. Appropriate Management Responses will be employed to reduce threats from fire and fire suppression actions to park resources. All suppression activities would

provide for firefighter and public safety as the highest consideration. Suppression activities would strive to minimize the potential damage to natural and cultural resources, and would take into consideration economic expenditures, firefighting resources, and other fire priorities (local, regional, and national preparedness). Prescribed fire would be used to manage the ponderosa pine stands at Walnut Canyon and a small area of montane meadow near Sunset Crater Volcano. The fire return interval and extent of fires would be based upon both local and regional fire scar records. For all prescribed burns, motor vehicles would be restricted to existing public and administrative roads. A prescribed fire plan would be prepared for each prescribed fire project, outlining specific objectives, required weather and fuels conditions, personnel and equipment, contingencies, and resource protection guidelines. Pre-burn manual thinning treatments would be completed as needed to reduce the risk of crown fires, shape desired stand structure, and/or protect identified sensitive cultural and natural resources from being damaged or destroyed. A range of options would be used to dispose of slash from thinning, including: bucking or chipping and scattering within openings to be consumed in subsequent broadcast burns; piling and burning off-site; or piling and burning on-site at carefully selected sites. After preliminary stand structure and crown fire risk reduction objectives are achieved, prescribed fire would subsequently be used to maintain and shape stands under a fire return interval of 4 to 14 years. Fire management activities would be coordinated with the U.S. Forest Service and other local fire organizations. The NPS will periodically evaluate local fire management organizational changes, resource conditions, treatment progress and results, and other factors. The FMP may be updated so long as it remains consistent with the identified fire management strategies and remains within the scope of effects discussed in the EA/AEF and other consultations. In this way, the FMP incorporates an adaptive management approach.

Fire Management Units. Fire management units (FMUs) were identified across all three monuments, based upon fire regime condition class assessments for the dominant vegetation-fuel types, natural historical fire regimes, and proposed fire management strategies. The FMUs are described below.

FMU 1 Areas where human life and public or private property are particularly at risk. All fires are unwanted and will be actively suppressed. Manual thinning treatments will be used to protect infrastructure, areas of heavy public use, and the cultural resources within these areas.

FMU 2 Areas of vegetation that, based upon the best available fire ecology and land-use history information, are maintained by a frequent fire regime. Existing vegetation composition and structure remains similar to documented presettlement conditions, and prescribed fire can be effectively used to restore ecosystem function. Site-specific manual thinning treatments may be used to protect NPS facilities and cultural and natural resources at risk. If needed, vegetation will be manually thinned and wildland fuels will be

reduced across the remaining FMU 2 area to lower prescribed fire intensity while restoring vegetation structure similar to reference period conditions. Prescribed fires will be used to simulate natural fire disturbance and the shape vegetation over time. Wildfires will be suppressed with AMR.

FMU 3 Areas of vegetation that, based upon the best available fire ecology and land-use history information, are maintained by a frequent fire regime. However, there are a number of scientific information needs and other considerations to resolve before deciding whether or not to manage with prescribed fire. Site-specific manual thinning treatments may be used to protect cultural and natural resources at risk, facilities, and adjacent private property improvements. Appropriate management response to wildfire will include all options from full suppression to conditional monitoring. The NPS may change strategies to include prescribed burning as an adaptive management option in a future Fire Management Plan, pending the accumulation of additional information on: vegetation change during the last 150-900 years; natural fire disturbance regimes; effects of recent wildfires on vegetation and wildlife; and the risk of invasion by non-native plants. Prior to any change in management direction, additional planning, public involvement, NEPA compliance, and regulatory consultations will be completed.

FMU 4 Areas of terrain and vegetation that have one or more of the following attributes:

- Are extremely rugged terrain, and human safety could not be ensured during direct suppression or prescribed burning operations.
- Are vegetation types that are adapted to long-term, stand-replacing fire cycles (e.g., pinyon-juniper stand along northeast Walnut Canyon rim).
- Are resistant to fire (e.g., riparian areas).
- Are very sparsely vegetated and fire would not spread far (e.g., cinder barrens, sandstone/shale desert).
- Are on steep slopes or rocky bluffs where lightning strikes locally “torch out” a few trees to create snags and local stand-replacement patches (e.g., Bonito Flow, Walnut Canyon slopes).
- Have had very few or no lightning or human ignited fires over the last 140 or more years (most of the examples above), and when ignitions did occur, fires rarely exceeded 1/10 acre and would not be expected to exceed 5 acres.

Within FMU-4, site-specific manual thinning treatments may be used to protect cultural and natural resources at risk (e.g., selected archeological and historic sites, large ponderosa pine trees, raptor nests, rare plant populations, etc.), NPS facilities, and

adjacent private property improvements. Appropriate management response to wildfire will include all options from full suppression to conditional monitoring.

Zone of Cooperation Areas of shared values (public, private, cultural, and natural) inside or outside of NPS administered areas (e.g., Sunset Crater Volcano Administrative Site), where fire management objectives and tactics will be developed in cooperation with the Coconino National Forest, local government agencies, and private property owners.

MITIGATING MEASURES

Appendix B (pages 149-173) of the EA/AEF includes extensive Mitigating Measures for Alternative B (NPS Preferred) to reduce or negate impacts to public health, human safety, and sensitive resources. As stated in the impact analysis for the preferred alternative, supplemental measures to protect the Federally-listed Mexican spotted owl were established during consultation with the U.S. Fish & Wildlife Service under Section 7 of the Endangered Species Act (see Errata Sheets). These are attached at the end of this FONSI, and will be implemented along with each fire management strategy when and where applicable.

ALTERNATIVES CONSIDERED

Alternative A (No Action). The EA/AEF evaluated the No Action alternative in addition to Alternative B (NPS Preferred). Under this alternative, the NPS would essentially have no FMP for the Flagstaff Area National Monuments. Without a current FMP, all wildland fires would be actively suppressed. The NPS would be able to meet some of the identified objectives to protect health, life, and property, but would be prevented from meeting most resource management objectives. Fires in some areas would be expected to become more severe as tree densities and fuel loads continue to increase over time. Prescribed burns or manual thinning treatments might be proposed on a project-by-project basis, but each would require a separate implementation plan, NEPA compliance documentation, tribal consultation, regulatory consultation, and decision records. This alternative would ultimately reduce NPS organizational efficiency and capability, and values at risk would not be protected from wildland fire over the long term.

Alternatives Eliminated From Further Consideration. Six alternatives identified during scoping were eliminated from further consideration under NEPA 40 CFR §1500.2e, which states that the process must “identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of actions upon the quality of the human environment.” The following alternatives were eliminated from further analysis for the accompanying reason(s):

- **NPS Preliminary Public Scoping Newsletter Alternative C: Implement a FMP that uses landscape–scale application of strategies by combining fire management with the surrounding Coconino National Forest.** This alternative was proposed during an internal NPS scoping meeting, and was described in a preliminary scoping newsletter which was mailed to the public before the EA/AEF was prepared. Under this alternative, the NPS, U.S. Forest Service, and other fire management/forest restoration partners would undertake mutual planning efforts to integrate fire management strategies within the monuments and the surrounding Coconino National Forest. This strategy is directed by the National Fire Plan, and could simultaneously restore forest health at the landscape or watershed scale, reduce fire threats to unique features and rare species habitats, and reduce wildfire threats to Flagstaff and surrounding communities. Many aspects of this alternative are incorporated into the strategies of the NPS Preferred Alternative (Alternative B), along with recent treatment plans for adjacent Coconino National Forest lands that were developed in collaboration with the Greater Flagstaff Forest Partnership (for example, the “Eastside Fuel Reduction and Forest Health Project”), and the Flagstaff Community Wildfire Protection Plan. Progress towards landscape-scale prioritization and planning is also becoming the standard model under the National Interagency Fire Management organization as part of the ongoing transition to the multi-agency “Fire Planning Unit.” At the time the EA/AEF was prepared, the NPS did not carry this alternative forth for consideration because given current local agency priorities and treatment funding levels, work within the monuments would likely be deferred for at least 10 years.
- **Wildland Fire Use.** A fire management program that includes wildland fire use for resource benefit as a management option was considered. However, the monuments are not large enough to manage for free-burning fires without substantial risk to cultural resources and/or park neighbors. Furthermore, the monuments are not staffed with personnel who possess the specialized qualifications to manage such fires.
- **No Prescribed Fire.** One alternative considered would use only suppression and manual fuels management strategies. However, without the ability to use prescribed fire to mimic natural fire disturbance within the ecosystem, many fire management, resource protection, and vegetation restoration objectives would not be attainable.
- **No Manual Thinning.** Another alternative considered would use suppression and prescribed fire strategies only. However, under this alternative, manual fuels treatment methods would not be available to create defensible spaces and reduce the risk of fire damage to values at risk. This alternative would not meet fire management and resource protection objectives.
- **Mechanical Thinning Using Motor Vehicles Off Existing Roads.** This alternative would allow the use of motor vehicles off existing public and NPS administrative roads

for vegetation/fuels thinning and slash removal operations. Vegetation restoration and fire restoration work might have progressed more rapidly and cost-effectively; however, this alternative would not meet resource protection objectives given the density of archeological sites at Wupatki National Monument and Walnut Canyon National Monument, and the fragile volcanic terrain at Sunset Crater Volcano National Monument.

- **No Management.** This alternative would allow all wildland fires to burn unimpeded by any management action. This alternative was dismissed because it defies Federal fire management policy, is too risky, and would not meet resource protection objectives.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

As stated in Section 2.7.D of *Director's Order #12 and Handbook* (USDI, NPS, 2001a), the environmentally preferred alternative is the alternative that will promote the national environmental policy according to the stated criteria under NEPA Section 101 (b), including:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
- Ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.
- Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.
- Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.
- Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities.
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Simply put, "this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources" (Question 6a in Council on Environmental Quality 1981). Under NPS policy, the "no action alternative" can also be considered in identifying the environmentally preferred alternative.

Alternative A (No Action) represents the current fire management practices at the Flagstaff Area National Monuments. Firefighters would be exposed to somewhat elevated safety risks and suppression costs would be higher, since this alternative does not allow for the use of confinement strategies in suppression operations. This alternative would contribute to the continued build-up of fuels and the potential for larger, hotter wildfires; damage to irreplaceable archeological resources and historic sites; severe disruption of natural ecosystem recovery and function; and spread of non-native species. There would be an increased risk of unwanted wildland fire escaping the Flagstaff Area National Monuments onto surrounding lands. This alternative would not provide the same level of protection of natural and cultural resources and the public over the long-term as would occur under the preferred alternative. Consequently, Alternative A does not satisfy provisions 2, 3, and 4 of NEPA Section 101.

