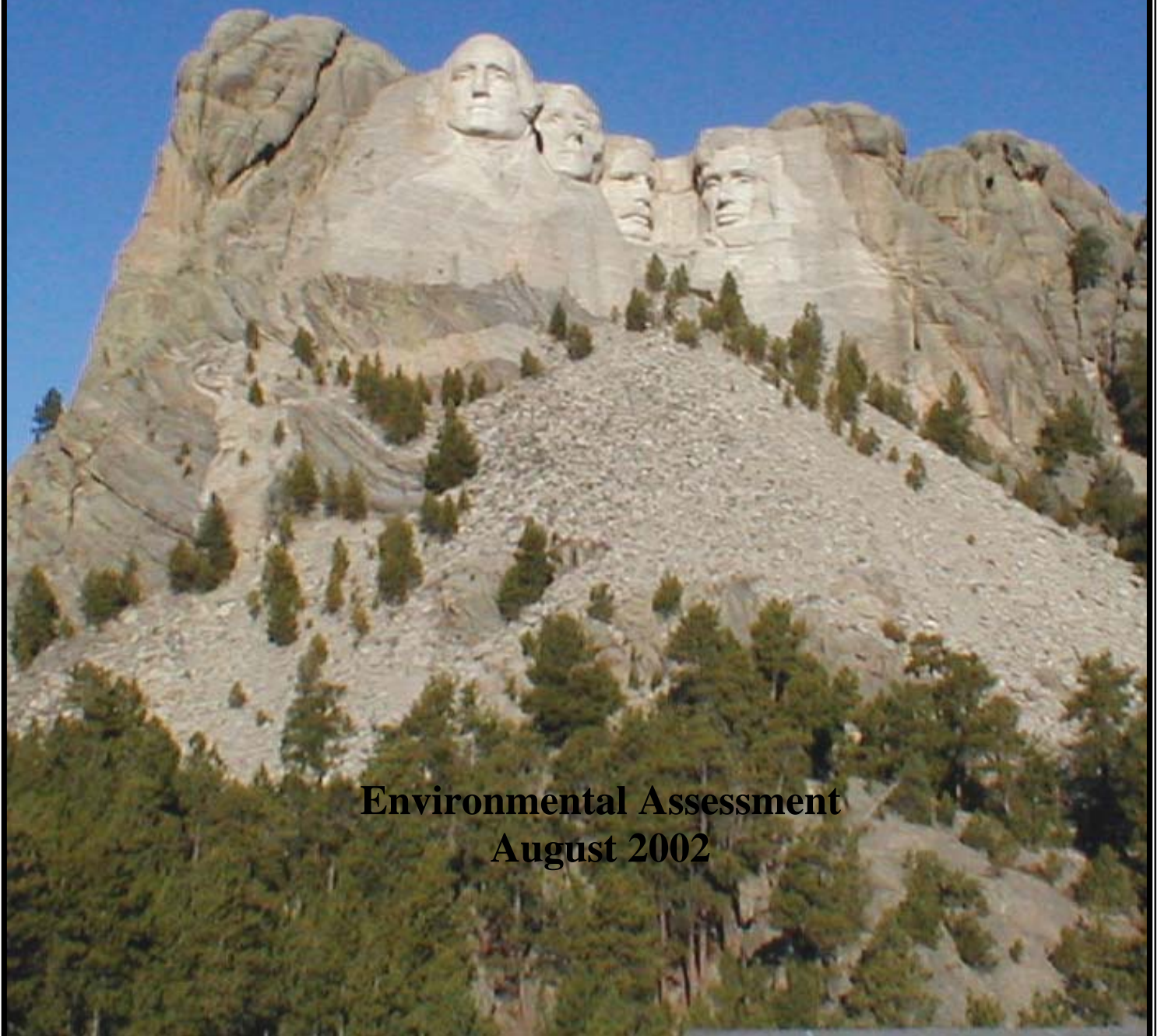


Mount Rushmore National Memorial Fire Management Plan



**Environmental Assessment
August 2002**

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Chapter 1 - Purpose and Need

1.1 INTRODUCTION

This Environmental Assessment (EA) documents the results of a study of the potential environmental impacts of an action proposed by the National Park Service to amend the Mount Rushmore National Memorial Fire Management Plan.

This EA has been prepared in compliance with:

- The National Environmental Policy Act (NEPA) of 1969 (42 United States Code (USC) 4321 et seq.), which requires an environmental analysis for major Federal Actions having the potential to impact the quality of the environment;
- Council of Environmental Quality Regulations at 40 Code of Federal Regulations (CFR) 1500-1508, which implement the requirements of NEPA;
- National Park Service Conservation Planning, Environmental Impact Analysis, and Decision Making; Director's Order (DO) #12 and Handbook.

The Purpose of an Environmental Assessment (EA)

There are three primary purposes of an EA:

- To help determine whether the impact of a proposed action or alternative could be significant, thus an environmental impact statement (EIS) is needed;
- To aid in compliance with NEPA when no EIS is necessary by evaluating a proposal that will have no significant impacts, but that may have measurable adverse impacts; and
- To facilitate preparation of an EIS if one is necessary.

Key goals of NEPA are to help Federal agency officials make well-informed decisions about agency actions and to provide a role for the general public in the decision-making process. The study and documentation mechanisms associated with NEPA seek to provide decision-makers with sound knowledge of the comparative environmental consequences of the several courses of action available to them. NEPA studies, and the documents recording their results, such as this EA, focus on providing input to the particular decisions faced by the relevant officials. In this case, the Superintendent of Mount Rushmore National Memorial is faced with a decision to amend the memorial's Fire Management Plan as described below. This decision will be made within the overall management framework already established in the Mount Rushmore National Memorial General Management Plan. The alternative courses of action to be considered at this time are, unless otherwise noted, crafted to be consistent with the concepts established in the General Management Plan (copies of the General Management Plan can be obtained by contacting NPS personnel at the memorial).

In making decisions about National Park Service administered resources, the Park Service is guided by the requirements of the 1916 Organic Act and other laws, such as the Clean Air Act, Clean Water Act, and Endangered Species Act. The authority for the conservation and management of the National Park Service is clearly stated in the Organic Act, which states the agency's purpose: "...to conserve the scenery and the natural and historic objects and the

wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” This authority was further clarified in the National Parks and Recreation Act of 1978: “Congress declares that...these areas, though distinct in character, are united...into one national park system.... The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress.”

The busts of four American Presidents – George Washington, Thomas Jefferson, Abraham Lincoln, and Theodore Roosevelt – were sculpted on the southeastern granite face of Mount Rushmore as “...a memorial... commemorative of our national history and progress...” (Act of March 3, 1925). This basic legislation authorized the carving and established the purpose of what was to become Mount Rushmore National Memorial. Subsequent legislation included charges to “administer, protect, and develop” the memorial. President Franklin Delano Roosevelt placed Mount Rushmore under the jurisdiction of the National Park Service by executive order on June 10, 1933. The purpose for which the park was established is to preserve and protect the memorial sculpture and the natural setting, and to provide for the access of the public and for the inspirational and educational appreciation of the cultural and natural resources of the memorial.

The requirements placed on the National Park Service by these laws, especially the Organic Act mandate that resources are passed on to future generations “unimpaired” (DOI, 2001a). This EA addresses whether the actions of the various alternatives proposed by Mount Rushmore National Memorial impair resources or values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the memorial, (2) key to the natural or cultural integrity of the memorial or opportunities for enjoyment of the memorial, and (3) identified as a goal in the memorial’s general management plan or other Park Service planning documents (see *Chapter 3 – Environmental Consequences*).

1.2 PURPOSE AND NEED

Historically, fire has played a major role in maintaining the ponderosa pine ecosystem and a diversity of wildlife habitat in the Black Hills surrounding the memorial. The ponderosa pine ecosystem historically has a fire regime of frequent, low-severity ground fires (every 11-74 years, with an average fire return interval of 20 years) that resulted in uneven-aged and open, park-like stands of ponderosa pine (Brown et al., 2000). Smaller trees were killed by the fires, while older, larger and fire-resistant trees survived.

One hundred years of wildland fire suppression in the region has resulted in an increased density of pine stands and abundant ladder fuels (e.g. dead and dry lower limbs, small trees), which create ideal conditions for severe crown fires. Fire suppression activities have also reduced the complex mosaic of forests and grasslands and increased the risk of catastrophic fire. The historic pre-European settlement pattern of frequent, low-severity ground fire, which removed ground

fuels, has shifted to a pattern of potential high severity wildfires that may threaten life, property, and memorial resources.

Thinning activities have occurred on the memorial over the past decade along the road corridor and adjacent to visitor use areas, however prescribed fire was not pursued as a mechanism for hazardous fuels reduction. The recent fire history at the memorial has been either minimal or not reported. Since 1988, the re-introduction of fireworks over the July 4th Holiday has resulted in 18 small wildfires; all were actively suppressed and, in sum, burned less than 2 acres. The few fires documented from 1983-2001, including small fires caused by lightning, humans, and the fireworks program, have only burned a total of 2 acres or less.

National Park Service Wildland Fire Management Guidelines (DO-18) states that “all parks with vegetation that can sustain fire must have a fire management plan.” The purpose of this federal action is to develop a fire management plan and program that utilizes the benefits of fire to achieve desired natural resource conditions while minimizing the fire danger to memorial resources and adjacent lands from hazardous fuel accumulations. There is a need to re-establish the natural fire regime and preserve native plant communities while at the same time protect visitors, facilities, and resources on and adjacent to the memorial.

1.3 BACKGROUND

Mount Rushmore National Memorial consists of 1,238 acres and is located on the central slope of the Black Hills of western South Dakota, in Pennington County (see Figure 1-1). The Black Hills are a forested mountain range in southwest South Dakota and northern Wyoming covering approximately 2 million acres. Granite knobs, peaks, ridges and valleys covered with ponderosa pine and dotted with meadows characterize Mount Rushmore.

Nearby communities include Rapid City, Hill City, and Keystone. Federal, state, and private lands surround the memorial. It is adjacent to the Black Elk Wilderness Area, the Peter Norbeck Wildlife Preserve, and the Hell Canyon and Mystic Districts of the Black Hills National Forest. The northeast corner of the memorial is bordered by the town of Keystone with a year round population of 300 and a significant increase of seasonal population from April through September.

1.4 FIRE MANAGEMENT OBJECTIVES

National Park Service Wildland Fire Management Guidelines (DO-18) requires that all parks with vegetation capable of sustaining fire develop a wildland fire management plan that will meet the specific resource management objectives for that park and to ensure that firefighter and public safety are not compromised. This guideline identifies fire as the most aggressive natural resource management tool employed by the National Park Service. The guideline further states that all wildland fires are classified as either wildfires or prescribed fires. Prescribed fires and wildland fire use may be authorized by an approved wildland fire management plan and contribute to a park’s resource management objectives. Human-caused wildfires are unplanned events and may not be used to achieve resource management objectives.

DO-18 identifies three paramount considerations for each Park's fire management program. They are:

- protect human life and property both within and adjacent to Park areas;
- perpetuate, restore, replace, or replicate natural processes to the greatest extent practicable; and
- protect natural and cultural resources and intrinsic values from unacceptable impacts attributable to fire and fire management activities

Wildfires are any non-structure fires, other than prescribed fires, that occur in the wildland. This term encompasses fires previously called both wildfires and prescribed natural fires.

Prescribed Fires are any fires ignited by management actions in defined areas under predetermined weather and fuel conditions to meet specific objectives.

Wildland fire use is the management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in predefined geographic areas outlined in Fire Management Plans.

The overall objectives of the Mount Rushmore Fire Management Plan are the following:

Employee and Visitor Safety

- provide for employee and visitor safety as the first priority in all fire management activities;
- protect the visiting public by providing information and closing memorial as needed;

Preparedness and Suppression

- prevent human caused fires;
- suppress all wildland fires to protect memorial resources;

Hazard Fuels Management

- reduce the potential for large wildland fires that could adversely affect memorial resources;
- create firebreaks that would aid suppression actions;
- use prescribed fires and mechanical means to reduce fuels in locations where fire would adversely affect memorial values at risk;
- apply prescribed fire to restore landscape vista and maintain reduced fuel loads;
- prevent fires from burning onto adjacent lands unless there is an agreement with the managing agency to accept the fire;

Vegetation Management

- reestablish fire as a critical component of the ecosystem;
- restore or gain the mosaic pattern of different plant communities associated with post fire stages;
- restore an open ponderosa pine community using fire and/or thinning as appropriate;
- encourage growth of beneficial forest understory species;
- assist in the control exotic plant species;
- improve forage by restoring understory shrubs, forbs and grasses;
- control or mitigate insect and disease attacks by providing a healthy diversity of forest age classes;

Public Use/Interpretation

- increase public awareness of the role of fire in natural processes through interpretation;
- protect the visiting public.

Resource management objectives in relation to the fire management program include the following:

- minimize the hazard of uncontrolled wildfire to the structures and facilities of Mount Rushmore (including the sculpture, historic sculpture studio and surrounding district);
- manage toward approximating the natural forest and vegetation conditions and scene which would exist if fire had occurred naturally (pre-settlement);
- maintain scenic vistas;
- preserve old growth forest stands in the memorial; and
- restore fire as a critical component of the ecosystem.

1.5 SCOPING ISSUES AND IMPACT TOPICS

On November 21, 2001, the memorial distributed a press release that described the Proposed Action and invited the public to an open house. On November 27, 2001, the public open house was held in Rapid City to discuss the Fire Management Plan and the proposed use of mechanical thinning and prescribed fire treatments in the memorial. Five people signed the attendance list. On November 30, 2001, a scoping letter describing the Proposed Action was sent to a mailing list of 80 individuals and organizations requesting comments (see Coordination and Consultation for a complete listing of those individuals, organizations, and agencies who received the notice and the draft EA). The major issues and concerns that came from the open house and other public input (e.g. email, written correspondence) were evaluated and sorted. Issues determined to be important were those related to the effects of the proposed action, and those not already adequately addressed by laws, regulations, and policies. Important issues were considered in developing and evaluating the alternatives to the Proposed Action discussed in this EA.

1.5.1 *Important Issues*

- Issue: Prescribed fires (broadcast burns) may escape out of memorial boundaries or spot outside of control lines, thus having the potential to impact human health and safety, private structures, and property; Restrict prescribed fires to the spring and fall to minimize control concerns.
- Issue: Fire management activities should prevent pine beetles populations from becoming rampant.

