

## **EXECUTIVE SUMMARY      Final Environmental Impact Statement and Assessment of Effect Grand Canyon National Park   Fire Management Plan**

This Final Environmental Impact Statement/Assessment of Effect (FEIS/AEF) describes and analyzes five alternatives designed to implement National Park Service (NPS) fire policies in Grand Canyon National Park. The FEIS/AEF supports the implementation document for the fire program—the Fire Management Plan (FMP). The Fire Management Plan will be prepared subsequent to issuance of a Record of Decision (ROD) for this Final Environmental Impact Statement (FEIS).

This FEIS/AEF considers a full range of alternatives for the restoration and maintenance of fire adapted ecosystems, management of wildland and prescribed fire, protection of human life and property and reduction of hazardous fuels. It also examines environmental impacts of each alternative.

### **Purpose and Need for Action**

The NPS has prepared this NEPA document to update the Fire Management Plan EA dated 1992 (NPS 1992). The Secretary of the Interior, through NPS wildland fire policy directives and NPS Director's Order 18 (DO-18) Wildland Fire Management, requires parks with burnable vegetation to have a Fire Management Plan. These plans are intended to be both strategic and operational, guiding the full range of fire program activities that support land and resource management objectives.

By revising the 1992 FMP Environmental Assessment, the NPS seeks to adjust management direction from the existing plan to 1) accommodate new national and NPS policy and new scientific information, and 2) introduce revised program goals and objectives.

The 1992 FMP is revised and amended annually, thus, the park's Fire Management Program is refined as knowledge of fire behavior and effects grow. The program undergoes annual reviews, and adjusts to reflect experience and information gained from management actions that achieve desired objectives and those that do not. Notably, fire managers have accelerated wildland fire use (WFU) for resource benefits, introduced aerial ignition for prescribed fires, and implemented prescribed fires under a wider range of environmental conditions to more fully meet fuel reduction objectives.

### **Existing Situation**

Between 1993 and 2006, more than 115,800 park acres burned. The majority (80%) was prescribed (46,459 acres) and naturally-ignited fires (46,433 acres) with desirable outcomes. Unwanted fires accounted for only 20% of the total (22,942 acres). Figure 1-1 (Chapter 1) displays annual acres burned by fire type since 1993. The fire effects monitoring program allows fire managers to evaluate effectiveness of prescribed and wildland fire-use activities, and adapt future practices as needed to better meet resource management objectives.

After more than 15 years of proactive fire management, progress toward restoring natural fire regimes to the park is measurable, but far from fully achieved. The past amount of managed fire in the park has been insufficient to remedy decades of landscape-scale fire exclusion. In many areas, multiple fire treatments will be needed to restore desired ecological conditions.

### **Fire Policy**

New guidance for Federal wildland fire management activities have occurred over the last year. Guidance for Implementation of Federal Wildland Fire Management Policy was issued by the Fire Executive Council 2/13/2009. The National Wildfire Coordinating Group (NWCG) issued two memos recently (NWCG#001-2009, Update on the Modifications to the Interagency Strategy for the Implementation of Federal Wildland Fire Management Policy dated 1/7/2009; and NWCG#011-2009, Interagency Fire

Management Plan Template dated 4/16/2009). Additionally, the NPS Intermountain Regional Office issued a memo tiering off of the NWCG#001-2009 memo (Guidance for Implementation of Federal Wildland Fire Management Policy and Updating Fire Managements Plans, dated 4/27/2009). Changes include clarification of fire terminology, guidance to manage unplanned fires for multiple objectives, emphasis on the need to conduct fire management planning that is intergovernmental in scope and at a landscape scale, and that every wildland fire will be assessed following a decision-support process that examines the full range of potential responses. These changes have occurred since DEIS distribution; these new guidance and directions are consistent with the intent of this FEIS. New terminology and affirmation for use of a decision support process that examines the full range of potential responses to fire, will be included in the park's Fire Management Plan to be completed after issuance of the Record Of Decision on this FEIS.