Alternative B (NPS Preferred) provides greater flexibility in responding to wildland fires and provides more opportunities for the effective management of hazardous fuels. It offers the lowest risk to firefighters by using an Appropriate Management Response (i.e., a wider range of suppression strategies) for wildland fires. Vegetation and fuels buildup can be effectively managed under Alternative B using prescribed fire and manual thinning. This fuel reduction program would ultimately promote visitor/employee safety and protect natural and cultural resources. Prescribed fire treatments would contribute to long-term stability and diversity in fire-dependent vegetation communities. The human environment, along with the unique cultural and fragile geologic resources within the monuments would receive more protection with minimum disturbance. Over time, the costs of fire suppression would be reduced as historic fuels build-up is managed to more natural levels. Wildfires could be more effectively managed before reaching the monument boundaries. Alternative B, the NPS Preferred Alternative, would satisfy each of the provisions of NEPA Section 101, and is also the environmentally preferred alternative.

WHY THE PREFERRED ALTERNATIVE WILL NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT

As defined in 40 CFR §1508.27, significance is determined by examining the following criteria:

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

The EA/AEF analyzed potential impacts of Alternative B (NPS Preferred) on all topics identified during internal and public scoping. There were no major impacts, either beneficial or adverse. There would be minor to moderate long-term beneficial impacts for most impact topics as fuels reduction objectives are met. Most adverse impacts would be

negligible to minor and short term, while a few adverse impacts would be negligible to moderate and long-term. The impacts from suppressing wildfires have the greatest potential for long-term adverse impacts to resources, with those to archeological resources and the Mexican spotted owl, listed as threatened under the Endangered Species Act, being of greatest concern. Extensive mitigation has been developed to negate or reduce impacts from fire management activities to the greatest feasible extent without compromising public and firefighter health and safety. Based on the analysis, there would be no significant impacts which require analysis in an environmental impact statement.

Degree of effect on public health or safety.

Although protecting public health and safety is the primary NPS fire management objective under Alternative B, actions to suppress wildland fires and implement prescribed fires pose inherent risks to the general public, primarily from the short term exposure to smoke. Wupatki and Sunset Crater Volcano National Monuments are relatively remote, with areas that are sparsely vegetated, where impacts of fire management activities on public health and/or safety are likely to be relatively low. The proposed strategies to manage vegetation and fuels to create fire defensible spaces adjacent to private property, around visitor use areas, and around park facilities is intended to decrease fire intensity, smoke generation, and other risks to public health and safety. Over the long term, restoring a frequent, low-severity fire regime around Walnut Canyon would reduce the intensity of wildfires, lower smoke levels, and have a beneficial effect on the health and safety of park employees, visitors, park neighbors, and firefighters.

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

Prime farmlands, wild and scenic rivers, or ecologically critical areas do not occur within the monuments and therefore these would not be affected. Wupatki National Monument and Walnut Canyon National Monument were established to protect unique archeological resources, while Sunset Crater Volcano National Monument was established to protect unique geologic resources. Based upon scientific studies, fire has long played a natural role in these landscapes, and is an integral natural process that shapes their vegetation, scenic character, and prehistoric setting. As a result of the NHPA Section 106 consultation process between the NPS and the Arizona State Historic Preservation Officer (SHPO), the guidelines for archeological site hazardous fuels reduction treatments (pages 168-170 in the EA/AEF) were incorporated into a Programmatic Agreement (PA), and will be incorporated into the FMP to reduce or eliminate impacts to archeological resources. Fire management activities would be excluded from wetlands and floodplains, except for possible wildfire suppression actions

under unlikely circumstances. The implementation of Alternative B would cause no major impacts on historic or cultural resources, parklands, or wetlands/floodplains.

Degree to which effects on the quality of the human environment are likely to be highly controversial.

Alternative B (NPS Preferred) is consistent with accepted fire management strategies that are currently employed at other nearby national parks, monuments, and adjacent Federal lands. Based upon public and agency involvement in the planning process and comments received during preliminary scoping and on the EA/AEF, Alternative B (NPS Preferred) is not highly controversial, nor is it expected to have future controversial effects on the quality of the human environment.

Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks.

Wildland fires pose some degree of inherent uncertainty and unique risks to the human environment because they may be difficult to extinguish, contain, or confine under worst case weather, fuel moisture, and fire behavior scenarios. However, the impacts of these events were assessed based upon comparable scenarios, and no major, short or long term impacts were identified. Prescribed fires pose some risk of escape and threat to resources, property, and infrastructure, but under Alternative B this risk is considerably more manageable given the wide range of organizational procedures for preventing an escape and identifying contingencies to manage an escaped prescribed fire. No additional unique or unknown risks to the human environment were identified during the public involvement process.

Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

The proposed fire management strategies and activities under Alternative B (NPS Preferred) are widely accepted under Federal fire management and NPS policies. The strategies are utilized within the region to manage vegetation-fuel types with associated cultural resources that are similar to those occurring within the Flagstaff Area National Monuments. Implementing the preferred alternative will not establish precedent for future NPS actions with significant effects or represent a decision in principle about a future consideration.

Whether the action is related to other actions with individually insignificant, but cumulatively significant impacts.

The EA/AEF analyzed the potential cumulative impacts of Alternative B (NPS Preferred), which are associated with unmanageable visitor activities, NPS facility development, rapid regional growth and development, natural agents of cultural

resource deterioration, and fire management activities on surrounding public lands. There were no major cumulative impacts, either beneficial or adverse. Most adverse cumulative impacts range from negligible to minor over both the short and long term, with the potential for moderate adverse cumulative impacts for invasive plant species, special status species, and water/wetland/riparian resources. Based on the analysis, no individually insignificant but cumulatively significant impacts would occur under Alternative B.

Degree to which the action may adversely affect districts, sites, highways, structures, or objects listed on the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

After applying the Advisory Council on Historic Preservation's criteria of adverse effects, the NPS concluded that the proposed action/preferred alternative would result in negligible to minor, adverse impacts to cultural resources in the park, with some minor to moderate, long-term beneficial impacts from eliminating the threat of extensive, high-intensity fires and reducing damaging fuels. On September 28, 2005 the Arizona State Historic Preservation Officer (SHPO) submitted comments that indicated a Programmatic Agreement (PA) was the most appropriate way for the NPS to meet its responsibilities to Section 106 of the NHPA and to address the anticipated impacts to cultural resources. According to the SHPO the undertakings proposed in the EA/ESF "...appears to meet three of the suggested criteria for using a PA (36 CFR 800(b)(1)): 1) when effects on historic properties are similar and repetitive; 2) when effect to historic properties cannot be fully determined prior to approval of the undertaking; and 3) where routine management activities are undertaken..." As a consequence, the NPS developed a PA with the SHPO that identifies detailed mitigation measures that will be implemented during execution of the fire management plan. The PA was developed in consultation with three cultural affiliated American Indian Tribes and the Advisory Council on Historic Preservation. The PA was finalized and signed by both participating parties on April 10, 2008. Expanded and refined mitigating measures (see the attached Errata Sheets) will be incorporated into the FMP to reduce or eliminate impacts to the monuments' cultural resources. Implementation of the proposed action/preferred alternative would have no major adverse impacts and would not result in the loss or destruction of significant cultural or historical resources within the monuments.

Degree to which the action may adversely affect an endangered or threatened species or its critical habitat.

A primary objective of Alternative B (NPS Preferred) is to restore the ecological role of fire to fire-dependent vegetation. This would reduce vegetation and fuels build-up in proximity to known sensitive plant and wildlife habitat, and better protect sensitive species

populations at the landscape level from intense, stand-replacing wildfires. Based upon scientific studies, this will also provide for greater landscape diversity of various vegetation seral stages and improve wildlife habitats over time. In accordance with the impact analysis for special status species (pages 81-82 in EA/AEF), the NPS consulted with the USFWS under the Endangered Species Act between October 2005 and July 2007. Additional measures to negate or reduce adverse effects on protected species and their habitats are included in the Errata Sheets, and are to be incorporated into the FMP as guidelines to protect sensitive natural resources.

On October 30, 2007, the NPS submitted a Biological Evaluation for Alternative B (NPS Preferred) to the USFWS. The potential effects of the proposed fire management strategies and activities were considered for Federally-listed species which are known to occur or potentially occur within the monuments, including the black-footed ferret, bald eagle, and Mexican spotted owl. The Biological Evaluation determined that the proposed NPS action “may affect, is not likely to adversely affect” black-footed ferret and bald eagle. The NPS Biological Evaluation determined that implementing Alternative B “may affect, is likely to adversely affect” MSO and designated MSO critical habitat, and requested formal consultation with the USFWS. Although the NPS proposed action is consistent with the Recovery Plan for the Mexican spotted owl (MSO) and the MSO Final Critical Habitat Designation Rule, at least four wildland fires have occurred at Walnut Canyon National Monument over the last 10 years, and it is highly likely that wildfires and NPS suppression activities will occur in MSO breeding territories and critical habitat over the life of the FMP. In addition, some unintended disturbance to MSO and habitat is possible while completing localized fuels reduction treatments to protect archeological resources, or while implementing prescribed fires within MSO habitat at Walnut Canyon National Monument.

The USFWS concurred with the NPS determination for the black-footed ferret in a memorandum dated March 21, 2008. Because the bald eagle was recently removed from the Endangered Species list, potential effects were not considered by the USFWS under the Endangered Species Act. However, bald eagles are protected under the Eagle Protection act, and measures to minimize disturbance will be incorporated into the FMP. The USFWS issued a Biological Opinion on Alternative B in March 2008, concluding that MSO and critical habitat will likely be adversely affected in the near term, and perhaps long-term, through fire suppression impacts to protected MSO habitat and/or from suppression actions during the MSO breeding season that may result in disturbance, injury, or mortality of owls associated with four “Protected Activity Centers” (PAC’s) at Walnut Canyon National Monument. In addition, manual thinning and prescribed burning activities may result in temporary degradation of habitat (including small portions of nest buffers) due to reduction in canopy cover, the removal and/or loss of large trees, and loss of snags and coarse woody debris. An “Incidental Take Statement” was issued for two MSO (one pair) and/or associated eggs, nestlings, or juveniles associated with the four

PAC's at Walnut Canyon during full implementation of the FMP over the next ten years. The USFWS determined that the FMP incorporates sufficient reasonable and prudent measures to minimize the effects of incidental take of MSO. The potential effects on MSO and MSO Critical Habitat are restricted to four (or 0.6%) of the total 624 PAC's within the Upper Gila Mountains Recovery Unit. The opinion concludes that implementing Alternative B will not likely jeopardize the continued existence of the MSO or adversely modify its critical habitat. Given the range-wide MSO population status and the total area of occupied and available habitat, this level of potential effect does not warrant the preparation of an EIS.