1.5.2 *Other Issues Considered but not Further Analyzed*

- Issue: Commercial timber harvest should be considered as a mechanism for fuels reduction. National Park Service regulations prohibit commercial timber harvest on National Park lands, therefore, this issue was not evaluated further in this EA.

- Issue: Smaller diameter trees should be thinned to reduce hazardous fuels. This issue is addressed in the Proposed Action since thinning activities would focus on small understory trees.
- Issue: Mechanical treatment of Mount Rushmore's forests is preferable over the use of prescribed fire. Mechanical treatments alone would not help restore the natural fire regime to the ponderosa pine forests and would be cost prohibitive as the sole means of achieving hazardous fuels reduction on the memorial. Therefore, this issue is not further analyzed in this EA.
- Issue: Install water lines and/or additional hydrants along established roads as a means of fire suppression/fire prevention. This issue would be addressed and analyzed as part of the memorial's General Management Plan and is therefore not further analyzed in this EA.
- Issue: The fireworks program should continue with appropriate human health and safety considerations in place and access issues to the memorial addressed. While a connected issue, the continuation of the fireworks program is a management decision unrelated to fire management activities to suppress wildfires, restore ecological processes through prescribed fire, and reduce hazardous fuels through prescribed fire and mechanical thinning treatments. The memorial is in the process of evaluating the fireworks program and associated environmental impacts on the human environment in an environmental assessment.

1.5.3 *Impact Topics Considered in this EA*

Impact topics are derived from issues raised during internal and external scoping. Not every conceivable impact of a proposed action is substantive enough to warrant analysis. The following topics, however, do merit consideration in this EA:

Soils: Intense fires, thinning activities, and suppression activities can adversely impact soils, therefore, impacts to soils are analyzed in this EA.

Water Resources (including Wetlands): NPS policies require protection of water resources consistent with the Federal Clean Water Act. Mount Rushmore National Memorial contains several intermittent streams and wetlands. Thinning treatments, prescribed fires and fire suppression efforts can adversely impact stream channels and wetlands, therefore, impacts to water resources are analyzed in this EA.

Vegetation: Ponderosa pine of varying age is the dominant vegetation type in the memorial. An area of the memorial contains one of the largest stand of old growth ponderosa pine in the Black Hills. Starling Basin, located in the southern part of the memorial, has been described as a "type habitat" that is rare in the Black Hills. In light of these considerations and coupled with the use of mechanical thinning and prescribed fire to reduce hazardous fuel loadings, vegetation impacts are analyzed in this EA.

Wildlife: There are resident populations of various species of reptiles, amphibians, birds, mammals, fish, and invertebrates that can be impacted by thinning treatments and prescribed fires. Therefore, impacts to wildlife are evaluated in this EA.

Air Quality: The Federal 1970 Clean Air Act stipulates that Federal agencies have an affirmative responsibility to protect a park's air quality from adverse air pollution impacts. Moreover, Mount Rushmore is located in a Class II area. While the park generally enjoys excellent air quality, it is not pristine air quality. Air pollution from industrial and electric utility facilities in the region, which includes nitrate and sulfate emissions, impact air quality at the memorial. All types of fires generate smoke and particulate matter, which can impact air quality within the memorial and surrounding region. In light of these considerations, air quality impacts are analyzed in this EA.

Noise: Noise is defined as unwanted sound. Fuels reduction, prescribed fires and fire suppression efforts can all involve the use of noise-generating mechanical tools and devices with engines, such as chain saws, trucks, helicopters, and airplanes. Each of these devices, in particular helicopters and chain saws at close range, are quite loud (in excess of 100 decibels). While there are few "sensitive receptors" (schools, churches, elderly homes) in the areas surrounding the memorial, a designated wilderness area lies on the western border of the memorial and could be exposed to noise levels from thinning activities within the memorial that would conflict with the areas' designation. Therefore, this impact topic is analyzed further in this EA.

Visitor Use and Experience: The 1916 NPS Organic Act directs the Service to provide for public enjoyment of the scenery, wildlife and natural and historic resources of national parks "in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations." Fire management activities can result in the temporary closure of certain areas and/or result in visual impacts that may affect the visitor use and experience of the memorial. Therefore, potential impacts of the proposed FMP on visitor use and experience are addressed in this EA.

Human Health and Safety: Fires can be extremely hazardous, even life-threatening, to humans, and current federal fire management policies emphasize that firefighter and public safety is the first priority; all FMP's must reflect this commitment (NIFC, 1998). Therefore, impacts to human health and safety are addressed in this EA.

Cultural Resources: Section 106 of the National Historic Preservation Act of 1966 provides the framework for Federal review and protection of cultural resources, and ensures that they are considered during Federal project planning and execution. Mount Rushmore National Memorial is listed on the National Register of Historic Places. In addition, numerous designations for historic protection of the memorial have been made such as the Hall of Records, the Sculptor's Studio, the residence, the Borglum View Terrace and other affiliated facilities from the time of the creation of the sculpture. These cultural resources can be affected both by fire itself and fire suppression activities, thus potential impacts to cultural resources are addressed in this EA.

Park Operations: Severe fires can potentially affect operations at national parks, especially in more developed sites like visitor centers, campgrounds, administrative and maintenance facilities. These impacts can occur directly from the threat to facilities of an approaching fire, and more indirectly from smoke and the diversion of personnel to firefighting. Fires have caused closures of facilities in parks around the country. Thus, the potential effects of the FMP alternatives on park operations will be considered in this EA.

Wilderness: According to National Park Service Management Policies (2001), proposals having the potential to impact wilderness resources must be evaluated in accordance with National Park Service procedures for implementing the National Environmental Policy Act. Because Mount Rushmore is bordered by the Black Elk Wilderness Area, wilderness impacts are evaluated further in this EA.

1.5.4 Impact Topics Considered but dropped from Further Analysis

NEPA and the CEQ Regulations direct agencies to “avoid useless bulk...and concentrate effort and attention on important issues” (40 CFR 1502.15). Certain impact topics that are sometimes addressed in NEPA documents on other kinds of proposed actions or projects have been judged to not be substantively affected by any of the FMP alternatives considered in this EA. These topics are listed and briefly described below, and the rationale provided for considering them, but dropping them from further analysis.

Threatened and Endangered Species: The Federal Endangered Species Act prohibits harm to any species of fauna or flora listed by the U. S. Fish and Wildlife Service (USFWS) as being either threatened or endangered. Such harm includes not only direct injury or mortality, but also disrupting the habitat on which these species depend. There are no known threatened or endangered species that reside within Mount Rushmore National Memorial, nor is there any critical habitat. Therefore, this impact topic is not included for further analysis in this EA.

Floodplains: Presidential Executive Orders mandate floodplain management and protection of wetlands. The memorial does not contain any floodplains, and therefore impacts are not analyzed further in this EA.

Waste Management: None of the FMP alternatives would generate noteworthy quantities of either hazardous or solid wastes that need to be disposed of in hazardous waste or general sanitary landfills. Therefore this impact topic is dropped from additional consideration.

Transportation: None of the FMP alternatives would substantively affect road, railroad, water-based, or aerial transportation in and around the memorial. One exception to this general rule would be the temporary closure of nearby roads during fire suppression activities or from heavy smoke emanating from wildland fires or prescribed fires. Over the long term, such closures would be very infrequent and would not significantly impinge on local transportation. Therefore, this topic is dismissed from any further analysis.

Utilities: Generally speaking, some kinds of projects, especially those involving construction, may temporarily impact above and below-ground telephone, electrical, natural gas, water, and

sewer lines and cables, potentially disrupting service to customers. Other proposed actions may exert a substantial, long-term demand on telephone, electrical, natural gas, water, and sewage infrastructure, sources, and service, thereby compromising existing service levels or causing a need for new facilities to be constructed. None of the FMP alternatives will cause any of these effects to any extent, and therefore utilities are eliminated from any additional analysis.

Land Use: Visitor and administrative facilities occur within the memorial. The city of Keystone shares a ½ mile boundary with the memorial and has a year-round population of 300. Fire management activities would not affect land uses within the memorial or in areas adjacent to it, therefore land use is not included for further analysis in this EA.

Socioeconomics: NEPA requires an analysis of impacts to the “human environment” which includes economic, social and demographic elements in the affected area. Fire management activities may bring a short-term need for additional personnel in the memorial, but this addition would be minimal and would not affect the neighboring community’s overall population, income and employment base. Therefore, this impact topic is not included for further analysis in this EA.

Environmental Justice / Protection of Children: Presidential Executive Order 12898 requires Federal agencies to identify and address disproportionate impacts of their programs, policies and activities on minority and low-income populations. Executive Order 13045 requires Federal actions and policies to identify and address disproportionately adverse risks to the health and safety of children. None of the alternatives would have disproportionate health or environmental effects on minorities or low-income populations as defined in the Environmental Protection Agency’s Environmental Justice Guidance, therefore, these topics are not further addressed in this EA.

Prime and Unique Agricultural Lands: Prime farmland has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Unique land is land other than prime farmland that is used for production of specific high-value food and fiber crops. Both categories require that the land is available for farming uses. Lands within Mount Rushmore National Memorial are not available for farming and, therefore, do not meet these definitions. This impact topic is not evaluated further in this EA.

Indian Trust Resources: Indian trust assets are owned by Native Americans but held in trust by the United States. Indian trust assets do not occur within Mount Rushmore National Memorial and, therefore, are not evaluated further in this EA.

Resource Conservation, Including Energy, and Pollution Prevention: The National Park Service’s *Guiding Principles of Sustainable Design* provides a basis for achieving sustainability in facility planning and design, emphasizes the importance of biodiversity, and encourages responsible decisions. The guidebook articulates principles to be used such as resource conservation and recycling. Proposed project actions would not minimize or add to resource conservation or pollution prevention on the memorial and, therefore, this impact topic is not evaluated further in this EA.

Table 1-1 Impact Topics for Mount Rushmore National Memorial Fire Management Plan
Environmental Assessment

Impact Topic	Retained or Dismissed from Further Evaluation	Relevant Regulations or Policies
Soils	Retained	<i>NPS Management Policies 2001</i>
Water Resources	Retained	Clean Water Act; Executive Order 12088; <i>NPS Management Policies</i>
Floodplains and Wetlands	Retained	Executive Order 11988; Executive Order 11990; Rivers and Harbors Act; Clean Water Act; <i>NPS Management Policies</i>
Vegetation	Retained	<i>NPS Management Policies</i>
Wildlife	Retained	<i>NPS Management Policies</i>
Air Quality	Retained	Federal Clean Air Act (CAA); CAA Amendments of 1990; <i>NPS Management Policies</i>
Noise	Retained	<i>NPS Management Policies</i>
Visitor Use and Experience	Retained	<i>NPS Management Policies</i>
Human Health & Safety	Retained	<i>NPS Management Policies</i>
Cultural Resources	Retained	Section 106; National Historic Preservation Act; 36 CFR 800; NEPA; Executive Order 13007; Director's Order #28; <i>NPS Management Policies</i>
Park Operations	Retained	<i>NPS Management Policies</i>
Wilderness	Retained	The Wilderness Act; Director's Order #41; <i>NPS Management Policies</i>
Threatened and Endangered Species and their Habitats	Dismissed	Endangered Species Act; <i>NPS Management Policies</i>
Waste Management	Dismissed	<i>NPS Management Policies</i>
Transportation	Dismissed	<i>NPS Management Policies</i>
Utilities	Dismissed	<i>NPS Management Policies</i>
Land Use	Dismissed	<i>NPS Management Policies</i>
Socioeconomics	Dismissed	40 CFR Regulations for Implementing NEPA; <i>NPS Management Policies</i>
Environmental Justice	Dismissed	Executive Order 12898
Prime and Unique Agricultural Lands	Dismissed	Council on Environmental Quality 1980 memorandum on prime and unique farmlands
Indian Trust Resources	Dismissed	Department of the Interior Secretarial Orders No. 3206 and No. 3175
Resource Conservation, Including Energy, and Pollution Prevention	Dismissed	NEPA; <i>NPS Guiding Principles of Sustainable Design</i> ; <i>NPS Management Policies</i>

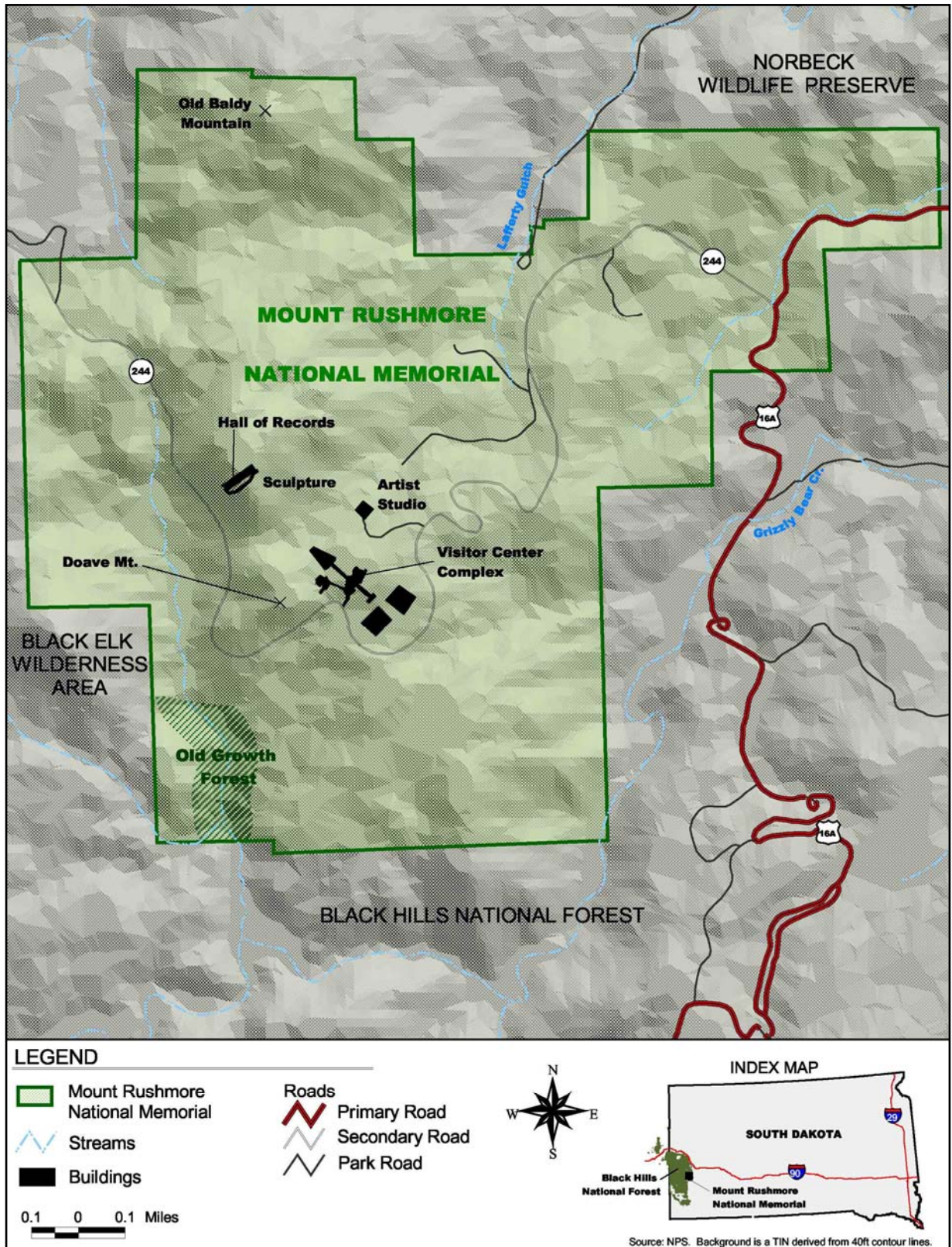


Figure 1-1 Mount Rushmore National Memorial Vicinity

Chapter 2 - Issues and Alternatives

This Chapter describes the range of alternatives, including the Proposed Action and No Action Alternatives, formulated to address the purpose of and need for the proposed project. These alternatives were developed through evaluation of the comments provided by individuals, organizations, governmental agencies, and the Interdisciplinary Team (IDT).