Wildland fire was a term describing any non-structural fire in wildland, but is now categorized as two distinct types: 1) unplanned ignitions or planned ignitions declared wildfires; and 2) prescribed fires or planned ignitions. In the DEIS, prescribed fire has and will continue to be a wildland fire and a planned event. Although human-caused wildfires occur in the park, lightning ignites most park wildfires. Fire managers are responsible for implementing a management response to each wildland fire. Responses to unplanned events include, but are not limited to, extinguishing, confining and/or containing the fire; monitoring the fire; or a mix of these responses. Throughout this document a number of terms are used to describe wildfires including suppression fires, wildland fire-use fires, wildland fire use for resource benefit (WFURB), appropriate management response to a fire (AMR), and arson fires. The terms wildland fires and wildfires are often used interchangeably throughout this document. All these terms are types of wildfires or responses to wildfire. Responses for wildfires may differ and are determined by environmental, fuel, and/or social conditions. Wildfires can be managed with multiple objectives, and those objectives may change during the life of any given fire as environmental, political, and resource availability needs change.

### **Project Goals**

To evaluate proposed actions, a team of interdisciplinary park staff identified success measures for the future Fire Management Program. These measures consist of program-specific goals

- Goal 1 Protect human health and safety and private and public property
- Goal 2 Restore and maintain park ecosystems in a natural, resilient condition
- Goal 3 Protect the park's natural, cultural, and social values
- Goal 4 Promote a science-based program that relies on current and best-available information
- Goal 5 Educate, inform, consult, and collaborate with tribes, stakeholders, and the public

### **History of Public Involvement**

In May 2001, the NPS sent a general scoping letter (Appendix B, Attachment A) to interested publics, affected agencies, and known groups, about the fire management program and projects to be undertaken at GRCA to prepare a NEPA document. The letter informed recipients about the proposed updated Fire Management Plan and projects including: suppression, prescribed, and wildland fire-use fires and manual/mechanical fuel reduction. The letter also described several existing park conditions that have led to increased fire potential such as decadent forests and activities undertaken before Grand Canyon became a national park. Eleven written responses to this letter were received by GRCA through email, U.S. mail, and hand delivery. Based on comments and issues raised during internal scoping, the NPS elevated the level of environmental analysis from an Environmental Assessment to an Environmental Impact Statement.

A Notice of Intent to prepare an EIS was published in the Federal Register on September 16, 2003. Written responses from the scoping letter and comments from public meetings helped identify fire management issues and concerns, a reasonable range of alternatives, and environmental impacts.

Members of the planning team identified substantive comments in each public submission, and coded them according to developed criteria. Major issues raised in the 2003 scoping comments were

- GRCA ecological restoration through natural fire
- Local impacts related to air and visual resource quality
- Cultural resource protection
- Wildland-Urban Interface/community protection
- Appropriate conditions for prescribed fire use
- Overall management and coordination procedures
- Coordination with adjacent landowners and neighboring land management agencies

A Notice of Availability (NOA) to prepare a Draft Environmental Impact Statement (DEIS) was published in the Federal Register on October 23, 2008 for a 90-day public comment period ending on January 21, 2009. Public meetings were held in Kanab, UT; Flagstaff, AZ; and Tusayan, AZ. Public meetings provided an overview of the DEIS and the opportunity for the public to discuss their comments with NPS staff. Approximately 28 people attended the meetings. A press release, website updates (PEPC), and public meetings were used to request public input and to disseminate information about draft alternatives and their impacts. During the public comment period, the NPS received 10 submissions either from public meetings, PEPC, email, or US mail. From those 10 submissions, there were 115 substantive comments. Major issues raised were:

- Cumulative impacts on resources combined with effects from Forest Service lands
- Adaptive management too vague
- Fire severity changes in the action alternatives
- Impacts to MSO critical habitat

## **Ecological Basis for Alternatives**

Information on fire history and fire ecology was used to assess ecological conditions of plant communities in the past and present. Based on differences between past and present conditions, a series of Desired Conditions were identified cooperatively by fire managers and GRCA natural and cultural resource specialists. These Desired Conditions represent characteristics of healthy and functioning vegetation ecosystems based on existing scientific knowledge and professional judgment. Existing data is limited in detail and/or resolution in some cases. Desired Conditions are meant to guide fire management actions and serve as a map for achievement. GRCA fire strategies and tactics are to be based on the best available science; the FMP planning team recognizes that Desired Conditions may be refined as new information becomes available. Existing and target conditions, along with analysis of expected fire behavior under differing weather conditions, were used to determine the type, amount, and location of fire management activities for proposed alternatives. Refinement of management actions will occur through the adaptive management process.