Whether the action threatens a violation of Federal, state, or local environmental protection law.

This action violates no federal, state, or local environmental protection laws.

APPROPRIATE USE, UNACCEPTABLE IMPACTS, AND IMPAIRMENT

Sections 1.5 and 8.12 of the NPS *Management Policies* (2006) emphasize that not all uses are allowable or appropriate in units of the National Park System. The proposed wildland fire management strategies included in Alternative B (NPS Preferred) were screened to determine consistency with applicable laws, executive orders, regulations, and policies; consistency with existing plans for public use and resource management; actual and potential effects to park resources; total costs to the Park Service; and whether the public interest would be served. Director's Order 18 – Wildland Fire Management – requires fire management plans be prepared for each NPS area with vegetation capable of sustaining fire. The proposed suppression, manual thinning, and prescribed fire management strategies are consistent with Federal interagency fire policy, and are routinely employed across Federal lands. They comply with applicable laws, executive orders, regulations, policies. They are also consistent with programmatic planning direction and resource management objectives identified in the current *General Management Plans* for each of the monuments, the 1996 *Resource Management Plan for the Flagstaff Area National Monuments*, and the interagency *Flagstaff Community Wildfire Protection Plan*. The actual and potential impacts within the monuments would not exceed thresholds where resources and values are permanently compromised or irretrievably lost. Fire management operations for the monuments would remain cost effective, as fiscal accountability is a key aspect of Federal interagency fire policy. There would typically be some short term impacts to visitor enjoyment, but over the long term the key resource values within the monuments would be better protected from wildland fire and the public interest will be served. Because the proposed wildland fire management strategies and identified mitigating measures are expected to be successful in ensuring there are no major adverse impacts, including cumulative impacts, implementing the preferred

alternative would not result in any unacceptable impacts. Therefore, Alternative B constitutes an appropriate use.

In analyzing impairments in the NEPA analysis for this project, the NPS takes into account the fact that if impairment was likely to occur, such impacts would be considered to be major or significant under CEQ regulations. This is because the context and intensity of the impact would be sufficient to render what would normally be a minor or moderate impact to be major or significant. Taking this into consideration, NPS guidance documents note that “Not all major or significant impacts under a NEPA analysis are impairments. However, all impairments to NPS resources and values would constitute a major or significant impact under NEPA. If an impact results in impairment, the action should be modified to lessen the impact level. If the impairment cannot be avoided by modifying the proposed action, that action cannot be selected for implementation.” (see Interim Technical Guidance on Assessing Impacts and Impairment to Natural Resources” National Park Service, Natural Resource Program Center, July 2003).

In addition to reviewing the list of significance criteria, the NPS has determined that implementing Alternative B (NPS Preferred) will not constitute an impairment to the integrity of the Flagstaff Area National Monuments resources or values as described by Section 1.4 of the NPS *Management Policies* and the individual *General Management Plans* for Wupatki, Sunset Crater Volcano, and Walnut Canyon National Monuments. This conclusion is based on the NPS’s analysis of the environmental impacts of the proposed action as described in the EA/AEF. This conclusion is further based on the Superintendent’s professional judgment, as guided and informed by the public comments received and the body of scientific literature cited in pages 129-140 of the EA/AEF. The EA/AEF identified less than major adverse impacts on geology and soils, vegetation, non-native invasive plant species, wildlife, special status species (including threatened and endangered species), water resources/wetlands/riparian areas, air quality, cultural resources, Native American traditional values, health and safety, park neighbors, visitor experience, park operations, and wilderness character. Although the preferred alternative would result in some minor to moderate adverse impacts, in all cases these result from actions taken to more strategically protect, preserve, and restore park resources and values over the long term. No major cumulative impacts were identified. Overall, Alternative B will benefit the resources and values of the monuments, opportunities for their enjoyment, and would not cause impairment.

PUBLIC INVOLVEMENT

In accordance with the National Environmental Policy Act (NEPA), the NPS involved the public in identifying and developing fire management strategies for the Flagstaff Area National Monuments. From February 15 through July 30, 2003, the NPS conducted preliminary public scoping by mailing a newsletter to numerous agencies, tribal governments, organizations, and potentially affected/interested citizens. The letter outlined the fire management objectives, preliminary alternatives, and invited comments. Seventeen comments were received, which were summarized in Appendix C of the EA/AEF. In addition, the fire management strategies proposed under Alternative B (NPS Preferred) and the impact analysis in the EA/AEF are complementary to ongoing efforts by the Coconino National Forest, Greater Flagstaff Forest Partnership, Ponderosa Fire Advisory Council, and other stakeholders to improve forest health and reduce the risk of wildfire around the community of Flagstaff.

The EA/AEF was released for public comment on August 30, 2005. Letters announcing the availability of the EA/AEF for on-line review and comment (<http://parkplanning.nps.gov>) were mailed to 65 individuals and businesses; 35 citizen organizations; 11 State of Arizona offices; 28 local government offices, universities and libraries; 11 American Indian tribal offices, and 30 Federal agency offices. A media release was circulated to 10 local newspapers, radio stations, and television networks. Hardcopies of the EA/AEF were mailed to 14 individuals, organizations, Arizona and local government offices, tribal governments, and Federal agencies. By the close of the 30-day comment period, 5 letters, 1 email message, and 1 phone message had been received.

Two substantive comments were received on the EA/AEF, centering on the fire risk to the community of Flagstaff and the need to develop a Programmatic Agreement with the Arizona State Historic Preservation Officer under the National Historic Preservation Act. The comments resulted in no change to the text of the environmental assessment but are addressed in errata sheets attached to this FONSI. The FONSI and errata sheets will be sent to all commentors.

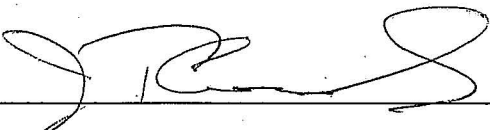
CONCLUSION

As described above, the preferred alternative does not constitute an action meeting the criteria that normally require preparation of an environmental impact statement (EIS). The preferred alternative will not have a significant effect on the human environment. Environmental impacts that could occur are limited in context and intensity, with generally adverse impacts that range from localized to widespread, short- to long-term, and negligible to moderate. There are no unmitigated adverse effects on public health, public

safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the action will not violate any federal, state, or local environmental protection law.

Based on the foregoing, it has been determined that an EIS is not required for this project and thus will not be prepared.

Approved:



Regional Director, Intermountain Region 11/18/08
Date

**MITIGATION MEASURES INCLUDED IN APPENDIX B
OF THE ENVIRONMENTAL ASSESSMENT
FIRE MANAGEMENT PLAN
FLAGSTAFF AREA NATIONAL MONUMENTS**

- 1. VEGETATION/FUELS MANAGEMENT PROJECTS**
- 2. MIMINUM IMPACT SUPPRESSION TECHNIQUES (MIST)**
- 3. MIMINUM IMPACT PRESCRIBED BURNING TACTICS (MIRxT)**
- 4. GUIDELINES FOR WORK CREWS: ARCHEOLOGICAL SITE
HAZARDOUS FUELS REDUCTION**
- 5. NATURAL RESOURCE PROTECTION GUIDELINES**
- 6. SAFETY MITIGATION**

1. Mitigating Measures: Vegetation/Fuels Management Projects

I. Worker safety.

Only fully trained and qualified Federal firefighters will be used for wildfire suppression, manual thinning, and prescribed burning operations.

All work will be conducted in accordance with the fire fighter safety standards in the “red” book and pocket guide.

II. Wildfire Suppression Operations.

See Draft FLAG FMP MIST Guideline.

Aircraft water and retardant drops will only be used in extreme wildfire suppression circumstances. Water drops are preferred over retardant.

Only native plant seed from intact populations within a 100 mile radius will be used to revegetate a wildfire site during burned area rehabilitation.

III. Effective Communication.

In the event of a wildfire, the fire incident commander will consult cultural and natural resource advisors as soon as possible regarding appropriate suppression tactics.

All FMP implementation projects will be jointly planned by an interdisciplinary team of fire operations, cultural resources, natural resources, and visitor services staff.

Each project implementation plan will include a standard marking system for delineating the project area boundary, cultural and natural features to be protected, etc.

Prior to manual treatment, cultural and natural resource specialists will clearly mark all resources to be protected.

The project planning team will brief all project work crews on the standardized marking system, resources to be protected, minimum impact tactics, and safety.

IV. Soils and Geologic Features.

All motor vehicle use to transport equipment and personnel for manual thinning and prescribed burn projects is restricted to existing public and NPS administrative roads.

Project implementation plans will designate appropriate vehicle parking location(s), staging area(s), and access route(s).

Vegetation thinning, fire line construction, and other ground disturbance from fire management activities will be entirely restricted or minimized as much as possible on the steep slopes of Walnut Canyon, the fragile volcanic cinder slopes at Sunset Crater Volcano National Monument, and the volcanic cinder dunes and other sparsely vegetated desert terrain at Wupatki National Monument.

Field work will be suspended when the ground is very wet and muddy.

Fine and small diameter slash will be thinly scattered across the ground between canopy openings, which will reduce soil movement and provide structural cover for emerging

herbaceous vegetation. Slash piles will be limited in size and burned during cold days with wet ground conditions to minimize soil scorch during burning. Other methods, such as chipping and broadcasting and/or off-site disposal, will be used when feasible to minimize the need for slash piling and burning.

Minimum impact suppression tactics and burned area rehabilitation techniques will be used to stabilize slopes and promote the recovery of native vegetation over areas disturbed by wildfire suppression and other fire management activities.