2.1 ALTERNATIVES CONSIDERED BUT NOT ANALYZED FURTHER IN THIS EA

2.1.1 *Revision of the 1993 Fire Management Plan to include Wildland Fire Use*

Wildland fire use involves the management of fires ignited by natural means (usually lightning) that are permitted to burn under specific environmental conditions for natural resource benefits. In many cases, national parks and forests employ wildland fire use as a part of their fire management program to obtain natural resource benefits from wildfire. These parks and forests typically have large acreages and the areas identified for its use contain few if any private residences and structures nearby (wildland urban interface). In such cases, wildland fire use is a critical component in meeting fire management objectives of federal agencies. This alternative was considered but not analyzed further in this EA because the 1,238 acres of the memorial is too small to ensure fire containment within memorial boundaries, and valuable resource and cultural resources would be at risk if the wildfire burned out-of-prescription. In the event of a resulting catastrophic wildfire, forest stands, including old growth stands in Starling Basin, could be entirely consumed and memorial and private residences and structures could be destroyed. Memorial staff concluded that the potential risks to human health and safety and cultural resources under this alternative outweigh any potential resource benefits that would be obtained from including wildland fire use.

2.2 ALTERNATIVES CONSIDERED AND ANALYZED IN THIS EA

2.2.1 *Alternative 1 (No Action Alternative) - Implement the 1993 Fire Management Plan*

This alternative meets the purpose and need by continuing the fire program according to the Fire Management Plan approved in 1993, however it would not be updated to reflect current fire policy guidance. The No Action Alternative would include the suppression of wildland fires, provide for prescribed fires, and allow for mechanical thinning treatments.

The entirety of Mount Rushmore National Memorial is contained in one Fire Management Unit since the following characteristics are similar throughout the memorial: climate, weather, topography, vegetation, elevation, air quality concerns, access, fire history, fuel types, major fire regimes and expected fire behavior. Under this alternative, all wildland fires in the memorial, human-caused fires and naturally-ignited fires (usually lightning), would be declared wildfires and suppressed in a manner that minimizes negative environmental impacts of suppression activities.

For the prescribed fire program, the memorial is divided into five management zones based upon administrative and cultural resources: Natural Environmental Zone, Special Use Zone, Historic Zone, Outstanding Historic Feature Subzone, and the Development Zone. After the vegetation is restored to a pre-European settlement condition and is then in a “maintenance” mode, units would be burned every ten to twenty years, when funds are available, to replicate the natural fire regime of the ponderosa pine forest and to reduce hazardous fuel accumulations. Those management zones associated with high economic values (historic and developed zones) would be treated more frequently.

A combination of mechanical thinning and prescribed fire would be used to return the developed, historic and special use zones to natural fire regimes and to provide defensible space for firefighters. Thinning treatments would concentrate on small understory trees and would not include large diameter trees or old growth. Under this project, the Memorial intends to reduce natural fuel loadings in forested areas, which currently range from 25-50 tons/acre, to 6-12 tons/acre. (Moreford, 2002). Up to 200 acres in any given year would be burned via prescribed fire to reduce fuel accumulations and restore ponderosa pine stands to pre – European settlement conditions. Prescribed fires would be employed in treatment units as frequently as every 5-15 years during the restoration phase. Once historical conditions in an area were restored, prescribed fire would be used to maintain them. This “maintenance” mode would result in areas being treated with prescribed fire every ten to twenty years. The burning of slash piles with prescribed fire is considered in the FMP. Interagency cooperative burns would be sought for areas near and adjacent to memorial boundaries. Under this alternative, mechanical equipment such as chainsaws, fire engines, and aircraft would be employed. During wildfire suppression efforts, fire retardants and foams may be used.

2.2.2 Alternative 2 (Proposed Action) - *Revise 1993 Fire Management Plan to Reflect Current Fire Policy Guidance*

Under this alternative, the 1993 Fire Management Plan would be revised to reflect current fire policy guidance. Fire management activities and prescriptions would remain the same as those described under the No Action Alternative. Prescribed fire units and mechanical thinning treatment areas are illustrated in Figure 2-1 and described in Table 2-1.

Table 2-1 Mount Rushmore National Memorial Treatment Units

Burn Unit	Timing of Thinning/Burn	Description
Lafferty	2002/2003	The treatment unit is heavily forested (ponderosa pine) with steep terrain and borders the town of Keystone along with private cabins on Forest Service land. This area is on the northeast and east side of the memorial. There exist large amounts of downed woody debris due to winter storms.
Sculpture	2003/2004	The treatment unit consists of the forested area around the Mount Rushmore sculpture. The area is depicted by ponderosa pine and granite rock outcroppings. A segment of the Starling Basin, which is located southwest of the sculpture across SD Highway 244, would also be included in this treatment unit.
Housing	2004/2005	The treatment unit is heavily forested area with ponderosa pine and is located around the National Park Service residential housing area off SD Highway 244.

Burn Unit	Timing of Thinning/Burn	Description
North Rock	2005/2006	The treatment unit is located to the north of the sculpture and consists of very steep terrain, granite rock outcroppings, and pockets of ponderosa pine, which can be very dense in some locations.
Dormitory	2006/2007	The treatment unit is heavily forested with ponderosa pine and is located north and west off SD Highway 244 between the historic Sculpture Studio and the concession dormitory facility.
Riordan's View	2007/2008	The treatment unit consists of the area adjacent to the administration building and an area southwest across the SD Highway 244. The terrain of the unit is rocky and contains ponderosa pine stands.

Since the completion of the memorial's previous version of its Fire Management Plan in 1993, national fire policy guidance has changed. The National Fire Plan of 2000 embodied the philosophical changes in fire policy and outlined four major goals. These included:

- Improve Prevention and Suppression
- Reduce Hazardous Fuels
- Restore Fire Adapted Ecosystems
- Promote Community Assistance

The National Fire Plan placed emphasis on the use of prescribed fire, wildland fire use and mechanical thinning as tools that could be used to meet these goals. Congress also embraced this new fire policy direction through its appropriations to fund projects nationwide that would help meet the national fire plan. In particular, Congress emphasized the need to protect the wildland urban interface by reducing hazardous fuel levels. A final difference under the new National Fire Plan involved administrative changes that allowed certain fire management activities of federal agencies to be funded from "emergency funds."

Besides the philosophical changes in fire policy, there have also been terminology changes since the memorial's Fire Management Plan from 1993. The key terminology changes were the following:

- "Prescribed natural fire" would be known as "wildland fire use";
- "Management-ignited prescribed fires" would be known as "prescribed fire";
- The use of the terms "contain, control, and confine" would no longer be used as descriptive strategies for wildland fire suppression in fire management plans. Formerly, each term was defined in a fire management plan with an accompanying description of the fire management strategy associated with it. Under new policy guidance, the terms would only be used during fire management activities to describe firefighter's progress in suppressing wildfires

2.2.3 Alternative 3 – *Suppression of Wildland Fires and No Prescribed Fire*

This alternative responds to the public's concern regarding the possible escape of prescribed fire and any associated human health & safety issues associated with such an event. Under this alternative, the 1993 Fire Management Plan would be updated to reflect current fire policy guidance and would state that all wildland fires (human-caused and naturally-ignited) would be declared wildfires and suppressed. In addition, prescribed fire would not be permitted on the memorial for resource benefits or for slash pile burning. Mechanical thinning treatments would be similar to those

described in the No Action Alternative. Priority areas to be treated would include those adjacent to structures, roadways, and the memorial's boundary for protection of private resources outside the memorial.

2.2.4 *Environmentally Preferred Alternative*

The National Park Service is required to identify the environmentally preferred alternative(s) for any of its proposed projects. That alternative is the alternative that will promote the national environmental policy expressed in NEPA (Section 101 (b)). This includes alternatives that:

- 1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- 2) ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- 3) attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- 4) 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;
- 5) achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
- 6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

In essence, the environmentally preferred alternative would be the one(s) 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" (DOI, 2001a).

In this case, the Proposed Action is the environmentally preferred alternative for Mount Rushmore National Memorial since it meets goals 1, 2, 3, and 4 described above. Under this alternative, fire management activities would reduce hazardous fuel loadings on the memorial, mimic the natural ecological processes, and help protect memorial resources and adjacent lands from the threat of wildfires. Finally, the alternative best protects and helps preserve the historic, cultural, and natural resources in the memorial for current and future generations.

2.3 IMPACT DEFINITIONS

Table 2-2 depicts the impact definitions used in this Environmental Assessment. Significant impact thresholds for the various key resources were determined in light of compliance with existing state and federal laws, compliance with existing Mount Rushmore National Memorial planning documents.

Table 2-2 Impact Definitions

	“Minor” Impact	“Major” or “Significant” Impact
Key Resources		
Soils	Minor damage to or loss of the litter/humus layers that causes minor localized increases in soil loss from erosion; fire severe enough to cause minor harm to soil community; minor, temporary surface sterilization of soils that does not cause long term loss of soil productivity that would alter or destroy vegetation community; short-term and localized compaction of soils that does not prohibit re-vegetation	Damage to or loss of the litter/humus layers that would increase soil loss from erosion on a substantial portion of the burn area; fire severe enough to damage soil community; substantial surface sterilization of soils that may cause long term loss of soil productivity and that may alter or destroy a portion of the vegetation community; long-term and widespread soil compaction that affects a large number of acres and prohibits re-vegetation
Water Resources (Including Wetlands)	Minor damage to or loss of the litter/humus layers that increases sedimentation on no more than 0.1% of a subwatershed; localized and indirect riparian impact that does not substantively increase stream temperatures or affect stream habitats; no alteration of natural hydrology of wetlands	Damage to or loss of the litter/humus layers that increases sedimentation on greater than 0.1% of a subwatershed; localized and indirect riparian impact that may substantively increase stream temperatures or affect stream habitats; alteration of natural hydrology of wetlands
Vegetation	Short-term changes in plant species composition and/or structure, consistent with expected successional pathways of a given plant community from a natural disturbance event; thinning of small diameter understory trees; increase in exotic species; occasional death of a canopy tree	Violation of the Endangered Species Act of 1973; removal of numerous large diameter or old growth trees greater than 80cm at breast height
Wildlife	Temporary displacement of a few localized individuals or groups of animals; mortality of individuals of species not afforded special protection by state and/or federal law; mortality of individuals that would not impact population trends	Violation of the Endangered Species Act of 1973; mortality of species that jeopardize the resident population
Air Quality	Minimal to negligible air emissions and temporary smoke accumulation; temporary and limited smoke exposure to sensitive resources	Violation of state and federal air quality standards; violation of Class II air quality standards; prolonged smoke exposure to sensitive receptors
Noise	<65 dBA at sensitive receptors; temporary noise levels <90 dBA	>65 dBA noise level at sensitive receptors (schools, nursing homes, etc.); continued exposure to noise levels > 90 dBA for workers and/or the general public

Visitor Use & Experience	Temporary displacement of recreationists or closure of trails, and recreation areas during off-peak recreation use; temporary or short-term alteration of the vista, or temporary presence of equipment/structures in localized area; smoke accumulation during off-peak recreation use	Permanent closure of trails and recreation areas; conflict with peak recreation use; long-term change in scenic integrity of the vista; substantive smoke accumulation during peak recreation use
Human Health & Safety	Minor injuries to any worker (e.g. minor cuts or bruises); limited exposure to hazardous compounds or smoke particulates at concentrations below health-based levels	Serious injury to any worker or member of the public; exposure to hazardous compounds or smoke particulates at concentrations above health-based levels.
Cultural Resources	Temporary, non-adverse effects to registered cultural resource sites, eligible cultural resource sites, sites with an undetermined eligibility, and traditional cultural properties	Temporary or long-term adverse impacts to registered cultural resource sites, eligible cultural resource sites, sites with an undetermined eligibility, and traditional cultural properties
Park Operations	Temporary suspension of non-critical memorial operations; negligible impact to memorial buildings and structures	Prolonged suspension of all memorial operations; adverse impacts to memorial buildings and structures
Wilderness	Any impact that does not conflict with wilderness values	Temporary or long-term, local or regional adverse impact to wilderness values – violation of the Wilderness Act

2.4 MITIGATION MEASURES AND MONITORING

Mount Rushmore National Memorial would collect information on fuel reduction efforts, vegetative resources, and other objective dependant variables after a fire (wildfire or prescribed fire). During fire events (wildfire or prescribed fire), data would be collected regarding the current fire conditions consistent with the variables identified in a prescribed fire plan, such as fuel and vegetation type, anticipated fire behavior and fire spread, current and forecasted weather, smoke volume and dispersal, etc.)

Northern Great Plains Area Fire Effects Crew would install permanent vegetation plots prior to prescribed fires following the Fire Monitoring Handbook (2001). These plots will be remeasured immediately following the fires, and at regularly determined intervals to verify that prescribed fire objectives are being met, that desired conditions are being reached, and that unwanted fire effects are not occurring.