## **ALTERNATIVES, INCLUDING THE PREFERRED ALTERNATIVE**

The NPS identified five alternatives for analysis while developing the proposed GRCA FMP. As required by NEPA, a No Action Alternative describes the existing Fire Management Program as described in the current FMP. Four action alternatives have been crafted in response to identified program goals and needs. Each aims to restore and maintain natural ecosystems and to protect people, communities, resource values, and infrastructure from unwanted fire. The five alternatives under consideration are:

### **Alternative 1 No Action, Existing Program**

Continues the existing program including fire suppression, wildland fire use, prescribed fire, and

limited manual fuel reduction treatments, in three existing Fire Management Units (FMU).

The No Action Alternative assumes a similar or slightly higher level of suppression would occur as occurred 1993–2005. Successful suppression of small fires (in areas treated with past fires) should improve. However, large areas with poor access have not burned in the last 100 years, and risk of large-scale wildfire in these areas is very high. Wildland fires managed as suppression actions averaged 1,705 acres annually from 1993–2005.

Prescribed fire would continue under a Long-Term Treatment Schedule (see Appendix D, Figure 2-3, and Map 2-4), resulting in an average 5,840 acres treated annually. As the Fire Management Program's prescribed fire portion moves into more complex burn units (like mixed-conifer areas with high fuel loads and ladder fuels), risks associated with these projects increase.

Annual acreage managed under a Wildland Fire Use (WFU) strategy is expected to increase as natural fire regimes are restored, though it is difficult to predict by how much. It is feasible to assume that acres treated under a WUI strategy could rise to an annual average 5,000 acres from the current 13-year (1993–2005) average 3,568 acres. Acres treated with future prescribed fires may actually decrease under this alternative as acres treated under WFU strategy increase and treat those future prescribed fire acres.

Under the No Action Alternative, existing manual fuel-reduction treatments would continue in piñon-juniper habitat of FMU 1 and 3 in areas not proposed as wilderness including Grand Canyon Village, Hermits Rest, Desert View, and along main routes between these developments (Highway 64 and West Rim Drive). Manual treatments in spruce-fir habitat (FMU 2) would continue, primarily aimed at prescribed fire unit preparation, WUI protection, and the main route in and out of North Rim (Highway 67). Level of activity would continue at 10–60 acres per year with an average 40 acres per year.

## **Alternative 2 Mixed Fire Treatment Program (NPS Preferred Alternative)**

The Mixed Fire Treatment Program Alternative would continue the existing direction of GRCA's Fire Management Program with limited changes. Changes include use of new Fire Management Units (Map 2-2) and development of a Wildland-Urban Interface treatment program involving manual/mechanical fuel-reduction methods. Alternative 2 would continue use of suppression, wildland fire-use, and prescribed fire, and manual fuel reduction treatments.

Alternative 2 assumes a similar or slightly higher suppression level would occur through the life of the plan as occurred 1993–2005. Prescribed fire would continue under a Long-Term Treatment Schedule (see Appendix D, Figure 2-4, and Map 2-5), resulting in an average 5,840 acres treated annually. As the Fire Management Program's prescribed fire portion moves into more complex burn units (like mixed-conifer areas with high fuel loads and ladder fuels), risks associated with these projects increase.

Annual acreage managed as Wildland Fire Use is expected to increase as natural fire regimes are restored, though it is difficult to predict the amount. It is feasible that acres treated under a WFU strategy could rise to an annual average 5,000 acres from the current 13-year (1993–2005) average 3,568 acres. Acres treated with future prescribed fires may actually decrease under this alternative as acres treated under other wildland fire strategies increase and treat those future prescribed fire acres.

Mechanical and manual fuel-reduction treatments in the WUI would also occur under a Long-Term Treatment Schedule (see Appendix D, Figure 2-4, and Map 2-5), resulting in an average 225 acres treated annually. Increased treated WUI acres will decrease wildland fire risks and increase safety.

Alternative 2 is also the Environmental Preferred Alternative, as it is the only alternative that meets or exceeds all requirements set forth in NEPA section 101(b).

### **Alternative 3 Non-Fire Treatment Emphasis**

Alternative 3 would change the existing direction of GRCA's Fire Management Program through inclusion of a large mechanical/manual thinning component along with the wildland fire use and suppression program. The mechanical and manual thinning program would comprise the majority of the fire management staff's planning and implementation efforts. Thus, the wildland fire use and prescribed fire programs would be reduced due to time and/or resource constraints.