V. Cultural Resources.

The Fire Incident Commander will consult with cultural resource advisors as soon as possible during wildfire suppression operations on the distribution and protection measures for cultural resources.

Aircraft water and retardant drops will only be used in extreme wildfire suppression circumstances.

Aerial ignition will not be used for any prescribed fire or wildfire suppression operation.

Depending upon resources at risk and fire behavior conditions, the most appropriate wildfire suppression response may include more passive fire containment strategies to minimize off-road vehicle use.

Within the fire-prone landscapes of the Flagstaff Area National Monuments, vegetation and wildland fuels conditions around cultural resource sites will be cyclically assessed to ensure that archaeological and historic site protection objectives are being met.

Separate project plans will be developed and approved for each manual vegetation thinning/fuels reduction and prescribed fire project, which will identify site-specific cultural resources to be protected during project implementation.

All motor vehicle use to transport equipment and personnel for manual thinning and prescribed burn projects is restricted to existing public and NPS administrative roads.

All work in proximity to archaeological and historic sites will be monitored by a NPS cultural resource specialist.

Depending upon site-specific cultural resource protection objectives, the NPS may implement a full range of treatments in proximity to archaeological and historic sites, from total avoidance to full vegetation thinning and fuels reduction.

Restoration work within 10 feet of archeological and historic features will adhere to the Archeological Site Hazardous Fuels Reduction (ASHFR) Guidelines, developed specifically for inclusion in the Flagstaff Area National Monuments' FMP. Under the ASHFR Guidelines, ground disturbance below the natural mineral soil surface is prohibited. This includes disturbance caused by uprooting vegetation or dragging vegetation across the ground surface.

Minimum Impact Prescribed Burning Tactics, being developed specifically for inclusion in the Flagstaff Area National Monuments' FMP, include a number of measures to prevent adverse effects on cultural resources.

VI. Vegetation and Fire Restoration.

All motor vehicle use to transport equipment and personnel for manual thinning and prescribed burn projects is restricted to existing public and NPS administrative roads.

Vegetation and fire restoration projects will only be implemented within areas for which there is sufficient information on presettlement vegetation structure and natural fire regimes.

Within the fire-prone landscapes of the Flagstaff Area National Monuments, a variety of vegetation and wildland fuels characteristics will be cyclically measured to ensure that ecological restoration objectives are being met.

Vegetation restoration thinning will be planned and implemented to mimic the stand structure during the reference period, as documented in site-specific natural presettlement forest stand reconstruction and other historical ecology studies.

Minimum Impact Manual Thinning Treatment Guidelines are being developed specifically for FMP to guide vegetation and fire restoration projects while minimizing adverse effects on sensitive/unique cultural and natural resources.

All ponderosa pine trees greater than 16" DBH will be retained during manual vegetation restoration thinning projects.

Except under the specific circumstances described below, vegetation restoration thinning will mostly be restricted to trees 9 inches DBH or smaller.

If needed, certain trees in the 9+ to 16 inch DBH range may be felled and moved only if growing in close proximity to a cultural or natural feature to be protected (such as an archaeological site, a 16 inch DBH or larger tree, or an important raptor nesting tree or snag). The felling of trees in the 9+ to 16 inch diameter range will be limited to one tree per feature to be protected. Decisions to fell trees in the 9+ to 16 inch DBH range will be made on a tree-by-tree basis during on-site evaluations by cultural and natural resource specialists.

Small diameter trees, ladder fuels, and ground fuels will be manually thinned more intensively around ponderosa pine trees 20 inches DBH and larger, snags 12 inches diameter and larger, downed logs 12 inches diameter and larger, Gambel oaks 10 inches diameter at root collar and larger, pinyon pine 16 inches DBH and larger, alligator juniper trees 16 inches DBH and larger, within 30 feet around rare plant populations, and in proximity to other sensitive natural resource features to reduce fire damage.

During vegetation restoration thinning, appropriate proportions of seedlings, saplings, and mid-age trees will be retained to ensure future recruitment of old trees. To ensure there are adequate replacement trees after "first entry" prescribed burning, about 15 to 20% more small to medium diameter trees will be left than documented in site-specific presettlement stand reconstruction research.

Live and dead tree branches will be removed up to 7 feet above ground level to prevent fire from climbing "ladder" fuels and burning into the tree crown.

Tree limbs will be flush cut just outside the branch collar tissue on the main trunk of the tree. Limbs will be cut using best tree trimming practices to minimize breaking and tearing of limbs and bark.

Small diameter slash (up to 8 inches in diameter) will be bucked and scattered within canopy openings away from sensitive resources (archeological sites, large trees, protected and sensitive raptor breeding areas and rare plant populations).

Tree boles in the 8+ to 12 inch DBH range will be left where they are felled and bucked down, unless they are too close to a resource in need of protection from fire damage, in which case they will cut into manageable sections and either scattered between tree canopy openings, carried off-site for disposal, and/or piled and burned at carefully selected sites. Tree limbs will be bucked and scattered between tree canopy openings.

Tree boles in the 12+ to 16 inch diameter range will be left on the ground where they fall. Tree limbs will be bucked and scattered between tree canopy openings.

Scattered slash may not accumulate 1 foot higher than ground level.

Slash piles for burning will range from 3 to 6 feet in height and diameter in stable teepee shapes

Slash piles will be located on level terrain at least 30 feet away from tree crowns.

Slash piles will include sufficient fine fuels to ensure rapid, clean burning. Piles will be covered with durable, water-resistant paper, such as "Kraft Clean Burn" or suitable substitute, to ensure piles can be quickly and cleanly burned when temperature and ground moisture conditions are optimal. Light plastic wrap will not be used to cover piles. At least 75% of each pile will be covered, and the covering material will be secured from wind by leaning large diameter branches over the fuel teepee.

VII. Prescribed Fire.

Prescribed fire implementation will adhere to Minimum Impact Prescribed Fire (MRxT) Guidelines, which are being developed specifically for inclusion in the Flagstaff Area National Monuments' FMP.

Manual vegetation thinning/fuels restoration projects will be implemented prior to "first entry" and "second stage" prescribed fires to minimize the risk of severe crown fire.

"First entry" and "second stage" prescribed fires will be implemented under optimum weather and fuel moisture ranges which favor low intensity surface fire and the survival of all ponderosa pine trees 20 inches DBH and larger.

After a "first entry" and "second stage" prescribed fire have been completed within each project area, and if monitoring information reliably shows that heavy fuels have been sufficiently eliminated to reduce crown fire risk, all subsequent fires will be planned and implemented to mimic the return interval, season, patchiness, and effects of fire during the reference period, as documented in site-specific fire scar histories and forest stand reconstruction studies.

As soon as possible when vegetation structure and wildland fuels are managed to more natural conditions, the NPS will rely more on "maintenance burning" instead of manual thinning methods to naturally shape vegetation over the long-term.

VIII. Protected/Sensitive Species.

The Fire Incident Commander will consult with natural resource advisors as soon as possible during wildfire suppression operations on the distribution, habitats, and protection measures for protected/sensitive species.

Aerial ignition will not be used for any prescribed fire or wildfire suppression operation.

Depending upon resources at risk and fire behavior conditions, the most appropriate wildfire suppression response may include more passive fire containment strategies to minimize off-road vehicle use.

Separate project plans will be developed and approved for each manual vegetation thinning/fuels reduction and prescribed fire project, which will identify site-specific habitats and breeding areas to be protected during project implementation.

The NPS would review each project implementation plan, and would consult with the U.S. Fish & Wildlife Service under Section 7 of the Endangered Species Act if the level of effect on protected species exceeds thresholds established during programmatic consultation for the FMP.

All motor vehicle use to transport equipment and personnel for manual thinning and prescribed burn projects is restricted to existing public and NPS administrative roads.

The NPS will strive to monitor protected/sensitive species population status and trends.

In the absence of reliable monitoring information, all known protected and sensitive raptor breeding areas (Mexican spotted owl "Protected Activity Centers", Peregrine Falcon nest cliffs, and Northern Goshawk nest buffers) will be considered "occupied" during respective breeding periods.

Vegetation and fire restoration are primarily proposed for areas adjacent to and upwind of the inner canyon environment at Walnut Canyon National Monument, which will reduce the risk of unnaturally severe fires within MSO, Bald Eagle, Peregrine Falcon, Northern Goshawk, and rare plant species habitats.

All vegetation and fire restoration crew personnel will be informed of protected/sensitive species known to occur or potentially occur within each project area, habitat protection measures, and the importance of minimizing human disturbance.

Only one prescribed burn will be implemented per year to minimize effects on protected/sensitive wildlife. Prescribed burn blocks will be small enough that heavy smoke from burning will be limited to 24 hours and residual smoke will be limited to 72 hours.

Prescribed fires will not occur between March 1 and August 31 at Walnut Canyon National Monument until at least three fire return cycles have been completed, and monitoring information reliably shows that heavy fuels have been sufficiently eliminated to ensure low smoke levels.

Prescribed fires will be planned and timed to avoid protected/sensitive wildlife species breeding areas during their respective breeding seasons.

Prescribed fires will be planned and timed to minimize smoke within protected/sensitive wildlife species habitats.

As a result of high ponderosa pine and Douglas fir tree mortality after the 2000-2002 drought, there are currently ample numbers of large diameter snags and replacement downed logs within areas proposed for prescribed burning. If monitoring information suggests that numbers of tall snags and large diameter logs are declining to less than an average of 2 per acre across each project planning area, fire line will be constructed around remaining snags and logs prior to prescribed fire.

Mexican Spotted Owl:

All vegetation and fire restoration activities within Mexican spotted owl (MSO) Protected Activity Centers (PACs), protected habitat, and restricted habitat will be consistent with the MSO Recovery Plan (U.S. Fish & Wildlife Service 1995), except for limited manual treatments to protect cultural resources from fire damage.

No manual vegetation thinning and fuels reduction activities will occur during MSO breeding season (March 1 to August 31) within PACs, protected habitat, restricted habitat, and other areas within ¼ mile of steeply sloping (>40%) terrain.

No vegetation restoration or prescribed fire activities will occur on steeply sloping terrain or the riparian corridor within Walnut Canyon National Monument.