Mitigation measures are prescribed to prevent and/or mitigate adverse environmental impacts that may occur from fire management activities. Mitigation measures are common to all alternatives.

2.4.1 *Fire Management Activities*

- Whenever consistent with safe, effective suppression techniques, the use of natural barriers would be used as extensively as possible;
- All suppression guidelines will follow MIST guidelines;
- Fire retardant agents must be on an approved list for use by the Forest Service and Bureau of Land Management;
- Earth moving equipment such as tractors, graders, bulldozers or other tracked vehicles would generally not be used for fire suppression. The Superintendent can authorize the use of heavy equipment in extreme circumstances in the face of loss of human life and/or property);
- When handline construction is required, construction standards would be issued requiring the handlines to be built with minimum impact. No handlines exposing mineral soil would be allowed through cultural sites, and all handlines would be rehabilitated. Erosion control methods would be used on slopes exceeding 10% where handline construction took place;
- All sites where improvements are made or obstructions removed would be rehabilitated to pre-fire conditions, to the extent practicable.

2.4.2 *Soil and Water Resources (Including Wetlands)*

- Stream crossings would be limited to set and existing locations;
- Except for spot maintenance to remove obstructions, no improvements would be made to intermittent/perennial waterways, wetlands, trails, or clearings in forested areas;
- Log jams/debris would be left in streams to protect fish and aquatic insect habitat;
- Fire line construction and fire retardant and foam suppression use would not be permitted in wetlands;
- Fire lines would be located outside of highly erosive areas, steep slopes, and other sensitive areas. Following fire suppression activities, fire lines would be re-contoured, water barred, and possibly seeded (with native plant species)

2.4.3 *Visitor Experience and Use*

- Prescribed fires would not be ignited in close proximity to memorial structures during periods of peak visitation;
- Fire management activities (excluding fire suppression) would not be conducted during periods of peak visitation, and would generally, but not totally, be concentrated during times of off-peak use (spring and fall).

2.4.4 *Cultural Resources*

- Prior to all fire management activities, cultural resources in treatments areas would be identified and avoided.

2.5 COMPARISON OF ALTERNATIVES

Table 2-3 briefly summarizes the environmental effects of the various alternatives. It provides a quick comparison of how well the alternatives respond to the project need, objectives, important issues and key resources. Chapter 3 discusses the environmental consequences of the proposed alternatives in detail.

Table 2-3 Comparison of Alternatives' Responses to Project Need, Objectives, Important Issues, and Key Resources

	Alternative 1 - No Action Alternative	Alternative 2 - Proposed Action	Alternative 3 – Suppress Wildland Fires and No Prescribed Fire
Project Need			
Reduces hazardous fuels	<p>Yes, hazardous fuels reduction over time on ~526 acres of the memorial</p> <p>This alternative provides hazardous fuels reduction similar to that under the Proposed Action</p>	<p>Yes, hazardous fuels reduction over time on ~526 acres of the memorial</p> <p>This alternative provides hazardous fuels reduction similar to that under the No Action Alternative</p>	<p>Yes, marginal hazardous fuels reduction over time on ~526 acres of the memorial</p> <p>This alternative provides less hazardous fuels reduction than that provided under the No Action Alternative</p>
Restoration of fire regime, plant and wildlife habitat diversity	<p>Yes, a low-severity, high frequency fire regime favoring fire adapted plant and animal species would result</p> <p>The degree to which this alternative restores a historic fire regime and contributes to plant and wildlife habitat diversity is similar to that achieved under the Proposed Action</p>	<p>Yes, a low-severity, high frequency fire regime favoring fire adapted plant and animal species would result</p> <p>The degree to which this alternative restores a historic fire regime and contributes to plant and wildlife habitat diversity is similar to that achieved under the No Action Alternative</p>	<p>No, habitat and diversity in ponderosa pine stands would continue to decline in the absence of fire; noxious weeds would spread</p> <p>This alternative does not restore a historic fire regime and marginally contributes to plant and wildlife habitat diversity</p>
Project Objectives			
Reduces the fire danger to the memorial and adjacent communities	<p>Yes, reduced fire danger to the memorial and adjacent communities</p> <p>This alternative provides a similar fire danger reduction as that provided under the Proposed Action</p>	<p>Yes, reduced fire danger to the memorial and adjacent communities</p> <p>This alternative provides a similar fire danger reduction as that provided under the No Action Alternative</p>	<p>Yes, reduced fire danger to the memorial and adjacent communities from thinning of woody tree species</p> <p>This alternative provides less fire danger reduction than the No Action and Proposed Action Alternatives</p>

Table 2-3 Comparison of Alternatives' Responses to Project Need, Objectives, Important Issues, and Key Resources

	Alternative 1 - No Action Alternative	Alternative 2 - Proposed Action	Alternative 3 – Suppress Wildland Fires and No Prescribed Fire
Important Issues			
Potential escape of prescribed fire	This alternative allows for prescribed fire, however, potential for escape would be minimal in light of mitigation measures and adherence to guidelines and procedures for ignition of prescribed fire	This alternative allows for prescribed fire, however, potential for escape would be minimal in light of mitigation measures and adherence to guidelines and procedures for ignition of prescribed fire	No potential for escape of prescribed fire since there would be no prescribed fires
Pine beetle infestations	Thinning and prescribed fire activities under this alternative would reduce the likelihood of pine beetle epidemics in the memorial	Thinning and prescribed fire activities under this alternative would reduce the likelihood of pine beetle epidemics in the memorial	Thinning activities under this alternative would reduce the likelihood of pine beetle epidemics in the memorial This alternative would not reduce the risk of pine beetle epidemics as much as the No Action Alternative and the Proposed Action
Key Resources			
Geology and Soils	Very minor short-term soil erosion impacts resulting from thinning and prescribed fire activities; benefits to soil development and soil nutrification	Very minor short-term soil erosion impacts resulting from thinning and prescribed fire activities; benefits to soil development and soil nutrification	Very minor short-term soil erosion and compaction impacts resulting from thinning activities; increased potential for high-severity fire in the future and direct soil impacts
Water Resources (including wetlands)	No water resources impacts	No water resources impacts	No water resources impacts
Vegetation	Plant habitat and diversity improved; native grasses and forbs favored; noxious weed species reduced; fuel loadings reduced on ~526 acres	Plant habitat and diversity improved; native grasses and forbs favored; noxious weed species reduced; fuel loadings reduced on ~526 acres	Plant habitat and diversity degraded in the absence of prescribed fire; continued spread of noxious weeds at the expense of native grasses and forbs

Table 2-3 Comparison of Alternatives' Responses to Project Need, Objectives, Important Issues, and Key Resources

	Alternative 1 - No Action Alternative	Alternative 2 - Proposed Action	Alternative 3 – Suppress Wildland Fires and No Prescribed Fire
Key Resources			
Wildlife	Thinning and prescribed fire activities would temporary displace some wildlife species; individual mortality of some species likely; no impact on T&E or Sensitive species; wildlife habitat improved in the long-term with restoration of historic fire regime	Thinning and prescribed fire activities would temporary displace some wildlife species; individual mortality of some species likely; no impact on T&E or Sensitive species; wildlife habitat improved in the long-term with restoration of historic fire regime	Wildlife benefits resulting from historic fire regime not realized; no impact on T&E or Sensitive species
Air Quality	Very minor and temporary effects resulting from prescribed fire; no smoke impacts on sensitive receptors	Very minor and temporary effects resulting from prescribed fire; no smoke impacts on sensitive receptors	Suppression efforts would reduce air quality impacts from wildfires
Noise	No significant noise impacts on sensitive receptors (wilderness area, state and federal listed species)	No significant noise impacts on sensitive receptors (wilderness area, state and federal listed species)	No significant noise impacts on sensitive receptors (wilderness area, state and federal listed species)
Visitor Use and Experience (including Park Operations)	Minor and short-term impacts during thinning and prescribed fire activities (e.g. trail or road closures, presence of work crews in the vista); no effect on park operations	Minor and short-term impacts during thinning and prescribed fire activities (e.g. trail or road closures, presence of work crews in the vista); no effect on park operations	Very minor and short-term impacts during thinning activities (e.g. trail closures or limited access to certain areas, presence of work crews in the vista); potential for impacts on park operations in the event of high-severity fire
Human Health & Safety	Human health and safety improved by reducing fire danger to the memorial and adjacent communities; potential for injury from thinning activities; very minor exposure to smoke by workers and the public during prescribed fire	Human health and safety improved by reducing fire danger to the memorial and adjacent communities; potential for injury from thinning activities; very minor exposure to smoke by workers and the public during prescribed fire	Human health and safety marginally improved with the absence of prescribed fire; increased fire danger to the memorial and adjacent communities with fuels buildup in the absence of prescribed fire

Table 2-3 Comparison of Alternatives' Responses to Project Need, Objectives, Important Issues, and Key Resources

	Alternative 1 - No Action Alternative	Alternative 2 - Proposed Action	Alternative 3 – Suppress Wildland Fires and No Prescribed Fire
Key Resources			
Cultural Resources	No impact to known cultural resources; potential for impacts to un-recorded sites	No impact to known cultural resources; potential for impacts to un-recorded sites	No impact to known cultural resources; potential for impacts to un-recorded sites

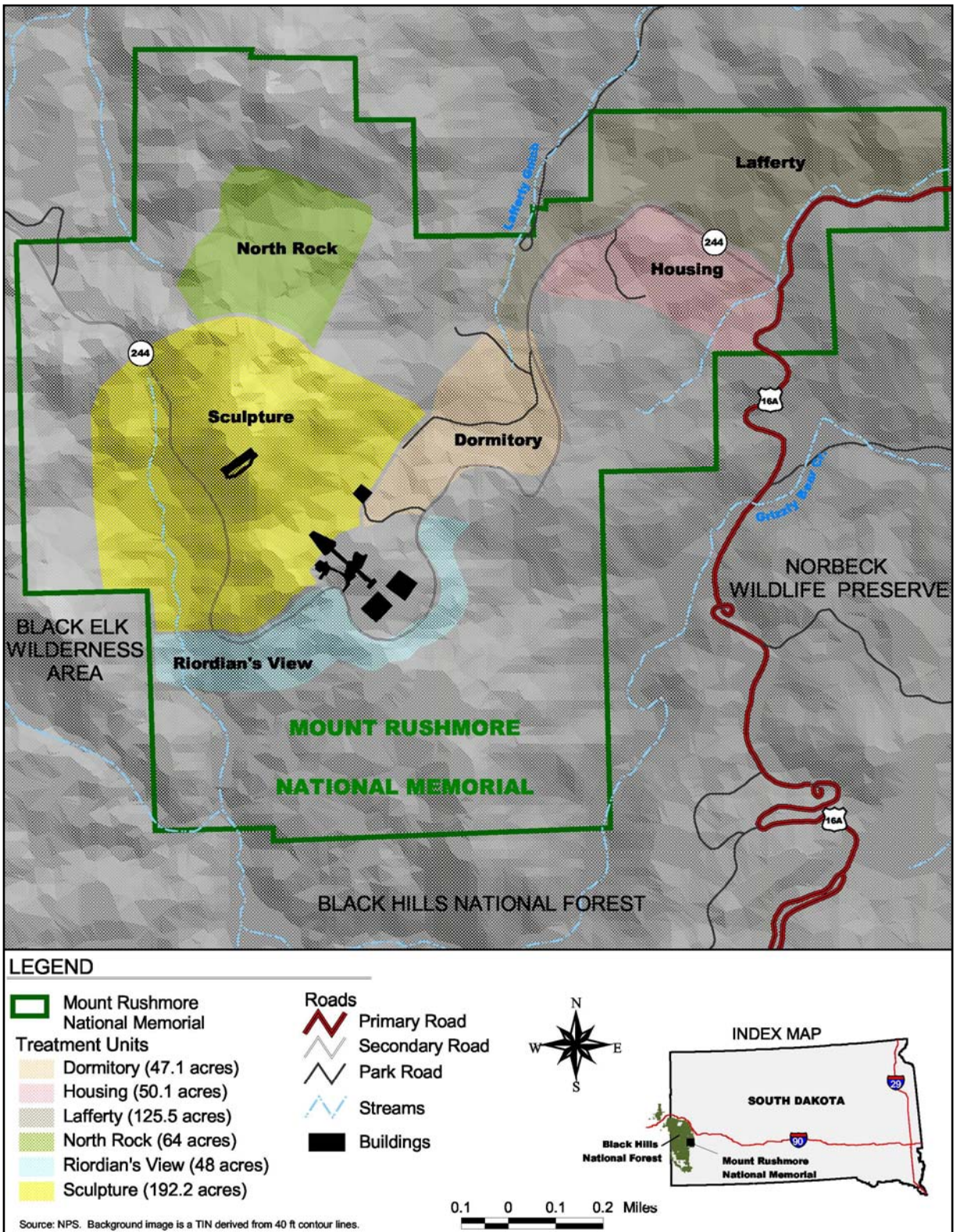


Figure 2-2 Mount Rushmore National Memorial Treatment Units

Chapter 3 – Environmental Analysis

This chapter summarizes the existing environmental conditions and the probable environmental consequences (effects) of implementing the action and No-Action alternatives. This chapter also provides the scientific and analytical basis for comparing the alternatives. The probable environmental effects are quantified where possible; where not possible, qualitative descriptions are provided.

3.1 SOILS

3.1.1 *Affected Environment*

Soils in the memorial generally consist of a 1-2 foot layer of mixed organic matter and decomposed granite resting on bedrock. In the lower elevations, soils are deeper and of a finer texture, allowing for the growth of hardwoods and grasses. Development of visitor use facilities and social trail development from backcountry activities such as recreational rock climbing plus the steep slopes have resulted in soil erosion, compaction, and loss of vegetative cover.

3.1.2 *Environmental Consequences*

Soil impacts were qualitatively assessed using soil characteristics, literature reviews, and mitigation measures.

3.1.2.1 Alternative 1 – No Action

Proposed activities with the potential to impact soils include building fire lines, thinning, and prescribed fire.

Very minor and localized soil compaction would occur from wildfire suppression and thinning activities, and vehicle use would be restricted to existing roads. Fire line construction during wildfire suppression and prescribed fire would result in soil disturbance and could lead to increased erosion, especially in steeply sloped areas within the memorial. To avoid these potential impacts, fire lines would be located outside of highly erosive areas, steep slopes, and other sensitive areas. Following fire suppression activities, fire lines would be re-contoured, water barred, and possibly seeded (with native plant species).