Alternative 3 Non-Fire Treatment Emphasis assumes an increase in suppression level through the life of the plan compared to 1993-2005. Acres burned under a suppression strategy would increase by an estimated 30% due to lack of effort in restoring fire regimes and fuel conditions (primarily in North Rim forests) through wildland fire-use or prescribed fire. Large areas with poor access have not burned in the last 100 years, and risk of large-scale wildfire in these areas is very high. As fuel loads increase, fires will grow more quickly with greater intensity, reducing effectiveness of firefighters and fire-suppression equipment. Wildland fires managed as suppression actions are assumed to average 2,370 acres annually through the life of the plan.

Prescribed fire would continue under a Long-term Treatment Schedule (Appendix D, Figure 2-5, and Map 2-6), resulting in an average 2,300 acres treated annually. Emphasis for most prescribed fire treatments will be in WUI to maintain light fuel loads.

Annual acreage managed as Wildland Fire Use is expected to fall due to fire staff commitments to accomplishing non-fire treatment. Fire-use fires would still be part of the Fire Management Program when staff is available to manage the fire. It is feasible that fire use acres would burn an annual average of 800 acres from the current 13-year (1993-2005) average 3,568 acres.

WUI mechanical and manual fuel-reduction treatments would occur under a Long-term Treatment Schedule (Appendix D, Figure 2-5, and Map 2-6), resulting in an average 360 acres treated annually.

### **Alternative 4 Prescribed Fire Emphasis**

Alternative 4 would change the existing direction of GRCA's Fire Management Program by increasing amount of prescribed fire. The prescribed fire program would be solely responsible for achieving desired vegetative structural conditions. Any area not identified as being at desired conditions would not be eligible for management with fire use, creating a suppression response. Therefore, the wildland fire use program would initially be reduced to a few small areas.

Alternative 4 assumes an increased suppression level through the life of the plan compared to 1993-2005. Acres burned could increase by an estimated 20% due to decrease of fire-use fires and multiple prescribed fire entries needed to move an area to desired conditions. Successful suppression of small fires (in areas previously treated with fire) should improve. However large areas with poor access have not burned in the last 100 years, and risk of large wildfire in these areas is very high. As the prescribed fire portion of the Fire Management Program moves into more complex burn units (like mixed-conifer areas with high fuel loads and ladder fuels), risks associated with these projects increase, thus increasing the chance of escaped prescribed fire. Wildland fires could rise to an average 2,190 acres annually.

Prescribed fire would continue under a Long-term Treatment Schedule (Appendix D, Figure 2-6, and Map 2-7), resulting in an average 9,930 acres treated annually. The prescribed fire program would emphasize treating WUI areas to maintain light fuel loads and protect park communities. The prescribed fire program would also emphasize moving current vegetative structural conditions toward desired

conditions outside the WUI. Time and effort needed for planning and implementing this level of prescribed fire would mean less effort toward planning and implementing non-fire treatments.

Annual acreage managed as Wildland Fire Use is expected to fall due to lack of suitable areas that meet desired conditions. It is feasible that fire-use acres would burn an annual average 500 acres from the current 3,568 acre 13-year (1993-2005) average.

Mechanical/manual fuel-reduction treatments in WUI would occur under a Long-term Treatment Schedule (Appendix D, Figure 2-6, and Map 2-7), resulting in an average 75 acres treated annually.

### **Alternative 5 Fire Use Emphasis**

Alternative 5 would change the existing direction of GRCA's Fire Management Program by expanding amount (acres and number of incidents) of fire use. Alternative 5 would emphasize managing fire for maintenance and restoration of fire-dependant ecosystems. Managing wildfire under a fire-use strategy would be applied in all park areas except the WUI. The prescribed fire program focus would be limited to protecting values at risk, developing defendable management action points or maximum manageable areas, and reducing wildfire risk in the WUI. Prescribed fire treatments would be phased out of the proposed wilderness area, but would occur in and around park boundaries and the WUI. Non-fire treatments would only occur in the WUI.