Manual vegetation thinning and fuels reduction activities within MSO PACs will mostly be limited to small areas of vegetation meeting the definition of unrestricted habitat (ponderosa pine vegetation on level terrain, with less than 10% Gambel oak cover) and limited to thinning trees less than 9 inches DBH. Exceptions are anticipated in protected and restricted habitat where small areas around 165 high priority archaeological sites at high risk from wildfire damage would be manually treated. At each site, less than ½ acre would be thinned, and one tree in the 9-16 inch DBH range may be felled and moved. Cumulatively, no more than 83 acres would be thinned, and no more than 165 medium diameter trees would be felled while implementing the 10 Year Vegetation and Fire Restoration Plan to meet cultural resource protection objectives.

Within PACs, protected habitat, and restricted habitat, manual vegetation thinning and fuels reduction projects will be planned and implemented with regard for maintaining existing levels of Gambel oak cover and retaining oaks with stems greater than 5 inches diameter at root collar.

No vegetation restoration or prescribed fire activities will occur within a 100 acre buffer area around known MSO nesting areas ("nest core buffers"), except where site-specific manual vegetation thinning and fuels reduction treatments may be needed to protect an archaeological or historic site from fire damage.

Bald Eagle:

No manual vegetation thinning and fuels reduction activities will occur within ¼ mile of Bald Eagle winter roosts or perches between October 15 and April 15.

If recommended by the natural resource specialist on the Project Implementation Team and identified in the Project Implementation Plan, small diameter trees, ladder fuels, and ground fuels within 50 feet of Bald Eagle winter roosts or perches may be reduced during manual thinning projects to protect them from severe fire.

Peregrine Falcon:

No manual vegetation thinning and fuels reduction activities will occur within ¼ mile above Peregrine Falcon nesting cliffs between March 1 and August 15.

Northern Goshawk:

No manual vegetation thinning and fuels reduction activities will occur within active Northern Goshawk breeding territories between March 1 and September 30.

Golden Eagle:

The use of most appropriate suppression response and Minimum Impact Suppression Tactics would reduce impacts to Golden Eagle habitat at Wupatki National Monument.

American Pronghorn:

The use of most appropriate suppression response and Minimum Impact Suppression Tactics would reduce human disturbance and impacts to pronghorn habitat at Wupatki National Monument.

Rare Plant Populations:

Each project area will be cyclically surveyed for rare plant populations.

Rare plant populations within prescribed burn blocks will be monitored according to standardized procedures to assess fire management related changes.

Depending upon vegetation and fuels conditions around rare plant populations within fire-prone landscapes, some rare plant population areas may be manually treated to protect them from severe fire.

Areas around rare plant populations that are fire-intolerant or for which fire ecology is not known will not be burned during prescribed fires.

IX. Visitor Enjoyment.

Project plans will be reviewed and approved by the Management Team for Flagstaff Area National Monuments to ensure coordination and minimal conflicts with other NPS operations during FMP implementation.

Whenever possible, work around primary visitor-use areas will be scheduled during off-peak visitation periods.

Small-diameter trees and brush will be flush cut at ground level to eliminate stumps.

Strips of denser vegetation will be left standing where needed between primary visitor use areas and NPS administrative facilities or other modern features to maintain natural scenic quality.

Only cyclic manual thinning treatments will be used in close proximity to NPS facilities and visitor use areas to minimize the threat of fire damage to facilities, to minimize facility closures during periods of severe fire risk or due to wildfires, and to maintain scenic quality in proximity to visitor use areas.

Cyclic vegetation thinning and fuels reduction treatments within ¼ mile of NPS facilities and visitor use areas will adhere to Facility and Visitor Use Area Vegetation and Fuels Management Guidelines being developed specifically for the Flagstaff Area National Monuments' FMP.

X. Environmental Protection.

No herbicides may be applied without separate management review under current environmental compliance procedures.

Chainsaws will be refueled on tarps to prevent fuel spill contamination.

Mechanized equipment will be maintained in good operating condition so that exhaust emissions are kept to a minimum.

As existing chainsaws are due for replacement, the NPS will replace them with models that produce lower emissions and run quieter.

XI. Smoke Management

Press releases, other media, and personal contacts with neighbors will be used to inform the public several days in advance of a planned prescribed fire.

Prescribed fires will be ignited on days when weather conditions are reliably forecast for smoke to rise and disperse.

As much slash from manual thinning as feasible will be disposed of through chipping/broadcasting, pile burning, or off-site disposal prior to prescribed burning.

In order to provide sufficient time for slash to cure and burn with less smoke, prescribed fires in should be completed no earlier than one year after manual thinning projects.

Prescribed fire blocks will be small enough for groundcover over the area to burn in less than one day, and for most large logs to burn in less than three days.

The number of proposed prescribed fire blocks proposed in the FMP will effectively generate smoke only a few days per year for burning slash piles.

The total number of proposed prescribed fire blocks in the FMP will effectively require only one prescribed fire per year to maintain vegetation under the natural fire regime.

XII. Non-native Invasive Plants.

Fire management vehicles will be washed to remove mud and plant seed prior to being deployed on wildfire suppression, vegetation restoration, or prescribed fire operations.

Vegetation will be monitored according to standardized procedures to assess fire management related changes in invasive plant species cover.

During manual vegetation and fuels reduction projects, invasive species in proximity to sensitive cultural and natural resources will first be manually removed using methods which minimize seed dispersal.

Areas of high-density species that increase under wildfire and prescribed burning and which can be feasibly contained will be controlled using manual methods.

The season and timing of prescribed burning may be adjusted to suppress the reproduction of invasive plant species.

Areas covered with high-density, fire-tolerant invasive plants may be excluded from prescribed burns if burning would further exacerbate their reproduction and spread.

Areas which are at high risk of invasion by fire-tolerant invasive plants may be excluded from prescribed burning to maintain native vegetation integrity.

2. MINIMUM IMPACT SUPPRESSION TECHNIQUES (MIST)

General Discussion:

These tactics were adapted from the “Red” book MIST guidelines and examples from other fire management plans. The IDT revised and added to this collection to address specific resource protection goals and features.

Suppression tactics will have an impact on the landscape. Following the Minimum Impact Suppression Tactics (MIST) guidelines outlined below can reduce the degree of long-term impacts associated with wildland fire suppression tactics. It is important that decision makers are aware of the long-term impacts fire suppression tactics can have on the landscape, and very carefully weigh those long-term impacts to fire suppression safety issues related to wildland fire incidents.

MIST does NOT compromise firefighter safety, or the effectiveness of the suppression effort, which might put other assets at risk. Safety zones and escape routes will be a factor in determining fireline location.

MIST DOES aim to only use suppression tactics that will have minimal long-term impact, while achieving a satisfactory fire suppression outcome. While MIST emphasizes suppressing wildland fire with the least impact to the land, actual fire conditions and good judgment will dictate the actions taken. Consider what is necessary to halt fire spread and containment within the fireline or designated perimeter boundary, while safely managing the incident.

Resource advisors will be consulted or notified (when fire situation allows) prior to and during suppression operations.

The following are MIST standards that will be used in Flagstaff Area National Monuments’ FMP:

Use of Motor Vehicles:

- In keeping with the Flagstaff Area National Monuments’ FMP fuel reduction model, all motorized vehicles used to transport equipment and personnel would be restricted to established roadways, unless the Incident Commander assesses that the fire is an immediate threat to resources. Off-road vehicle travel is to be used minimally, and unnatural trails properly restored in a timely fashion after incident is complete. The route to the fire from the nearest trail or road will be flagged. Flagging will be removed by the last person to leave the area.

Fireline Construction Location:

- Fireline construction will be minimized by taking advantage of natural barriers, rock outcrops, trails, roads, streambeds, cinder barrens and other existing fuel breaks. Allow the fire to burn to natural barriers.
- Where possible, on-site archeological clearance will be obtained prior to line construction.
- Consult with natural resource specialist (time permitting) to avoid constructing line that will negatively impact sensitive species.

- Consider the potential for introduction of noxious weeds and mitigate by removing weed seed from vehicles, personal gear, cargo nets, etc.
- Consider impacts to riparian areas when siting water handling operations.
- Use longer draft hoses to place pumps out of sensitive riparian areas.
- Plan travel routes for filling bladder bags to avoid sensitive riparian areas.

Fireline Construction Methods:

- Select procedures, tools and equipment that least impact the environment.
- Firelines will be the minimum width necessary to halt the spread of the fire and will be routed to avoid impacts to natural and cultural resources vulnerable to the effects of fire and fire suppression activities.
- Prioritize the use of water or foam for wet line construction.
- As a last resort, use mechanized equipment when constructing fire line.
- If utilizing mechanized equipment constructing fire line, use excavators and rubber tired skidders rather than bulldozers when constructing mechanical line.
- Adjacent to fireline: limb only enough to prevent additional fire spread.
- Inside fireline: remove or limb only those fuels which would have potential to spread fire outside the fireline.
- Unburned material may be left within the final line.
- Clearing and scraping will be minimized.
- Minimize bucking to establish fireline: preferably move or roll downed material out of the intended constructed fireline area. If moving or rolling out is not possible, or the downed log/bole is already on fire, build line around it and let the material be consumed.
- Snags or trees will be felled only when essential for control of the fire or for safety of personnel. Make all cuts flush with the ground.
- Identify hazard trees with flagging, glow sticks, or a lookout.
- During fireline construction, cut shrubs or small trees only when necessary. Make all cuts flush with the ground.
- When using indirect attack:
 - Do not fall snags on the intended unburned side of the constructed fireline unless they are an obvious safety hazard to crews
 - Fall only those snags on the intended burn-out side of the line that would reach the fireline should they burn and fall over.

Mop-up Phase:

- Consider using “hot-spot” detection devices along perimeter (aerial or hand-held).
- Use extensive cold-trailing to detect hot areas.
- Cold-trail charred logs near fireline: do minimal scraping or tool scarring. Restrict spading to hot areas near fireline.
- Minimize bucking of logs to check for hot spots or extinguish fire: preferably roll the logs and extinguish the fire.
- When ground is cool return logs to original position after checking.
- Refrain from piling: burned/partially burned fuels that were moved should be arranged in natural positions as much as possible.
- Consider allowing larger logs near the fireline to burn out instead of bucking into manageable lengths. Use a lever, etc. to move large logs.
- Personnel should avoid using rehabilitated firelines as travel corridors whenever possible.
- Aerial fuels (brush, small trees, and limbs): remove or limb only those fuels which if ignited have potential to spread fire outside the fireline.
- Burning trees and snags:
 - Be particularly cautious when working near snags (ensure adequate safety measures are communicated).
 - The first consideration is to allow a burning tree/snag to burn itself out or down.
 - Identify hazard trees with flagging, glow-sticks or a lookout.
 - If there is a serious threat of spreading firebrands, extinguish with water or dirt.