Prescribed fire would release nutrients into the soil and the fertilization effects of ash would provide an important source of nutrients for vegetation in the area. In addition to increasing nitrification of the soils and increasing minerals and salt concentrations in the soil, the ash and charcoal residue resulting from incomplete combustion aids in soil buildup and soil enrichment by being added as organic matter to the soil profile. The added material works in combination with dead and dying root systems to make the soil more porous, better able to retain water, and less compact while increasing needed sites and surface areas for essential microorganisms, mycorrhizae, and roots (Vogl, 1979; Wright and Bailey, 1980).

If a prescribed fire exceeded a burn prescription and burned “hot”, resulting in areas of high-burn severity, the organic layer of the soil could be consumed and soil layers could become water repellent. Fire management personnel would contain and/or suppress out-of-prescription fires, minimizing the potential for and effects of any high-burn severity prescribed fires.

3.1.2.2 Alternative 2 – Proposed Action

General soil impacts under Alternative 2 would be similar to those described under the No Action Alternative.

3.1.2.3 Alternative 3 – Wildland Fire Suppression and No Prescribed Fires

General soil impacts would be similar to those described under the No Action Alternative, except the benefits accruing to soils from prescribed fire would not occur.

Conclusion

The implementation of any of the alternatives would not impair geologic and soil resources or values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the memorial, (2) key to the natural or cultural integrity of the memorial or opportunities for enjoyment of the memorial, and (3) identified as a goal in the memorial’s general management plan or other Park Service planning documents.

3.2 WATER RESOURCES (INCLUDING WETLANDS)

3.2.1 *Affected Environment*

The memorial contains several intermittent streams that run after storms, heavy snowmelt, and/or high precipitation seasons, as well as a series of springs. In the southwest part of the memorial within Starling Basin, there are approximately 34 acres of wetlands, however, the wetlands are located outside of proposed treatment units. No floodplains exist within the memorial. Since the memorial is located near the upper reaches of the drainage basin, the flash flooding events rarely occur.

3.2.2 *Environmental Consequences*

Water resource impacts were qualitatively assessed using presence/absence of surface water resources, literature reviews, and mitigation measures.

3.2.2.1 Alternative 1 – No Action

Proposed activities with the potential to impact water resources include building fire lines, thinning, and prescribed fire; however, in light of the mitigation measures employed during fire management activities (e.g. no fire line construction in intermittent streams, wetlands or adjacent to natural springs) and the location of treatment units, there would not be any direct impacts on surface water resources on the memorial.

The use of fire retardants or foams could potentially cause short and long-term impacts to water resources if misapplied or mishandled. Retardants contain ammonia and phosphate or sulfate ions, which can change the chemistry of a water body, thus making it lethal to fish and other aquatic organisms. Foams contain detergents that can interfere with the ability of fish gills to absorb oxygen. The degree of impact would depend on the volume of retardant/foam dropped into the water body, the size of the water body, and the volume of flow in the stream or river. For example, if a 800-gallon drop is made into a fast flowing river, it is likely that the lethal effects to aquatic resources will be short-lived as dilution below the toxic level is quickly achieved. On the other hand, a 3,000-gallon drop in a stagnant pond would likely cause toxic levels to persist for some time (USDA, 2001).

3.2.2.2 Alternative 2 – Proposed Action

General water resources impacts under Alternative 2 would be similar to those described under the No Action Alternative.

3.2.2.3 Alternative 3 – Wildland Fire Suppression and No Prescribed Fires

General water resources impacts under Alternative 3 would be similar to those described under the No Action Alternative.

Conclusion

The implementation of any of the alternatives would not impair water resources or values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the memorial, (2) key to the natural or cultural integrity of the memorial or opportunities for enjoyment of the memorial, and (3) identified as a goal in the memorial's general management plan or other Park Service planning documents.

3.3 VEGETATION

3.3.1 *Affected Environment*

Ponderosa pine (*Pinus ponderosa*) of varying age is the dominant vegetation type in the memorial. Starling Basin in the southwest corner of the memorial contains one of the largest stand of old growth ponderosa pine in the Black Hills. The Basin is considered a "type habitat" rare in the Black Hills. Additional intermingled trees include Black Hills spruce (*Picea glauca*), quaking aspen (*Populus tremuloides*), paper birch (*Betula papyrifera*), burr oak (*Quercus macrocarpa*), and Rocky Mountain Juniper (*Juniperus scopulorum*). Shrubs and groundcover on the memorial consist primarily of chokecherry (*Prunus virginiana*), pin cherry (*Prunus pensylvanica*), kinnikinnick (*Arctostaphylos uva-ursi*), grasses and sedges.

Many of the ponderosa pine stands in the memorial and surrounding areas contain high densities of trees and pose a high fire hazard. Overly dense forest stands can lead to outbreaks of a group of insects called bark beetles (Family *Scolytidae*). These are among the most destructive insects of North American conifer forests. Native bark beetles do play an important role in a healthy

forest ecosystem. The primary role of bark beetles in nature is to prepare the way for ecological succession in forests by selectively removing mature, senescent, stressed or damaged pines from the forest (Douce, 1993). The resulting dead trees provide habitat for cavity nesting birds and other wildlife. Later the dead trees break down and rejuvenate the forests by returning nutrients to the site and creating space for new and healthy trees to grow (Poland & Haack, 1998). Many species, however, reach epidemic proportions in forests that are either overmature, overstocked or stressed by drought or wildfire. Bark beetles attack the cambium layer of trees where they construct egg and larval galleries. Trees that are successfully attacked are killed. In addition, most bark beetles introduce blue stain fungi into infested trees. These fungi enter the woody tissue and hasten the death of infested trees. Some bark beetles are capable of attacking trees weakened by fire and the brood emerging from the fire-damaged trees can attack and kill trees suffering slight fire damage or no damage (USFS, 2000).

Noxious weeds in the memorial are found in several areas, especially former construction zones, and the memorial has a program in place to control their spread. Some of the more prevalent plant species include Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*), common mullein (*Verbascum thapsus*), and hound's tongue (*Cynoglossum officinale*).

Mount Rushmore National Memorial does not contain any plant species that are protected under the Endangered Species Act.

3.3.2 *Environmental Consequences*

Vegetation impacts were qualitatively assessed using literature reviews and quantitatively assessed by acres impacted.

3.3.2.1 Alternative 1 – No Action

Thinning and prescribed fire activities would occur on approximately 526 acres of the memorial under this alternative. Priority would be given to areas adjacent to developed areas and to boundary areas, which would minimize the potential of unwanted fire ingress or egress over jurisdictional boundaries.

The restoration of the historic fire regime to the ponderosa pine ecosystem would enhance the variety and diversity of native plant species and habitats, increase the extent of native grasses and forbs, and at the same time help control noxious weeds. Plant communities adapted to high frequency, low-severity fires would be favored with prescribed fire. Prescribed fire would also release nutrients into the soil and the fertilization effects of ash would provide an important source of nutrition for vegetation in the area. Finally, prescribed fire would kill some trees and ensure a renewable supply of snags in the forest.

Thinning activities would focus on small understory trees, which would reduce tree densities and help return some areas to an open park-like structure characteristic of pre-settlement ponderosa pine forests. Many standing dead trees (snags) would be preserved as wildlife habitat unless they posed a risk to human health and safety and were deemed hazardous. Old growth trees in

treatment units would not be thinned. Proposed thinning and prescribed fire activities would not occur in the old growth forest in the Starling Basin.

Thinning and prescribed fire activities would remove some dead, damaged, and stressed trees, which are weakened and susceptible to insect infestations, and would decrease the likelihood of spreading bark beetle infestations. Thinning activities would also decrease the likelihood of large, high-intensity fires in the future that could result in large areas of stand mortality, which in turn, could lead to bark beetle infestation.

Suppression activities that resulted in soil disturbance (fire lines) would make those disturbed areas more susceptible to noxious weed infestation. Disturbed areas would be seeded with native grasses. Thinning and fire activities would retard the encroachment of woody tree species into meadows and would reduce prevent hazardous fuels buildup on the memorial.

3.3.2.2 Alternative 2 – Proposed Action

General vegetation impacts under Alternative 2 would be similar to those described under the No Action Alternative.

3.3.2.3 Alternative 3 – Wildland Fire Suppression and No Prescribed Fires

Thinning activities would occur on approximately 526 acres of the memorial under this alternative. The absence of prescribed fire would eliminate the benefits to plant habitat and diversity that accrue from a high frequency, low severity fire regime in ponderosa pine forests. In particular, noxious weeds and/or fire-intolerant plant species would continue to increase in number and out-compete favorable native species.

Conclusion

The implementation of any of the alternatives would not impair vegetation resources or values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the memorial, (2) key to the natural or cultural integrity of the memorial or opportunities for enjoyment of the memorial, and (3) identified as a goal in the memorial's general management plan or other Park Service planning documents.

3.4 WILDLIFE

3.4.1 *Affected Environment*

A variety of wildlife resources inhabit the forests and grasslands of Mount Rushmore National Memorial including ungulates, small mammals, birds, reptiles, amphibians, and invertebrates. Some common species include mountain lion (*Felis concolor*), mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), porcupine (*Erethizon dorsatum*), white-tailed jackrabbit (*Lepus townsendii*), mountain goat (*Oreamnos americanus*) and yellow-bellied marmot (*Marmota flaviventrus*). The memorial is currently conducting an inventory of all wildlife species on the memorial.

There are no known federally listed wildlife species that reside within the memorial. No critical habitat is known to exist within the memorial.

NPS *Management Policies* states “*the National Park Service will inventory, monitor, and manage state and locally listed species in a manner similar to its treatment of federally listed species, to the greatest extent possible.*” There are 13 species of animals that are listed by the State of South Dakota as endangered. They are peregrine falcon (*Falco peregrinus*), whooping crane, eskimo curlew (*Numenius borealis*), bald eagle (*Haliaeetus leucocephalus*), interior least tern (*Sterna antillarum*), black-footed ferret (*Mustela nigripes*), lined snake (*Tropidoclonion lineatum*), Blanding’s turtle (*Emydoidea blandingii*), pallid sturgeon (*Scaphirhynchus albus*), finescale dace (*Phoxinus eos*), central mudminnow (*Umbra limi*), blacknose shiner (*Notropis heterolepis*), and banded killifish (*Fundulus diaphanus*). Of these species, the peregrine falcon is the most likely to be sighted within the memorial during migration (Ode, 2002).

At the present time, there are 15 species of animals that are listed by the State of South Dakota as threatened. They are: American dipper (*Cinclus mexicanus*), osprey (*Pandion haliaetus*), piping plover (*Charadrius melodus*), black bear (*Ursus americanus*), mountain lion (*Felis concolor*), swift fox (*Vulpes velox*), river otter (*Lutra canadensis*), false map turtle (*Graptemys pseeudogeographica*), Eastern hognose snake (*Heterodon platirhinos*), trout-perch (*Percopsis omiscomaycus*), sturgeon chub (*Machrhybopsis gelida*), sicklefin chub (*Machrhybopsis meeki*), northern redbelly dace (*Phoxinus eos*), pearl dace (*Semotilus margarita*), and longnose sucker (*Catostomus catostomus*). Of these species, only the mountain lion is known to frequent the memorial, however, a sighting of black bear was recently reported in the Black Hills region (Ode, 2002).

3.4.2 *Environmental Consequences*

Wildlife impacts were qualitatively assessed using presence/absence determinations, fire’s role in ponderosa pine ecosystems, and mitigation measures

3.4.2.1 Alternative 1 – No Action

Proposed activities with the potential to impact wildlife include building fire lines, fire retardant use associated with suppression activities, thinning, and prescribed fires.

Habitat conditions for many wildlife species that inhabit ponderosa pine would improve with the restoration of the historic high frequency, low intensity fire regime characteristic of the ponderosa pine forest stands in the Black Hills. Such a fire regime would help restore and enhance the variety and diversity of native plant and wildlife habitats. Nutrients released to plants through the fertilization effects of ash would provide an important source of nutrition for wildlife in the area. While some trees would be killed from the effects of fire, many of these dead standing trees (snags) would be left as these provide important habitat for a variety of wildlife species. Snags that are deemed hazardous trees would be removed.

All the fire management activities could result in the temporary displacement of wildlife or individual mortality of wildlife species. The loss of individuals of a non-threatened or

endangered species, however, would not jeopardize the viability of the populations on and adjacent to the memorial. The mountain lion would not be directly affected since the animal would simply avoid any areas where fire management activities were being undertaken.

There would be no impacts to federally or state listed species from fire management activities under this alternative.

3.4.2.2 Alternative 2 – Proposed Action

General wildlife impacts under Alternative 2 would be similar to those described under the No Action Alternative.

3.4.2.3 Alternative 3 – Wildland Fire Suppression and No Prescribed Fires

In the long-term, the absence of prescribed fire in the ponderosa pine forest ecosystem would lead to increased fuels and would result in more intense and severe fires. Such a fire regime would not help restore and maintain the forest's native plant and wildlife habitats. While the potential for individual mortality would increase under this alternative, the viability of populations on and adjacent to the memorial would not be affected.

Conclusion

The implementation of any of the alternatives would not impair wildlife resources or values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the memorial, (2) key to the natural or cultural integrity of the memorial or opportunities for enjoyment of the memorial, and (3) identified as a goal in the memorial's general management plan or other Park Service planning documents.

3.5 AIR QUALITY

3.5.1 *Affected Environment*

Under the terms of the 1990 Clean Air Act amendments, the memorial is designated as a Class II quality area. By definition, Class II areas of the country are set aside under the Clean Air Act, but identified for somewhat less stringent protection from air pollution damage than Class I areas. The primary means by which the protection and enhancement of air quality is accomplished is through implementation of National Ambient Air Quality Standards (NAAQS). These standards address six pollutants known to harm human health including ozone, carbon monoxide, particulate matter, sulfur dioxide, lead, and nitrogen oxides (USDA, 2000a).

Historically, the memorial's air quality has been considered excellent. Several major sources of air pollution (sources that emit more than 100 tons/year of one or more regulated pollutants) are nearby the memorial. These include coal-fired power plants in Rapid City and Lead, South Dakota, and Osage, Wyoming; three cement plants in Rapid City; and a refinery and a natural gas pipeline compressor station in Newcastle, Wyoming. A number of minor sources are also

located in the vicinity of the memorial, including sawmills in the areas of Pringle and Custer, South Dakota, and Newcastle, Wyoming and a feldspar mill in Custer.