Alternative 5 assumes a decrease in suppression fires through the life of the plan compared to 1993–2005 because more fires will be managed under a fire-use strategy. Acres burned under a suppression strategy would decrease by an estimated 10% due to increased number of fires approved and managed under a fire-use strategy. Wildland fires managed with suppression actions would be assumed to average 1,640 acres annually. These suppression acres account for fires that would not be considered for management under a fire-use strategy for reasons including but not limited to political pressures, air quality issues, staffing concerns, and national preparedness concerns.

Prescribed fire would continue under a Long-term Treatment Schedule (Appendix D, Figure 2-7, and Map 2-8), resulting in an average 2,720 acres treated annually. Prescribed fire would also be used as a restoration and maintenance tool, but implementation would be focused on the WUI.

Annual acreage managed as wildland fire-use is expected to increase due to acceptance of fire use as a restoration and maintenance tool. It is feasible that fire-use acres would burn an annual average 8,000 acres from the current 13-year (1993-2005) average 3,568 acres.

Mechanical and manual fuel-reduction in the WUI would be carried out under a Long-term Treatment Schedule (Appendix D, Figure 2-7, and Map 2-8), resulting in an average 245 acres treated annually.

### **Elements Common to All Action Alternatives**

In addition to the alternative summary above, elements common to all action Alternatives (2-5) include

- GRCA is divided into eight new Fire Management Units (FMU)
- WUI treatment areas and priorities do not change, but implementation pace varies by alternative
- Wildland fire-use fire would not be used as a management tool in the two WUI FMU
- Highway 64 and Highway 67 are not classified in either WUI FMU, but these roads and their corridors are primary public escape routes and would be included as areas where mechanical/manual thinning is proposed. For project planning and funding purposes, work associated with these road corridors (300 feet from road centerline) would be designated WUI projects
- It is anticipated that up to 80% of proposed thinning projects would be completed under contracted services (using local or regional resources)

- Mechanical treatments are proposed for the Primary WUI FMU only
- Increased allowance of moderate/high and high burn severity in mixed-conifer compared to the No Action Alternative. A mitigation addressing increased high and moderate/high severity states: “Assess the amount of moderate/high and high severity fire through composite burn index monitoring after each managed fire in the mixed-conifer vegetation type above the rim. Use the adaptive management process to adjust burn prescription, ignition pattern, burn seasonality, and/or pre-treatment to ensure no more than 30% of the mixed-conifer vegetation type and MSO mixed-conifer restricted habitat burns with moderate/high and high severity. This includes high and moderate/high fire severity from past fires (2000 to present) (Table 4-15a), and all fires that will occur within the scope of this planning document.” The allowance of 30% high and moderate/high severity is not meant to be a target, but is a maximum amount. The park has described tools for planned and unplanned fires that will help keep the level of high and moderate/high severity to a minimum
- The adaptive management process will be used during the planning, implementation, and review process for each fire event with the intent that more tools can be developed to continue to minimize high and moderate/high fire severity effects (See section 2.6.4).

## MONITORING AND IMPLEMENTATION PLAN

After a Record of Decision (ROD) has been signed, the National Park Service will develop a detailed plan for monitoring and implementation of the Fire Management Plan as described in the ROD. The NPS will consider all possible funding sources available to GRCA. It is the intention of the Grand Canyon National Park to pursue long-term permanent solutions to guarantee funds for monitoring, mitigation, and other implementation needs for the life of the plan. As part of the monitoring and implementation plan, if resource conditions change sufficiently to adversely affect resources or visitor experience more than describe in the ROD, or if mitigation measure cannot be adequately funded or implemented or are unsuccessful, park managers will use the adaptive management process to review and revise the fire management plan.

## ENVIRONMENTAL CONSEQUENCES

An impact analysis for each impact topic was completed for each alternative in the FMP FEIS/AEF. Beneficial and adverse environmental consequences ranging from “negligible” to “major” in intensity occur within all five alternatives. Table 2-11 (Chapter 2) provides a matrix of impacts by alternative and topic (biological, cultural, physical), and Chapter 4 describes the impacts in detail. Potential impacts analysis identifies intensity, context, duration, timing, and the cumulative effects for each topic, and by each alternative. Alternative 2 “Mixed Fire Treatment Program” was selected as the NPS preferred alternative. Alternative 2 meets all the goals and objectives, as well as provides a balance of fire management opportunities to move the forest ecosystems toward desired conditions listed in Chapter 2. None of the alternatives would raise the impact to the level of impairment.