Restoration of Fire Area:

- Pick up and remove all flagging, garbage, litter, and equipment. Dispose of trash appropriately.
- Backfill cup trenches and scarify wide firelines.
- Construct waterbars to prevent erosion.
- Place “boneyards” in a natural or random arrangement.
- Position cut ends of logs so as to be inconspicuous to visitors and camouflage where possible.
- Flush cut stumps, camouflage with soil and ground material.

Wilderness Fire Campsites:

- In general, back country camping within the monuments is prohibited.
- Consider impacts on present and future visitors.
- Use existing campsites if available.
- If existing sites are not available, select impact resistant sites a minimum of 200' from water resources.
- Practice "Leave No Trace" methods of camping.
- Establish several small camps rather than one large one.
- Use stoves and minimize camp improvements.
- Vary travel routes to the greatest extent possible to reduce impact.
- Open campfires are not permitted.

Aircraft Helicopters:

- Minimize use.
- Balance fire fighter safety and resource protection against the impacts of helispot construction.
- Use natural openings for helicopter landing. If tree felling is necessary, avoid high visitor use locations unless the modifications can be rehabilitated. Fall, buck, and limb only what is necessary to achieve a safe and practical operating space.
- Establish helispot in weed free area to avoid the transport of noxious weeds into the wilderness.
- Consider using a long line remote hook if helicopter is only needed for logistical support.

Retardant Aircraft:

- Retardant shall be only used as a last resort.
- The effects of slurry retardant drops on arch sites and natural scenery are generally severe and should be avoided unless the situation requires it.
- Prior to the use of retardant drops, every effort should be made to consult with the Superintendent and resource advisors.
- Use environmentally friendly retardant whenever possible.
- Use SEAT's whenever possible.
- Use water drops where practical.

- Minimize number of drops to what is essential for control of the fire.
- Assess risks to sensitive watersheds from chemical retardants and foam.
- Fire managers should weigh use of retardant with the probability of success by unsupported ground force. Retardant may be considered for sensitive areas when benefits will exceed the overall impact. This decision must take into account values at risk and consequences of expanded fire response and impact on the land.

3. Minimum Impact Prescribed Burning Tactics (MIRxT)

General Discussion:

Strategic considerations for prescribed fire projects over the life of the Flagstaff Area National Monuments' FMP, and objectives linked to manual treatment/prescribed fire project implementation plans include:

- Prior to Rx burn, manual pre-treatment of vegetation/fuels will be completed according to MIMTT to protect sensitive resources.
- After medium-term Fire Management Plan objectives have been met for restoring vegetation structure to reference conditions, reducing accumulated fuels, and mitigating the landscape-level risk of severe fire, a strategic shift to maintenance prescribed burning according to the natural historical fire return interval (every 4 to 14 years) should prevent excessive accumulations of needles, bark flakes, and other fuels, as well as the growth of seedling thickets.
- As soon as stand conditions and fuel loads allow, the timing of prescribed burning should mimic the seasonal and inter-annual variation documented in fire history studies for the Flagstaff Area National Monuments and regional climate reconstruction records for the reference period.

The following operational tactics were adapted from the Flagstaff Area National Monuments' MIST guidelines, the Flagstaff Area National Monuments' ASHFR guidelines, a Working Paper prepared by the Ecological Restoration Institute, "Protecting Old Trees from Prescribed Fire," and in consultation with USFWS to protect the Mexican Spotted Owl and designated Critical Habitat within Walnut canyon NM [note: ESA Sect. 7 consultation is still pending]. The IDT adapted and augmented these examples to address specific resource protection goals and features for the Flagstaff Area National Monuments' FMP.

Prescribed burning operations will have an impact on the landscape. The following Minimum Impact Prescribed Fire Tactics (MIRxT) are identified to reduce the degree of long-term environmental impacts associated with prescribed burning operations. It is important that decision makers are aware of the trade-offs between the short-term impacts of prescribed burn operations versus achieving the medium- or long-range objectives of the Flagstaff Area National Monuments' FMP. MIRxT does *NOT* compromise firefighter safety, or the effectiveness of the effort. Safety zones and escape routes will be a factor in determining the burn area perimeter. MIRxT *DOES* serve as the primary means of communicating tactics to work crews that will minimize impacts to sensitive cultural and natural features. While MIRxT emphasizes prescribed burning with the least impact to the land, actual fire conditions good judgment will be needed to effectively implement them. Consider what is necessary to halt fire spread and containment within the project burn area, while safely completing the burn.

In the unlikely event a prescribed fire becomes a wildfire, Flagstaff Area National Monuments' MIST will be implemented.

The following are minimum impact tactics for prescribed fire (MIRxT) that will be used in Flagstaff Area National Monuments' FMP:

Use of Motor Vehicles:

- All motorized vehicles used to transport equipment and personnel are be restricted to established roadways.

Staging and Access:

- Each Rx project implementation plan will identify parking, staging, access, equipment service, water and fueling area(s).
- For safety and resource protection, the route to the burn block from the nearest trail or road will be flagged. Flagging will be removed by the last person to leave the area.
- All project work crews will be briefed on the standardized marking system, objectives, resources to be protected, minimum impact tactics and safety.

Resource Protection:

- Sensitive cultural and natural features will be marked in advance of prescribed fire ignition.
- Fireline will be routed, constructed, and improved in advance to avoid sensitive cultural and natural features.

Fireline Routing and Construction:

- Fireline construction will be minimized by taking advantage of natural barriers, rock outcrops, trails, roads, streambeds, cinder barrens and other existing fuel breaks. Allow the fire to burn to natural barriers.
- Prioritize the use of water or foam for fire line construction.
- When possible, long hose lays and portable pumps will be used to construct wet or foam lines.
- Select procedures, tools and equipment that least impact the environment.
- Firelines will be the minimum width necessary to confine fire within the project burn area.
- Vegetation/Fuels will be managed according to the MIMTT guidelines adjacent to fireline to minimize risk of fire escape.
- Slash, debris and litter from fireline construction may be placed within the project burn area.
- If placing slash, debris and litter inside the project burn area exacerbates fuel loads and increases fire intensity in proximity to sensitive resources and fire line, then it will be disposed of off-site according to MIMTT guidelines.
- Clearing and scraping will be minimized.

- Any fire susceptible living trees and snags that are within falling distance of the fire line of the project burn area will be lined and received fuels treatment in accordance with the MIMTT.
- Identify hazard trees with flagging, glow sticks, or a lookout.
- During fireline construction, cut shrubs or small trees only when necessary. Make all cuts flush with the ground.

Ignition Phase:

- Avoid firing through monitoring plots and sensitive resources.
- Fueling of equipment (drip torches, chainsaws, etc.) shall be completed in designated areas.
- Utilize ignition techniques and fire spread patterns, such as backing fires, short run, strip head fires, and spot ignition, that result in low intensity fire while still meeting Rx burn objectives.

Mop Up Phase:

- Consider using “hot-spot” detection devices along perimeter (aerial or hand-held).
- Use extensive cold-trailing to detect hot areas.
- Restrict spading to hot areas near fireline.
- Minimize scraping and tool scarring.
- Allow stumps, logs and large fuels near the fire line to burn out instead of extinguishing.
- Use a lever to roll large logs instead of bucking into sections or dragging.
- When ground is cool return logs to original position after extinguished.
- Burned/partially burned fuels that were moved should be scattered in natural positions as much as possible.
- Burning trees and snags:
 - Be particularly cautious when working near snags (ensure adequate safety measures are communicated).
 - The first consideration is to allow a burning tree/snag to burn itself out or down.
 - Identify hazard trees with flagging, glow-sticks or a lookout.
 - If there is a serious threat of spreading firebrands, extinguish with water or dirt.
 - If there is a serious threat of a burning tree or snag falling outside the fire line, extinguish with water, foam or dirt and consider felling as a last resort.

Restoration of Fire Area:

- Personnel should avoid using rehabilitated firelines as travel corridors whenever possible.
- Pick up and remove all flagging, garbage, litter, and equipment. Dispose of trash appropriately.
- Backfill cup trenches and scarify wide firelines.
- Construct waterbars to prevent erosion.
- Place “boneyards” in a natural or random arrangement.
- Position cut ends of logs so as to be inconspicuous to visitors and camouflage where possible.
- Flush cut stumps, camouflage with soil and ground material.

Wilderness Fire Campsites:

- In general, back country camping within the monuments is prohibited.
- If camping is needed for cold-trailing or monitoring purposes, practice “Leave No Trace” methods of camping.
- Open campfires are not permitted.

4. Guidelines for Work Crews: Archeological Site Hazardous Fuels Reduction

The following guidelines are for manual vegetation thinning and wildland fuels removal activities within the treatment perimeter around sensitive archeological features. The treatment perimeter will be marked in advance by the fire project archeologist. Certain sites may require less intensive treatments, and such sites will be marked differently according to a standard system established in the Project Plan. The Fire Project Archeologist will be familiar with the range of treatments and marking system, and will guide work crews accordingly. Work should proceed at each designated site according to the general sequence outlined below.

Monitoring:

- All manual vegetation thinning and wildland fuels reduction work in proximity to cultural resources must be guided and monitored by a fire project archeologist at all times.

Work Restrictions:

- Off-road vehicle use is prohibited.
- Disturbing the ground below the mineral soil surface is prohibited except under the direct guidance of the fire project archeologist assigned to the crew. This includes disturbance caused by uprooting vegetation or dragging vegetation across the ground surface.
- The work crew leader will be briefed on other equipment, weather-related, seasonal, or other work restrictions, as outlined in the project plan.

Project Area Access:

- Utilize designated vehicle staging areas and hiking routes to the project area.

Invasive Plant Species:

- Remove any non-native plant species from treatments sites first. Place the entire plants, or the plant parts that bear seeds, in plastic bags or other suitable containers, and move off-site for disposal.