Air quality and visibility monitoring have been conducted in the Black Hills for many years. There are several monitors in Rapid City, approximately 40 air miles northeast of the memorial, which measure total suspended particulates (TSP), fine particles, sulfur dioxide and nitrogen dioxide. Air quality monitoring stations for particulate matter 2.5 and 10 microns (PM_{2.5} and PM₁₀) are located at Badlands National Park and Wind Cave National Park. Monitoring of particulate matter at Wind Cave National Park reveals that air quality is excellent, with PM_{2.5} and PM₁₀ registering at background levels (Schultz, 2002).

3.5.2 *Environmental Consequences*

Air quality impacts were qualitatively assessed upon review of National Park Service best management practices to reduce air emissions, State of South Dakota prescribed fire permit specifications and requirements, and the extent of proposed prescribed fire activities under all the alternatives.

3.5.2.1 Alternative 1 – No Action

Smoke consists of dispersed airborne solids and liquid particles, called particulates, which could remain suspended in the atmosphere for a few days to several months. Particulates can reduce visibility and contribute to respiratory problems. Very small particulates can travel great distances and add to regional haze problems. Regional haze can sometimes result from multiple burn days and/or multiple owners burning within an airshed over too short a period of time to allow for dispersion.

Prior to any prescribed fire, the memorial would submit an open burning permit application to the South Dakota Division of Resource Conservation and Forestry that, among other things, identifies the location and size of the proposed prescribed fire, as well as the fuel types to be burned. The permit is necessary for all open burning conducted in the Black Hills Forest Fire Protection District. The State then would review the burn application and, upon a favorable review, the State would provide the memorial with an open fire permit for that particular prescribed fire. While the state does not require general open burning permit applications to contain quantified emissions from the proposed prescribed fires, it does require a smoke management plan (Hermanson, 2002).

For prescribed fires, there are three principle strategies to manage smoke and reduce air quality effects. They include:

1. Avoidance - This strategy relies on monitoring meteorological conditions when scheduling prescribed fires to prevent smoke from drifting into sensitive receptors, or suspending burning until favorable weather (wind) conditions;
2. Dilution – This strategy ensures proper smoke dispersion in smoke-sensitive areas by controlling the rate of smoke emissions or scheduling prescribed fires when weather systems are

unstable, not under conditions when a stable high-pressure area is forming with an associated subsidence inversion. An inversion would trap smoke near the ground; and

3. Emission Reduction – This strategy utilizes techniques to minimize the smoke output per unit area treated. Smoke emission is affected by the number of acres burned at one time, pre-burn fuel loadings, fuel consumption, and the emission factor. Reducing the number of acres that are burned at one time would reduce the amount of emissions generated by that burn. Reducing the fuel beforehand, e.g. removing firewood, reduces the amount of fuel available. Conducting prescribed fires when fuel moistures are high can reduce fuel consumption. Emission factors can be reduced by pile burning or by using certain firing techniques such as mass ignition.

If weather conditions changed unexpectedly during a prescribed fire, and there was a potential for violating air quality standards or for adverse smoke impacts on sensitive receptors, the memorial would implement a contingency plan, including the option for immediate suppression. Considering the relatively small number of acres that would be affected by prescribed fire, approximately 526 acres, and in light of the current air quality in the area and review and approval of the burn permit by the state, prescribed fires would not violate daily national or state emission standards and would cause very minor and temporary air quality impacts. The greatest threat to air quality would be smoke impacts on sensitive receptors, however, the paucity of sensitive receptors adjacent to the memorial minimizes and/or eliminates this potential air quality impact.

3.5.2.2 Alternative 2 – Proposed Action

General air quality impacts under Alternative 2 would be similar to those described under the No Action Alternative.

3.5.2.3 Alternative 3 – Wildland Fire Suppression and No Prescribed Fires

Under Alternative 3, air quality impacts from wildfires would be reduced by suppression efforts.

Conclusion

The implementation of any of the alternatives would not impair air quality resources or values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the memorial, (2) key to the natural or cultural integrity of the memorial or opportunities for enjoyment of the memorial, and (3) identified as a goal in the memorial's general management plan or other Park Service planning documents.

3.6 NOISE

The loudest sounds that can be detected comfortably by the human ear have intensities that are 1 trillion (1,000,000,000,000) times larger than those of sounds that can just be detected. Because of this vast range, any attempt to represent the intensity of sound using a linear scale becomes very unwieldy. As a result, a logarithmic unit known as the decibel (dB) is used to represent the intensity of a sound. Such a representation is called a sound level.

Although the dB scale accurately reflects the sound pressure level of a given sound, it does not accurately reflect the sound exposure levels heard by a human observer. The human ear is progressively reduced in sensitivity to sounds in the lower and upper ranges of our audible frequency spectrum. To more accurately assess the loudness of sounds as heard by the human ear, sound levels are measured on the A-weighted decibel (dBA) scale. This sound level scale is progressively reduced in sensitivity to very low and very high-pitched sounds. This method of sound measurement mimics our own sense of hearing, and therefore more accurately assesses the effects of different sound levels on a human observer.

Normal speech has a sound level of approximately 60 dBA. Sound levels above about 120 dBA begin to be felt inside the human ear as discomfort and eventually pain at still higher levels (DOD, 1978). Sound level examples can be found in Table 3-1.

Table 3-1 Common Noise Levels and Their Effects on the Human Ear

Source	Decibel Level (dBA)	Exposure Concern
Soft Whisper	30	Normal safe levels.
Quiet Office	40	
Average Home	50	
Conversational Speech	60	
Busy Traffic	75	May affect hearing in some individuals depending on sensitivity, exposure length, etc.
Noisy Restaurant	80	
Average Factory	80-90	
Pneumatic Drill	100	Continued exposure to noise over 90 dBA may eventually cause hearing impairment
Automobile Horn	120	

(DOD, 1978)

To accurately assess the impacts of noise exposure on an entire community, dBA sound levels are commonly expressed with a measure that describes the cumulative effects of noise levels over time. The most commonly employed cumulative noise measure for environmental analysis is the Day-Night Sound Level (Ldn). This measure (expressed in dBA) describes the cumulative noise exposure expected from all major noise sources over a 24-hour period. Using the Ldn system, 10 dB is added to the assessment of sound produced by activities occurring between 10 PM and 7 AM. This addition places greater weight on the noise produced by nighttime activities due to the higher sensitivity of communities to noise during these hours.

Certain facilities, communities, and land uses are more sensitive to a given level of noise than others. Such “sensitive receptors” include schools, churches, hospitals, retirement homes, campgrounds, wilderness areas, hiking trails, and species of threatened or endangered wildlife. Impacts from noise production are generally assessed with respect to changes in noise levels experienced at sensitive receptors. Different types of sensitive receptors vary in their acceptance of noise disturbance. As a result, noise impacts for different receptors are often assessed using different noise level standards. Recommended land use and associated noise levels are illustrated in Table 3-2.

Table 3-2 Recommended Land Use Noise Levels

Land Use Category	Noise Levels (Ldn)			
	Clearly Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential	< 60	60-65	65-75	> 75
Commercial, Retail	< 65	65-75	75-80	> 85
Commercial, Wholesale	< 70	70-80	80-85	> 85
Manufacturing	< 55	55-70	70-80	> 80
Agricultural, Animal Breeding	< 60	60-75	75-80	> 80
Natural Recreation Areas	< 60	60-75	65-75	> 75
Hospitals	< 60	60-65	65-75	> 75
Schools	< 60	60-65	65-75	> 75
Libraries	< 60	60-65	65-75	> 75
Churches	< 60	60-65	65-75	> 75
Nursing Homes	< 60	60-65	65-75	> 75
Playgrounds	< 55	55-65	65-75	> 75

(HUD, 1991)

3.6.1 Affected Environment

There are several potential noise sources associated with thinning and prescribed fire activities for all the action alternatives. The dB sound levels from the equipment at a distance of 50' includes the following: chainsaw (78 dB) and engine/truck (91 dB). While Mount Rushmore National Memorial does not contain proposed or designated wilderness, the Black Elk Wilderness Area, a sensitive receptor, lies on the western border of the memorial. The Norbeck Wildlife Preserve is also an area of special concern.

The Wilderness Act of 1964 established a National Wilderness Preservation System to be composed of federally owned areas designated by Congress as "wilderness areas". By law, these wilderness areas "shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness" (16 USC 1131).

The Wilderness Act defined and described a wilderness area as area:

- where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain
- of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation
- which generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable
- which is protected and managed so as to preserve its natural conditions
- which has outstanding opportunities for solitude or a primitive and unconfined type of recreation
- which has at least five thousand acres of land or is of sufficient size to make practicable its preservation and use in an unimpaired condition
- which may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

These attributes serve both as standards for studying areas and evaluating their suitability for inclusion in the national wilderness preservation system and as objectives to guide National Park Service actions pertaining to the preservation and use of wilderness areas (DOI, 1999; DOI, 2001b).

The mountain lion is the only known federal or state listed animal species that resides in the areas of the Black Elk Wilderness Area and in the Norbeck Wildlife Preserve adjacent to the memorial.

3.6.2 *Environmental Consequences*

Noise levels were quantitatively determined using the Inverse-Square Law, the law by which the mean-square sound pressure level varies inversely as the square of the distance from the source (Traux, 1999). All noise level calculations were performed assuming that obstructions that may impede the propagation of sound (buildings, vegetation, etc.) were not present, and that the land between the source of the sound and the receiver was flat. Thus the noise level calculations should be considered a “worst case” measure. Noise impacts were then assessed with respect to the location of sensitive receptors.

3.6.2.1 Alternative 1 – No Action

Under the Proposed Action, there would not be any significant adverse impacts (> 65 dBA) to sensitive receptors on the memorial or in the Black Elk Wilderness Area. Based on the noise modeling calculations (worst case), ambient noise levels of 65 dBA would be reached at a distance of approximately 1,500 feet from the source of thinning activities. Sound levels would be reduced even further if noise-generating activities occur within dense vegetation, especially conifer forests. Dense vegetation that is at least 100’ in depth would reduce the sound levels by 3 to 7 dBA (NYDEC, 2000). In areas of dense conifer forests, especially near the Black Elk Wilderness Area, ambient noise levels of 65 dBA could be reached within 750’ of project operations. The memorial would restrict thinning activities in areas adjacent to the wilderness to periods of off-peak visitation use (fall-spring) on the memorial and in the wilderness area. There would be a very minor impact to the mountain lion from elevated noise levels while in the wilderness or in the wildlife preserve since it would avoid the areas on the memorial boundary where thinning crews were present. Wilderness character is inextricably linked to “natural” sound levels

The general public would not be exposed to continual sound levels greater than 90 dBA, while equipment workers may experience levels greater than 90 dBA. Those workers operating the equipment would be required to mitigate any possible adverse noise impacts by using noise reduction devices such as earplugs.

3.6.2.2 Alternative 2 – Proposed Action

General noise impacts under Alternative 2 would be similar to those described under the No Action Alternative.

3.6.2.3 Alternative 3 – Wildland Fire Suppression and No Prescribed Fires

General noise impacts under Alternative 3 would be similar to those described under the No Action Alternative.

Conclusion

The implementation of any of the alternatives would not impair sensitive receptors or memorial resources and values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the memorial, (2) key to the natural or cultural integrity of the memorial or opportunities for enjoyment of the memorial, and (3) identified as a goal in the memorial's general management plan or other Park Service planning documents.

3.7 VISITOR USE AND EXPERIENCE (INCLUDING PARK OPERATIONS)

3.7.1 *Affected Environment*

Most visitors remain in Mount Rushmore for short-day periods. Visitor use is highest during the months of May through September, with July as the most popular month. The memorial visitation totals 25,000 to 30,000 visitors on peak summer days. Visitor use is expected to continue at approximately 2.6 million visitors per year for the near-term.

The visitor experience is overwhelmingly the sculpture of the busts of four U.S. Presidents: George Washington, Thomas Jefferson, Abraham Lincoln, and Theodore Roosevelt. In addition, visitors have access to a visitor's center and dining hall, as well as several other attractions such as the Sculptor's Studio. The memorial contains a viewing platform and nature trail that offer views of the sculpture and scenery of the memorial. Recently, the memorial has conducted a fireworks display to celebrate the July 4th Holiday, a nationally televised event that attracts an attendance of over 30,000 people on site and reaches millions of people throughout the nation.

Fire management on the memorial is administered with the aid of fire management personnel from Wind Cave National Park.

3.7.2 *Environmental Consequences*

Recreation impacts were qualitatively assessed in light of the intensity and duration of fuel treatment activities as they related to visitor use and experience. Visual resource impacts in this environmental assessment were assessed in terms of scenic integrity, visual wholeness, and unity of the landscape.

3.7.2.1 Alternative 1 – No Action

There would be some short-term reduction in scenic integrity and visitor use and experience during and immediately following any thinning, prescribed fire, or wildfire suppression activities

from the presence of engines and thinning or fire crews. Short-term reduction in scenic integrity, however, would be minor because 1) fire management activities would involve only short-term presence of vehicles and people, 2) stumps would be cut flush with the ground, 3) smoke accumulation would be temporary since prescribed fires would be ignited under favorable conditions for smoke dispersion. The reduction of tree densities in the areas adjacent to the sculpture would not significantly affect the scenic integrity of the memorial since thinning efforts would focus on small understory trees. Preserving old growth and large diameter trees would largely preserve the canopy in adjacent areas. For some visitors, open “park-like” ponderosa pine stands would be more aesthetically pleasing than overstocked stands with high densities of young pines.

Any prescribed fires would likely produce short-term smoke accumulations that impact local visual quality. Minimizing smoke emissions through best management practices and prohibiting prescribed fires during times of peak recreation use would reduce any short-term impacts.

Visitor use would also be temporarily affected under this alternative when crews were conducting thinning, prescribed fire, and suppression activities near designated trails and developed areas. Visitor use and experience impacts would be minimized by focusing thinning and prescribed fire activities to times of low public use. In addition, interpretive programs associated with the prescribed fire program would help educate memorial visitors and staff about the historic role of fire in the ponderosa pine forest ecosystem in the Black Hills. It is likely that visitors who might otherwise have their experience affected by the presence of fire management activities would be less affected after exposure to the interpretive program.

With the aid of fire management personnel from Wind Cave National Park and other National Park Service units, park operations and park facilities would not be affected under this alternative. In the event of a wildfire within or adjacent to the memorial, park operations could be temporarily affected depending on the severity of the fire and situation at hand as visitors and non-essential memorial personnel were evacuated to off-site and safe locations. Under a worst-case scenario, park facilities could be either damaged by or destroyed by a catastrophic wildfire.