Dead and Downed Wood:

- Sites without flammable contents: Carry small diameter fuels (6 inches dia or less) at least 12 feet beyond the marked site perimeter and broadly scatter across openings between the surrounding tree canopy.
- Sites with flammable contents: Carry medium-large diameter fuels (> 6 inches dia) at least 40 feet beyond the marked site perimeter and broadly scatter across openings between the surrounding tree canopy. Orient large diameter wood with the same side up as before it was moved.

Brush and Small Diameter Trees.

- Prune or cut shrubs growing in contact with stone masonry or other identified cultural features. Do not remove cacti, agaves, yuccas, or other succulents.
- Cut all ponderosa, piñon, and junipers measuring 9 inches DBH or less within the flagged perimeter.
- Flush cut stumps as close to the ground as possible.

- Unless the project implementation plan includes different guidelines for slash disposal, remove slash from the treatment perimeter according to the slash disposal methods outlined below.
- Shape vegetation with an irregular boundary around the marked site perimeter to blend with the surrounding vegetation and maintain a natural appearance.

Tree Limbs:

- On the remaining conifer trees and snags to be retained within the treatment perimeter, cut and remove all of the lower dead and living branches up to 7 feet above the ground.
- In close proximity to flammable or fire-sensitive cultural resources, living and dead tree limbs may be cut up to 7 feet above the highest point of the flammable feature.
- Flush cut limbs with the limb “collar” at the main tree trunk to speed healing of the cut.
- Limb trees symmetrically to give them natural shapes.
- Unless the project implementation plan includes different guidelines for slash disposal, remove slash from the treatment perimeter according to the slash disposal methods outlined below.

Needlecast and Leaf Litter:

- Only if instructed to do so by the fire project archeologist, gather pine needle and litter accumulations that exceed 3 inches deep from around sensitive archeological features. Remove litter within 5 feet of masonry architecture and rock art, and within 15 feet of identified flammable features.
- Attempt to leave the lower 2 to 3 inches of needles and litter intact to prevent mineral soil disturbance.
- Gather up needle cast and litter by hand for removal rather than raking to prevent mineral soil disturbance.

Medium Diameter Trees and Snags (9-16 in DBH range):

- If the Lead Forestry Technician concurs that a medium diameter tree can be safely and controllably felled, cut and remove any medium-diameter trees or standing snags marked by the Fire Plan Implementation Team (FPIT).

Disposal of Wood, Vegetation, Slash, Litter, etc.

- Carry, do not drag, all wood, vegetation, slash, litter, etc. to disposal locations.
- Carry small diameter slash (6 in dia or less) at least 15 feet beyond the marked site perimeter and broadly scatter across openings between the surrounding tree canopy.
- Carry medium-large diameter slash (> 6 in dia) at least 40 feet beyond the marked site perimeter and broadly scatter across openings between the surrounding tree canopy.
- Scatter slash flat on the ground, less than 1 foot above the ground. Do not hang slash in trees or mid-story vegetation.
- Do not scatter slash near other natural resource features flagged for protection (large diameter trees, snags, etc.).
- Scatter slash out of view of visitor use areas.
- On steep slopes, avoid scattering wood, slash, etc. on the slope directly above or below the site.
- On steep slopes, trees should be felled or placed with the crown pointing down-slope to mimic a natural tree fall.

- When there is insufficient area within the project boundary for proper disposal of the volume of slash being generated, excess slash will be removed off-site for disposal, or piled and burned on-site according to separate guidelines established in the project plan.

5. NATURAL RESOURCE PROTECTION GUIDELINES

Measures for reducing fire risk to large diameter trees (ponderosa pines > 16 in dbh), large diameter Gambel oaks, alligator junipers, raptor nest/perch trees, important snags, etc.

Adapted from: Ecological Restoration Institute. 2003. Protecting Old Trees From Prescribed Fire. Working Papers in Southwestern Ponderosa Pine Forest Restoration. Northern Arizona University. 4 pp.

Manual pre-treatments for trees/snags to be protected:

- Carefully remove thick accumulations of needles and bark flakes that have accumulated under the crowns of trees, without raking into mineral soil.
- Carefully remove fine fuels 2-3 feet away from the trunks of trees and snags.
- Remove dead and downed tree trunks and branches from beneath the canopy of trees and snags.
- Remove most seedling, saplings, and trees < 9" DBH growing under or within a 30 foot radius of the desirable tree crown. Depending upon local small diameter tree densities, remove 50 to 80% of the trees between the 30 feet limit and a larger 50 feet radius around the tree crown. Do not remove small diameter trees in a perfect circular pattern, but create an irregular spacing pattern that blends with the surrounding vegetation at the 50 feet perimeter. The removal of trees 9" DBH and larger requires on-site determination by the FPIT.
- Trim dead and live branches 6 to 8 feet above the ground.
- Do not pile slash. Buck, lop and scatter small-diameter slash (typically < 6" dia. Sections) between the surrounding tree canopy openings. In order of descending preference, large diameter slash should be: (a) chipped and broadcast to be consumed in subsequent burns; (b) carried off-site for piling and burning; or (c) carried off-site for disposal at the local landfill. On-site piling and burning may only be used as a last resort [note: resource protection guidelines are still needed for this activity].

Prescribed burning:

- Incorporate appropriate weather and moisture parameters into burn plans to reduce fire intensity and the risk of large tree mortality.
- Prescribed burn only during periods of favorable weather and fuel moisture to prevent large tree mortality.
- Utilize ignition techniques and fire spread patterns that result in low-intensity fire. Backing fires, short run strip headfires, and spot ignition techniques assist in reducing tree mortality.
- Prescribed burning is prohibited during periods of severe drought, when trees are more vulnerable to heat stress.
- Consider burning at night if this is the best way to keep fire intensities low while accomplishing fire management objectives.

6. SAFETY MITIGATION

Public and firefighter safety is the number one priority in fire management. The Federal Fire Policy states “firefighter and public safety is the first priority, and all fire management plans and activities must reflect this commitment.” NPS Wildland Fire Management Policy (DO-18) echoes this direction: “The NPS is committed to protecting park resources and natural ecological processes, but firefighter and public safety must be the first priority in all fire management activities”. Therefore, the following safety measures would be included in the Flagstaff Area National Monuments’ FMP:

- Portions of the monuments may be restricted by order of the Superintendent when there is any threat to the public or firefighters from a wildland fire or fire management activities.
- Smoke warning signs will be posted on roadways and/or traffic control will be instituted during wildland fires as directed by the Burn Boss, Incident Commander, Safety Officer, or a visitor protection representative.
- All fire personnel will receive annual training in all wildland fire safety standards [including the 10 Standard Fire Orders, the 18 Situations That Shout “Watchout”, Downhill/Indirect Line Checklist, Four Common Denominators of Fatality Fires, Lookouts-Communications-Escape Routes-Safety Zones (LCES), and Risk Management/Situational Awareness].
- Fire personnel assigned to fireline operations will complete a minimum of 32 hours of basic wildland fire training, including modules on basic firefighting, basic fire behavior, and Standards for Survival; and an annual minimum of 16 hours of refresher (FFT1 and above) and 8 hours refresher for FFT2 and non-operations personnel likely to be on the fireline.
- All project plans will address safety in an attached job hazard analysis.
- A safety briefing will be given prior to initiating work on any project.
- Every Incident Action Plan (IAP) will include a safety message.
- Every project or incident will have at least one person charged with incident safety oversight, complex situations will require multiple safety officers.
- All personnel will be authorized and obligated to exercise emergency authority to stop and prevent unsafe acts.
- All employees will have the right to turn down unsafe assignments; they will also have the responsibility to identify safe alternatives to accomplish the mission.
- All personnel on wildland fires will be equipped with proper personal protective equipment (PPE) as described in Chapter 3 of RM-18. All personnel will carry a fire shelter on wildland fires at all times unless in a designated safety zone.
- All visitors to wildland fires on the Flagstaff Area National Monuments will be equipped with Nomex clothing, gloves, hardhat, and fire shelter, and will be accompanied by an operationally qualified person that can maintain communications with the incident management team and that can recognize potential problem fire behavior.
- All personnel engaged in wildland fire activities on NPS lands will adhere to the health screening/medical surveillance and fitness requirements of RM-18, Chapter 3.

Errata Sheets

Fire Management Plan Environmental Assessment

Flagstaff Area National Monuments

The following changes to the text of the EA/AEF are made to address comments received from the public, correct errors, and clarify the mitigating measures for the Mexican spotted owl resulting from Endangered Species Act consultation with the U.S. Fish and Wildlife Service.

SUBSTANTIVE COMMENTS

Two substantive comments were received on the EA/AEF, centering on the fire risk to the community of Flagstaff and the need to develop a Programmatic Agreement with the Arizona State Historic Preservation Officer under the National Historic Preservation Act. The comments resulted in no changes to the alternatives or impact analysis. One non-substantive comment precipitated a correction to a typographic error the EA/AEF, as described in the Errata Sheets.

Fire Risk to the Community of Flagstaff

Comment: “In addition to the benefits and drawbacks to the use of prescribed fire in the Monuments, consideration must also be given to the effect of fuel reduction and prescribed burns in the context of a massive wildfire in the vicinity of Flagstaff. If a major conflagration should erupt, the National Monuments would be subject to effects that are part of a much larger size fire. The forests of the Monuments would either add fuels to an already swollen fire, or they would serve to reduce the intensity of the fire, depending upon how the fuel reduction practices have been implemented.”

Response: Impacts to park neighbors, including nearby privately owned lands and homes, were analyzed in the EA/AEF. Specific risk to the City of Flagstaff was not identified during the scoping process and was not assessed. A fire of sufficient magnitude to threaten Flagstaff would likely only involve Walnut Canyon National Monument. The monument is neither located within the Coconino National Forest “Urban-rural Influence Zone” nor within the “Community Buffer Zone” in the multi-agency Flagstaff Community Wildfire Protection Plan, where vegetation/fuels management actions are the highest priority to reduce the fire risk to Flagstaff. The monument encompasses about 1,380 acres of ponderosa pine stands, and it is highly unlikely that a widespread crown fire would originate within the monument, or that the NPS would be the lead agency on such a suppression response. The strategies and implementation projects proposed under Alternative B will complement other agency efforts at the landscape level to reduce the risk of severe fire around the community of Flagstaff.

Need for Programmatic Agreement under the National Historic Preservation Act.