3.7.2.2 Alternative 2 – Proposed Action

General impacts to visitor use and experience would be similar to those described under the No Action Alternative.

3.7.2.3 Alternative 3 – Wildland Fire Suppression and No Prescribed Fires

General impacts to visitor use and experience would be similar to those described under the No Action Alternative. In the short-term, the absence of prescribed fire would result in fewer temporary impacts to visitor use and experience, however, in the long-term, it would increase the potential for more intense and severe wildland fires that could affect visitor use and experience, and park operations and facilities.

3.8 HUMAN HEALTH AND SAFETY

3.8.1 *Affected Environment*

Prior to the ignition of any prescribed fire in the memorial, all the burn parameters of the existing and approved prescribed fire burn plan must be met to ensure a safe and effective prescribed fire. In addition, staff would prepare brochures for the public and adjacent landowners that advise them of the time and extent of the proposed burn and educate them about the role of fire in the ponderosa pine forests of the Black Hills. In the event of potentially hazardous fires within the memorial, the Park Superintendent and Chief Ranger would coordinate public notification efforts within and outside the memorial. The extent of public notice would depend on the specific fire situation. In every case, assuring visitor and memorial staff safety would take priority over other activities.

Safety-related issues and mitigations associated with the fireworks display over the July 4th Holiday are being addressed in a separate NEPA document. Oftentimes, small wildfires are ignited as a result of the embers from the fireworks, however, firefighting crews are on-site and initiate suppression actions as soon as fire starts are detected.

3.8.2 *Environmental Consequences*

Human health & safety impacts were qualitatively assessed through determination of activities, equipment and conditions that could result in injury, literature review of type and extent of injury caused by equipment and conditions, and in light of mitigation measures and best management practices.

3.8.2.1 Alternative 1 – No Action

Factors most likely to adversely impact firefighter health and safety include activities associated with wildland fire suppression efforts (accidental spills, injuries from the use of fire-fighting equipment, smoke inhalation, and, in severe cases, injuries from wildland fires). Impacts to the public could include smoke inhalation, and in severe cases, injuries from wildland fires.

Accidental spills of fire retardants and foams are the most likely to adversely impact human health & safety. Fire retardants used in controlling or extinguishing fires contain about 85% water, 10% fertilizer, and 5% minor ingredients such as corrosion inhibitors and bactericides. Fire suppressant foams are more than 99% water. The remaining 1% contains surfactants, foaming agents, corrosion inhibitors, and dispersants. These qualified and approved wildland fire chemicals have been tested and meet specific requirements with regard to mammalian toxicity as determined by acute oral and dermal toxicity testing as well as skin and eye irritation tests (USDA, 2001). However, they are strong detergents, and can be extremely drying to skin. All currently approved foam concentrates are irritating to the eyes as well. Application of a topical cream or lotion can alleviate the effects of a retardant, and protective goggles can prevent any injury to the eyes when using foams.

Fuel break construction can pose safety threats to firefighters. Injuries can occur from the use of equipment as well as from traveling overland to targeted areas for firefighting efforts during suppression efforts. While each of the crew is trained in the use of firefighting equipment, accidental injuries may occur from time to time. Strict adherence to guidelines concerning firefighter accreditation, and equipment and procedure safety guidelines would minimize accidents.

Smoke inhalation can also pose a threat to human health & safety. Smoke from wildland fires is composed of hundreds of chemicals in gaseous, liquid, and solid forms. The chief inhalation hazard appears to be carbon monoxide (CO), aldehydes, respirable particulate matter with a median diameter of 2.5 micrometers (PM_{2.5}), and total suspended particulate (TSP). Adverse health effects of smoke exposure begin with acute, instantaneous eye and respiratory irritation and shortness of breath, but can develop into headaches, dizziness, and nausea lasting up to several hours. Based on a recent study of firefighter smoke exposure, most smoke exposures were not considered hazardous, but a small percentage routinely exceeded recommended exposure limits for carbon monoxide and respiratory irritants (USDA, 2000b).

Use restrictions applied to areas of wildland fires or prescribed fires would minimize or eliminate public human health & safety concerns resulting from smoke exposure and fire injuries. When using prescribed fire, mitigation measures, such as construction of fire lines, the presence of engines, and strict adherence to prescribed fire plans, would minimize the potential for an out-of-prescription burn or escape. Elements of the prescribed fire plan that relate to ensuring a safe burn include such measures as fuel moisture, wind speed, rate of fire spread, and estimated flame lengths. While the potential for a fire escape will always exist when conducting prescribed fires, that potential is extremely small. Recent statistics summarized by the Boise Interagency Fire Center report that approximately 1% of prescribed fires on federal lands required suppression activities of some kind. In most cases these prescribed fires jumped a control line and suppression tactics were successfully used to control them. Out of the 1% of prescribed fires that required suppression, 90% were controlled without incident. Statistically, this result leaves about 0.1% of prescribed fires that required major suppression actions (Stevens, 2000).

3.8.2.2 Alternative 2 – Proposed Action

The general impacts to human health & safety under Alternative 2 would be similar to those described under the No Action Alternative.

3.8.2.3 Alternative 3 – Wildland Fire Suppression and No Prescribed Fires

The general impacts to human health & safety under Alternative 3 would be similar to those under the Proposed Action. The exclusion of prescribed fire to reduce surface fuels would eliminate the possibility of an out-of-prescription burn or fire escape. Since slash pile burning would be conducted during winter, the potential for escape from a slash pile burn and for a subsequent wildfire would be very low. In the long-term, however, fuels buildup in the absence of prescribed fire would result in more intense and severe wildland fires that could be more difficult to suppress.

3.9 CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act requires federal agencies to consider the effects of their proposals on historic properties, and to provide state historic preservation officers, tribal historic preservation officers, and, as necessary, the Advisory Council on Historic Preservation a reasonable opportunity to review and comment on these actions.

3.9.1 *Affected Environment*

Mount Rushmore National Memorial is listed on the National Register of Historic Places. It was registered on the basis of the carving of the faces. The sculpture itself is the memorial. The only significant historical event was the carving process. The remainder of the land with Rushmore's boundaries is used for scenic protection and administrative facilities.

Numerous designations for historic protection of the memorial have been made. These include the listing of the entire memorial on the National Register of Historic Places, establishment of the Historic sub-zone for the Visitor Services Area for management purposes, and creation of a Historic District for an area including the sculpture, the uncompleted Hall of Records, the Sculptors Studio, the residence, the Borglum View Terrace, and other affiliated facilities from the time of the creation of the sculpture, including the lift platform, the compressor, the water reservoir, a stairway, and remnants of railroad tracks, winches and pulleys. There are no known archeological sites in the memorial.

Protection measures for sites are keyed to determinations of each site's eligibility for inclusion in the National Register of Historic Places. Several structures in the Memorial are listed as classified structures. These include: the Historic Residence, the Sculptor's Studio, the Hall of Records, the Water Reservoir, the Historic Compressor, the Shrine of Democracy Sculpture, the Historic Stairway, and the Lift Platform. Several other features have been deemed ineligible for listing, but are managed as a resource by the Memorial. These include: the Borglum Memorial View Terrace, the Doane Mountain Commemorative Plaque, the Historic Culverts, and the Historic Retaining Walls. Officially listed cultural resource sites and sites determined eligible or with an undetermined eligibility are of concern. Ineligible sites are dropped from management concerns unless otherwise noted, and determinations of effect on these properties are not addressed in this analysis.

3.9.2 *Environmental Consequences*

Cultural resource impacts were qualitatively assessed through a presence/absence determination of significant cultural resources and mitigation measures to be employed during wildfire suppression, thinning, and prescribed fire activities.

3.9.2.1 Alternative 1 – No Action

Proposed activities with the potential to impact cultural resources include building fire lines, thinning, and prescribed fire.

Sites that could be potentially affected during thinning, fire line construction and slash piling would be avoided to eliminate damage to cultural sites. Site boundaries would be clearly marked for avoidance, and sites would be monitored during and after completion of the activities. Because these sites would be avoided, there would be no effect to these cultural resource sites.

Sites with combustible materials (i.e. exposed wood) that cannot be avoided during prescribed fires would be covered with fire resistant foam or fire shelters. If needed, a fire line would be built around the perimeter of these sites. Fuels would be removed from the interior of the sites and from the area surrounding the site to maintain low burn temperatures. Back burning may also take place around the site to reduce fuel loading.

There would be the potential for fire suppression activities to affect unrecorded cultural resources within the memorial.

3.9.2.2 Alternative 2 – Proposed Action

General impacts to cultural resource sites under Alternative 2 would be similar to those described under the No Action Alternative.

3.9.2.3 Alternative 3 – Wildland Fire Suppression and No Prescribed Fires

Proposed activities with the potential to impact cultural resources include building fire lines and thinning. Impacts to cultural resource sites from these activities are similar to those described under the No Action Alternative. As with the other action alternatives, there would be the potential for fire management activities affecting unrecorded cultural resource sites.

Conclusion

The implementation of any of the alternatives would not impair cultural resources or values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the memorial, (2) key to the natural or cultural integrity of the memorial or opportunities for enjoyment of the memorial, and (3) identified as a goal in the memorial's general management plan or other Park Service planning documents.

3.10 CUMULATIVE EFFECTS

The cumulative effects analysis for the Fire Management Plan environmental assessment considers the past, present, and reasonably foreseeable future actions on land uses that could add to (intensify) or offset (compensate for) the effects on the resources and that may be affected by the fire Management Plan alternatives. Cumulative effects vary by resource and the geographic areas considered here are generally the memorial and areas adjacent to the memorial. In some instances, activities may result in both negative and positive impacts when considering the short and long-terms. As a result, some resource categories in Table 3-3 show both positive and negative impacts resulting from a particular activity. The information provided in Table 3-3 is the basis for the cumulative effects described in Table 3-4.

Table 3-3 Affected Key Resources and Activities/Land Uses
Contributing to Fire Management Plan Implementation Cumulative Effects

	Geology & Soils	Water Resources	Vegetation	Wildlife	Air Quality	Noise	Visitor Use & Experience	Human Health & Safety	Cultural Resources
Past prescribed fires and thinning on the memorial	+-	-	+-	+-	-	-	+-	+-	+-
Lightning & human-caused wildfires	+-	+-	+-	+-	-		+-	+-	+
Wildfire suppression past, present, future	-	+-	-	-	+	-	+-	+	+
July 4 th Fireworks Program	-	-	-	-	-	-	+	-	-
Visitation on the memorial	-	-	-	-	-	-	+	-	-
Improvements to memorial visitor center complex	-	-	-	-	-	-	+	+	+-
Development outside the memorial boundary	-	-	-	-	-	-	+-	-	
Designation of Black Elk Wilderness and Norbeck Wildlife Preserve	+	+	+	+	+	+	+		+

DIRECT/INDIRECT EFFECTS KEY: (+) Positive/beneficial; (-) Negative/detrimental; (Blank) Neutral/no effect

Table 3-4 Cumulative Effects

Resource	Past and Present Actions	Proposed Actions	Future Actions	Cumulative Effects
Geology & Soils	Adverse soil impacts (soil erosion or loss) from past roads, memorial buildings and improvements, wildland fires and suppression efforts; Beneficial soil impacts from past wildland fires (nutrification of soils)	Prescribed fire and thinning activities would have temporary and minor adverse effects on soils (soil erosion), but beneficial effects as well over the short and long-terms (soil development and soil nutrification)	Increased development in areas adjacent to the memorial will impact soils; suppression efforts of large wildfires could adversely impact soils (compaction, erosion from firebreaks, etc.)	Soils inside of the memorial would improve over time with soil development and nutrification from prescribed fires; Fire Management Plan would not result in significant cumulative impacts; the No Action and Proposed Action Alternatives would contribute the most to soil cumulative impacts, while Alternative 3 would contribute the least
Water Resources	Minimal impacts to water resources from past wildfires and suppression efforts; designation of wilderness and preserve helps protect water resources from development (timber, roads, mineral extraction, etc.)	Thinning and prescribed fires would have no direct impacts on water resources	Increased development in areas adjacent to the memorial would likely indirectly impact water resources, depending on its location; designation of wilderness and preserve helps protect water resources from development (timber, roads, mineral extraction, etc.)	Minor effect on water resources; Fire Management Plan would not result in significant cumulative impacts; the No Action and Proposed Action Alternatives would contribute the most to water resource cumulative impacts, while Alternative 3 would contribute the least
Vegetation	Natural fuel loading increased in absence of historic low-severity, high frequency fire regime; native plant habitat and diversity declined; increased infestation of noxious weeds	Thinning and prescribed fire would decrease hazardous fuel loadings; native grass and forb species would be favored; forest stand structure in some areas would return to historic conditions	Thinning and prescribed fire efforts in the Black Hills National Forest would reduce fuel loadings and help restore historic fire regime to ponderosa pine stands	Ponderosa pine habitat and diversity would continue to improve; noxious weeds would continue to decline; fuel loadings would pose a reduced fire danger; Fire Management Plan would not result in significant cumulative impacts; the No Action and Proposed Action Alternatives would contribute the most to vegetation cumulative impacts, while Alternative 3 would contribute the least
Wildlife	Fire suppression efforts within the memorial degraded wildlife habitat and diversity; memorial building and improvements temporarily affect wildlife species	Thinning and prescribed fire would result in minor, short-term disturbance and displacement with minimal species loss; improved habitat and increased wildlife diversity with restoration of historic fire regime	Thinning and prescribed fire efforts in the Black Hills National Forest would help restore historic fire regime to ponderosa pine stands and benefit habitat and species diversity; increased development in adjacent areas would fragment habitat	Wildlife habitat and diversity increases; Fire Management Plan does not result in significant cumulative impacts; the No Action and Proposed Action Alternatives would contribute the most to wildlife cumulative impacts, while Alternative 3 would contribute the least