Comment: The Arizona State Historic Preservation Officer (SHPO) commented that a Programmatic Agreement (PA) was the most appropriate way for the NPS to meet its responsibilities under Section 106 of the NHPA, and to address the anticipated impact to cultural resources in the parks.

Response: The NPS developed a PA with the SHPO that is based upon the detailed work guidelines for hazardous fuels reduction work around archeological sites (included on page 168 of the EA/AEF), which will be implemented under the FMP.

Text Changes

1. Pages 35- 36, *Alternatives Considered but Dismissed*: insert the following section which was inadvertently omitted:

“Public Scoping Letter Alternative C: Implement a FMP that uses landscape–scale application of strategies by combining fire management with the surrounding Coconino National Forest. This alternative was proposed in the initial public scoping release in 2003. The NPS, U.S. Forest Service, and other fire management/forest restoration partners would undertake mutual planning efforts to integrate fire management strategies within the monuments and the surrounding Coconino National Forest. This strategy is directed by the National Fire Plan, and could simultaneously restore forest health at the landscape or watershed scale, reduce fire threats to unique features and rare species habitats, and reduce wildfire threats to Flagstaff and surrounding communities. Aspects of this alternative are incorporated into the Preferred Alternative, but this alternative was considered but dismissed in the EA/AEF because interagency planning at the landscape level would prioritize project work, and would defer projects on NPS lands for approximately ten years. The NPS would be able to accomplish improvements in resource conditions, and reducing the risk of wildland fire in the monuments by managing agency-specific projects independently (see Appendix C, page 174 of the EA/AEF).

2. Page 36, delete the last sentence in the following section:

“Mechanical Thinning Using Motor Vehicles Off Existing Roads – This alternative would allow the use of motor vehicles off existing public and NPS administrative roads for thinning and slash removal operations. Vegetation and fire restoration work might have progressed more rapidly and cost-effectively; however, this alternative would not meet resource protection objectives given the density of archeological sites at Wupatki National Monument and Walnut Canyon National Monument, and the extremely fragile volcanic terrain at Sunset Crater Volcano National Monument. ~~During scoping this was identified as Alternative C.~~”

3. For Alternative B (NPS Preferred), the NPS fire planning team overestimated the number of acres that would be directly affected by the proposed manual thinning treatments to protect archeological sites. The initial estimate was up to 1 acre per archeological site, but the actual calculated amount based upon the treatment guidelines (given on pages 168-169) is less than 0.2 acre per site. The number of sites and their locations remain unchanged, but the total affected acres is corrected in the places listed below.

Page 34, 1st paragraph, sentence 6: “In addition, up to 29 [originally 83] acres within a variety of fire-prone vegetation types would be manually treated within WACA-FMU-4 to protect archaeological sites from fire damage. At Sunset Crater Volcano National Monument, up to 34 acres of ponderosa pine-dominated vegetation would be manually thinned around NPS facilities and visitor-use areas to create defensible areas in the event of a wildfire. In addition, 50 acres of montane meadow vegetation would be maintained with prescribed fire. At Wupatki National Monument, up to 125 [originally 250] acres of juniper woodland would be potentially treated to manage vegetation/fuels build-up in proximity to archeological sites, and up to 30 acres in proximity to adjacent private structures.”

Page 54, 4th paragraph, sentence 1: “Manual thinning with chainsaws and hand-tools would be used, where approved, to reduce tree densities around identified structures, sites, and facilities. These actions are planned for WACA-FMU-1 (113 [originally 123] acres), SUCR-FMU-1 (34

acres), WACA-FMU-4 (29 [originally 225] acres), and WUPA-FMU-3 (155 [originally 280] acres)..."

Pages 59-60, third bullet in list:

- Risk of high severity wildland fire in close proximity to archeological sites within WACA-FMU-4 and WUPA-FMU-3 would be much reduced from those of Alternative A through proactive assessment and manual treatment; this would impact vegetation in very localized areas around identified sites and would not exceed 29 [originally 125] acres of vegetation in Walnut Canyon or 155 [originally 280] acres in juniper woodland at Wupatki National Monument.

4. Page 125, a commenter noted that the NPS had misspelled one of the EA recipients; the correct spelling should be:

Naval Observatory

5. As stated on page 82, first paragraph, the NPS consulted with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act on the Ten Year Fuels Treatment Plan (summarized on page 34), and established conservation measures for federally listed threatened species, including the Mexican spotted owl. The Mitigating Measures for protected/sensitive species on pages 154-155 of the EA/AEF are supplemented with the following section:

Appendix B, Section VIII. Protected/Sensitive Species (pages 154 – 156)

VIII. Protected/Sensitive Species

Information on sensitive resources will remain readily available to resource advisors, agency representatives, and fire incident commanders.

If the fire situation allows, the resource advisor will survey and mark protected/rare species locations and unique resource areas for avoidance in advance of ground suppression operations.

Except when necessary to achieve suppression objectives, ground operations sites (personnel/equipment staging, base camps, spike camps, refueling stations, etc.) should be located outside of special status species habitats and identified sensitive resource areas. If ground operations activity areas are necessary in proximity to sensitive resources, previously-disturbed sites will be considered first.

Except when necessary to achieve suppression objectives, aircraft operations are restricted under 2,000 feet altitude above ground surface level.

Except when necessary to achieve suppression objectives, the use of retardants or chemical foams is restricted within 300 feet of Federally-protected species habitat, riparian areas, aquatic habitats, or identified sensitive ephemeral drainages. Apply operational guidelines in the Interagency Standards for Fire and Fire Aviation Operations (2006 version), "Environmental Procedures for Application of Fire Chemicals: Threatened and Endangered Species" (page 12-5), and "Environmental Guidelines for Delivery of Retardant or Foam Near Waterways" (pages 12-3 through 12-4).

Aerial ignition will not be used for wildfire suppression operations within ¼ mile of Federally protected species habitat areas.

A resource advisor will remain assigned to the incident during short-term burned area emergency rehabilitation work, and will monitor/document activities in proximity to protected/rare species locations and unique resource areas.

Medium to long-term burned area emergency rehabilitation work will adhere, to the greatest practical extent, to applicable seasonal work restrictions and area closures for Federally listed species.

A resource advisor will be assigned during manual thinning and prescribed fire project planning to ensure sensitive resources are identified and appropriate protection measures are incorporated into project plans.

During any given project year at Walnut Canyon National Monument, no more than two thinning projects (not to exceed a combined 660 acres) and one prescribed fire (not to exceed 360 acres) will be ongoing in order to temporally and spatially limit human activity and short-term impacts to wildlife, vegetation, soils, air quality, watershed function, and sensitive natural resources.

Prescribed fire block size and rotation pattern will be planned to ensure short-term fire impacts are temporally and spatially distributed across the landscape.

Page 155. The following revised and expanded mitigating measures for Mexican Spotted Owl (ESA Threatened) supplement the measures listed in the EA/AEF:

Mexican Spotted Owl (ESA Threatened):

Wildland Fire Suppression Operations

Except for the existing NPS visitor center/administrative area, fire suppression ground operations sites (personnel/equipment staging, base camps, spike camps, refueling stations, etc.) should be located at least ¼ mile away from Mexican spotted owl (MSO) Protected Activity Centers (PACs). If ground operations sites are necessary within PACs to achieve suppression objectives, resource advisors will be consulted to identify sites having the least impacts.

If fireline construction is necessary within PACs and other patches of “protected” or “restricted” habitat, avoid felling trees and snags larger than 9 inches DBH. Avoid felling Gambel oak trees larger than 9 inches DBH, or other trees larger than 16 inches DBH unless necessary to achieve suppression objectives.

If air attack is necessary, precise, low-volume water drops are preferred over large-volume retardant drops. Do not drop retardant or water on known or suspected MSO nests.

Manual Thinning and Prescribed Fire Operations

Use of power equipment and other noise generating activities is prohibited within ¼ mile of steep slopes during MSO breeding season (March 1 to August 31).

The only exception to for felling trees 9 inches or larger DBH or snags 12 inches or larger DBH and is to protect 145 archeological sites within MSO PACs, including 20 sites that are located within the MSO Core Nest Buffers. These sites have been formally assessed and assigned a high risk of wildfire damage. Vegetation/fuels may be manually treated up to a radius of 50 feet around each site (approximately 0.2 acre per site) in accordance with the Archeological Site Hazardous Fuels Reduction Guidelines in Appendix B. In addition to thinning trees <9 inches DBH, 1 tree or snag per site in the 9-16 inch DBH range may be felled, but only if doing so is crucial to protect the site from fire damage. No trees or snags larger than 16 inches DBH will be felled. Cumulatively over the life of the FMP, no more than 30 acres will be thinned in any vegetation type on steep slopes, and no more than 145 medium diameter trees/snags will be felled within the four PACs.

Prescribed burns within PACs will only be implemented within WACA-FMU-2.

Prescribed fire treatments within the Cherry, Lucida, Breezy, and Walnut 33 PACs will not exceed a combined total of 375 acres of mixed ponderosa-pinyon-juniper-Gambel oak woodland on level terrain.

Within WACA-FMU-2, restoration thinning and prescribed fire treatments will be deferred within approximately 165 acres of MSO nest buffers, patches of Douglas fir-Gambel oak vegetation, and riparian vegetation.

Prescribed fires inside MSO PACs will be implemented under optimum prescriptions to:

- Minimize the risk of fire escape.
- Minimize the risk of MSO exposure to smoke
- Retain Critical Habitat Primary Constituent Elements and Key Habitat Components
- Reduce the risk of stand-replacing fire by consuming surface fuels and mimicking the role of presettlement fire
- Minimize post-fire mortality in ponderosa pines >20 inches DBH.
- Minimize post-fire mortality in Gambel oaks >10 inches diameter at root collar (DRC).

Within MSO PAC areas and other patches of “protected” and “restricted” habitat proposed for prescribed fire treatment, important habitat attributes will be manually pre-treated if needed to reduce the risk of loss to fire, including:

- Trees 16 inches and larger inches DBH
- Gambel oaks 10 inches and larger DRC
- Gamble oak groves, in project areas where oak is at least 10% of the total canopy cover
- If necessary, these habitat features can be excluded from prescribed fire by lining around them or by other protective tactics.

Manual pre-treatments are required until monitoring and modeling, and/or fire behavior/fire effects documentation reliably demonstrates that fire-only treatment would not adversely affect MSO habitat attributes.