Table 3-4 Cumulative Effects

Resource	Past and Present Actions	Proposed Actions	Future Actions	Cumulative Effects
Air Quality	Industry and agricultural practices emit pollutants and particulate matter; automobiles, past wildland and prescribed fires, fireworks program contribute to some temporary deterioration in air quality and visibility	Prescribed fire emissions would result in very minor, short-term air quality and visibility impacts	Future wildland fires and fireworks programs would contribute to temporary deterioration in air quality and visibility	Class II air quality standards would not be violated; Fire Management Plan would not result in significant cumulative impacts; the No Action and Proposed Action Alternatives would contribute the most to air quality cumulative impacts, while Alternative 3 would contribute the least
Noise	Past development and improvements resulted in short-term noise impacts; traffic associated with visitation of the memorial continues to produce sustained and long-term source of noise; fireworks program results in temporary noise impacts	Thinning and suppression activities would result in temporary, but insignificant, noise impacts to sensitive receptors	Traffic associated with visitation of the memorial continues to produce sustained and long-term source of noise; fireworks program results in temporary noise impacts	Noise sources and levels in the memorial would remain relatively constant; Fire Management Plan would not result in significant cumulative impacts; all alternatives would result in similar noise impacts
Visitor Use and Experience (including Park Operations)	Establishment of the memorial, improved roads and trails provided access for recreation opportunities; increased population growth results in increased recreational use; scenic integrity compromised in the short-term as a result of improvements of the sculpture; fireworks program continues to be key recreation event	Very minor visitor use and experience impacts resulting from thinning and prescribed fire activities	Increased recreation use as population grows; fireworks program continues to be key recreation event	Long-term enhancement of recreation resources and opportunities offsets short-term recreation inconveniences from fuel treatments; Fire Management Plan would not result in significant cumulative impacts; the No Action and Proposed Action Alternatives would contribute the most to visitor use and experience cumulative impacts, while Alternative 3 would contribute the least
Human Health & Safety	Past suppression efforts protected memorial staff and visitors; fireworks program increased safety risks to general public observing fireworks display	Thinning and prescribed fire activities might result in very minor impacts; long-term improvement in human health & safety with reduction in fuels	Similar effects as described in Past and Present Actions	Human health and safety would improve over time with thinning and prescribed fire activities, consistent launch criteria for fireworks program; Fire Management Plan would not result in significant cumulative impacts; the No Action and Proposed Action Alternatives would contribute the most to human health and safety cumulative impacts, while Alternative 3 would contribute the least

Table 3-4 Cumulative Effects

Resource	Past and Present Actions	Proposed Actions	Future Actions	Cumulative Effects
Cultural Resources	Establishment of the memorial helped protect cultural resources; past suppression efforts may have impacted un-recorded sites	Fuel treatments could result in impacts to un-recorded sites	Similar effects as described in Past and Present Actions	Cultural resources continue to be protected; Fire Management Plan would not result in significant cumulative impacts; the No Action and Proposed Action Alternatives would contribute the most to cultural resources cumulative impacts, while Alternative 3 would contribute the least

Consultation and Coordination

List of Preparers

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Rebecca Whitney, Geographic Information Systems (GIS) Analyst, Mangi Environmental Group

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Cody Wienk, Wind Cave National Park

Persons, Organizations, and Agencies Who Received the Scoping Notice for this Project

LOCAL TELEVISION:

KOTA Television and Radio
Rapid City, SD 57701

KEVN/KIVV/FOX 7 TV
Rapid City, SD 57709-0677

KNBN TV
Rapid City, SD 57702

KCLO-TV
Rapid City, SD 57702

KCLO -TV
Sioux Falls, SD 57104

KAT, KFXS & KIMM
Rapid City, SD 57709

KDDX & KZZI
Spearfish, SD

KKMK, KRCS & KKLS
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KLMP
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KSLT
Spearfish, SD

South Dakota Public Broadcasting
Rapid City, SD 57701

KTEQ
Rapid City, SD 57701

KZMX
Hot Springs

RAPID CITY JOURNAL
Rapid City, SD 57701

ARGUS LEADER
Sioux Falls, SD 57117-5034

BLACK HILLS PIONEER & WEEKLY PROSPECTOR
Spearfish, SD 57783

CUSTER COUNTY CHRONICLE
Custer, SD 57730

HILL CITY PREVAILER
Hill City, SD 57745

PIERRE CAPITAL JOURNAL
Pierre, SD 57501

WATERTOWN PUBLIC OPINION
Watertown, SD 57201

YANKTON DAILY PRESS & DAKOTAN
Yankton, SD

BROOKINGS REGISTER
Brookings, SD 57006-0177

ABERDEEN AMERICAN NEWS
Aberdeen, SD 57402-4430

MOBRIDGE TRIBUNE
Mobridge, SD 57601-0250

WINNER ADVOCATE
Winner, SD 57580

BLACK HILLS PRESS & MEADE COUNTY TIMES-TRIBUNE
Sturgis, SD 57785-1527

PLAIN TALK
Vermillion, SD 57769-1109

THE HOT SPRINGS STAR
Hot Springs, SD 57747

PLAINSMAN
Huron, SD 57350

LEMMON LEADER
Lemmon, SD 57638

MADISON DAILY LEADER
Madison, SD 57042-0348

THE DAILY REPUBLIC AND DAILY ADVISOR
Mitchell, SD 57301

MURDO COYOTE
Murdo, SD 57559

MELLETTE COUNTY NEWS
Mission, SD 57755

PENNINGTON COUNTY COURANT
Wall, SD 57790

NATIONS CENTER NEWS
Buffalo, SD 57720

CORSON COUNTY NEWS and MCLAUGHLIN MESSENGER
McLaughlin, SD 57642-0788

THE HIGHLINER
Pierre, SD 57501

REDFIELD PRESS
Redfield, SD 57469

TIMBER LAKE TOPIC
Timber Lake, SD 57656

PHILIP PIONEER REVIEW
Philip, SD 57567

GREGORY TIMES-ADVOCATE
Gregory, SD 57533

CHAMBERLAIN REGISTER
Chamberlain ,SD 57325-0550

KADOKA PRESS
Kadoka, SD 57543

ISABEL DAKOTAN
Isabel, SD 57633

FAITH INDEPENDENT
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BURKE GAZETTE
Burke, SD 57533

BONESTEEL ENTERPRISE
Bonesteel, SD 57317

BELLE FOURCHE POST and BEE
Belle Fourche, SD 57717

ASSOCIATED PRESS
Sioux Falls, SD 57101

SOUTH DAKOTA MAGAZINE
Yankton, SD 57078-0175

DEADWOOD MAGAZINE
Rapid City, SD 57702

NEWS LETTER JOURNAL
Newscastle, WY 82701

SUNDANCE TIMES
Sundance, WY 82729

CASPER STAR TRIBUNE
Casper, WY 82602

DOUGLAS BUDGET
Douglas, WY 82633

BUFFALO BULLETIN
Buffalo, WY 82834

THE NEWS RECORD
PO Box 3006
Gillette, WY 82716

THE LUSK HERALD
Lusk, WY 82225

THE SHERIDAN PRESS
PO Box 2006
Sheridan, WY 82801

TORRINGTON TELEGRAM
Torrington, WY 82240

WYOMING TRIBUNE-EAGLE
Cheyenne, WY 82001-4397

MOUNT RUSHMORE NATIONAL MEMORIAL SOCIETY

MOUNT RUSHMORE HISTORY ASSOCIATION

PRESIDENTIAL PARKING

XANTERRA PARKS AND RESORTS

MIDWEST REGIONAL OFFICE

WIND CAVE NATIONAL PARK

JEWEL CAVE NATIONAL MONUMENT

DEVILS TOWER NATIONAL MONUMENT

BADLANDS NATIONAL PARK

CUSTER STATE PARK

SOUTH DAKOTA DEPARTMENT OF TOURISM

RAPID CITY CONVENTION AND VISITORS BUREAU

BLACK HILLS BADLANDS AND LAKES ASSOCIATION

BELLE FOUCHE CHAMBER

CUSTER CHAMBER

DEADWOOD CHAMBER

HILL CITY CHAMBER

HOT SPRINGS CHAMBER

KEYSTONE CHAMBER

LEAD CHAMBER

STURGIS CHAMBER

WALL CHAMBER

Scoping

Details of the scoping process and the issues that arose from it are described in Chapter 1, Section 1.5 – *Scoping Issues and Impact Topics*.

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FINDING OF NO SIGNIFICANT IMPACT

Fire Management Plan

Mount Rushmore National Memorial

Mount Rushmore National Memorial consists of 1,238 acres and is located on the central slope of the Black Hills of western South Dakota, in Pennington County. The Black Hills are a forested mountain range in southwest South Dakota and northern Wyoming covering approximately 2 million acres. Granite knobs, peaks, ridges and valleys covered with ponderosa pine and dotted with meadows characterize Mount Rushmore.

Nearby communities include Rapid City, Hill City, and Keystone. Federal, state, and private lands surround the Memorial. It is adjacent to the Black Elk Wilderness Area, the Peter Norbeck Wildlife Preserve, and the Hell Canyon and Mystic Districts of the Black Hills National Forest. The northeast corner of the Memorial is bordered by the town of Keystone with a year round population of 300 and a significant increase of seasonal population from April through September.

Historically, fire has played a major role in maintaining the ponderosa pine ecosystem and a diversity of wildlife habitat in the Black Hills surrounding the Memorial. The ponderosa pine ecosystem historically has a fire regime of frequent, low-severity ground fires that resulted in uneven-aged and open, park-like stands of ponderosa pine. Smaller trees were killed by the fires, while older, larger and fire-resistant trees survived.

One hundred years of wildland fire suppression in the region has resulted in an increased density of pine stands and abundant ladder fuels (e.g. dead and dry lower limbs, small trees), which create ideal conditions for severe crown fires. Fire suppression activities have also reduced the complex mosaic of forests and grasslands and increased the risk of catastrophic fire. The historic pre-European settlement pattern of frequent, low-severity ground fire, which removed ground fuels, has shifted to a pattern of potential high severity wildfires that may threaten life, property, and Memorial resources. There is a need to re-establish the natural fire regime and preserve native plant communities while at the same time protect visitors, facilities, and resources on and adjacent to the Memorial.

An environmental assessment (EA) was prepared to better understand the environmental effects associated with employing prescribed fire and thinning to protect the cultural and natural resources of the Memorial, while at the same time protecting employee and visitor safety during these fire management activities. Environmental issues identified during scoping and evaluated in the EA included geology and soils, surface water resources, vegetation, wildlife (including federally threatened and endangered species), air quality, noise (including wilderness impacts), visitor use and experience, human health and safety, and cultural resources.

Alternatives for restoring the natural fire regime to the ponderosa pine forest ecosystem and reducing hazardous fuels on the Memorial included employing the use of prescribed fire and thinning treatments (the preferred alternative) and employing thinning treatments only.

PREFERRED ALTERNATIVE

The entirety of Mount Rushmore National Memorial is contained in one Fire Management Unit since the following characteristics are similar throughout the Memorial: climate, weather, topography, vegetation, elevation, air quality concerns, access, fire history, fuel types, major fire regimes and expected fire behavior. Under this alternative, all wildland fires in the Memorial, human-caused fires and naturally-ignited fires (usually lightning), would be declared wildfires and suppressed in a manner that minimizes negative environmental impacts of suppression activities.

For the prescribed fire program, the Memorial is divided into five management zones based upon administrative and cultural resources: Natural Environmental Zone, Special Use Zone, Historic Zone, Outstanding Historic Feature Subzone, and the Development Zone. After the vegetation is restored to a pre-European settlement condition and is then in a “maintenance” mode, units would be burned every ten to twenty years, when funds are available, to replicate the natural fire regime of the ponderosa pine forest and to reduce hazardous fuel accumulations. Those management zones associated with high economic values (historic and developed zones) would be treated more frequently.

A combination of mechanical thinning and prescribed fire would be used to return the developed, historic and special use zones to natural fire regimes and to provide defensible space for firefighters. Thinning treatments would concentrate on small understory trees and would not include large diameter trees or old growth. Up to 200 acres in any given year would be burned via prescribed fire to reduce fuel accumulations and restore ponderosa pine stands to pre – European settlement conditions. Prescribed fires would be employed in treatment units as frequently as every 5-15 years during the restoration phase. Once historical conditions in an area were restored, prescribed fire would be used to maintain them. This “maintenance” mode would result in areas being treated with prescribed fire every 10-20 years. The burning of slash piles with prescribed fire is considered in the FMP. Interagency cooperative burns would be sought for areas near and adjacent to Memorial boundaries. Under this alternative, mechanical equipment such as chainsaws, fire engines, and aircraft would be employed. During wildfire suppression efforts, fire retardants and foams may be used.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The “prescribed fire” alternative is the environmentally preferred alternative. The environmentally preferred alternative is the alternative that will promote the national environmental policy as expressed by §101 of the National Environmental Policy Act (NEPA). This includes alternatives that:

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings

3. attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. 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
5. achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

In essence, the environmentally preferred alternative would be the one(s) 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”.

In this case, the Proposed Action Alternative is the environmentally preferred alternatives for Mount Rushmore National Memorial since it meets goals 1, 2, 3, and 4 described above. Under these alternatives, fire management activities would reduce hazardous fuel loadings on the Memorial, mimic the natural ecological processes, and combat the invasion of exotic invasive plants. In addition, the alternatives help protect Memorial resources and adjacent lands from the threat of wildfires. Finally, the alternatives best protect and help preserve the historic, cultural, and natural resources in the Memorial for current and future generations.

THE PREFERRED ALTERNATIVE AND SIGNIFICANCE CRITERIA

As defined at 40 CFR §1508.27, from the regulations of the Council on Environmental Quality that implement the provisions of NEPA, significance is determined by examining the following criteria:

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

Periodic burning in the ponderosa pine forest ecosystem is an important component in maintaining a healthy forest. The restoration of the historic fire regime to the ponderosa pine ecosystem would enhance the variety and diversity of native plant species and habitats, while at the same time help control noxious weeds. Plant communities adapted to high frequency, low-severity fires would be favored with prescribed fire, and hazardous fuels would be reduced (surface and ladder fuels). Prescribed fire would also release nutrients into the soil and the fertilization effects of ash would provide an important source of nutrition for vegetation in the area. These effects are considered to be minor and not significant impacts because they exemplify natural ecological processes that occur under a natural fire regime for ponderosa pine forest ecosystems in the Black Hills of South Dakota.

The EA also discusses the negligible to minor impacts to air quality associated with the preferred alternative. Considering the relatively small number of acres that would be affected by prescribed fire, approximately 526 acres, and in light of the current air quality in the area and review and approval of the burn permit by the state of South Dakota, air quality impacts are felt to be negligible to minor, and not significant. Noise impacts to the Black Elk Wilderness Area are also considered to be minor since thinning activities would not be conducted adjacent to it during peak recreational use of the area.

The degree to which the proposed action affects public health or safety

When conducting fire management activities, human health and safety is the primary concern. Under the preferred alternative, there would likely be very minor human health and safety impacts (small cuts and bruises) to firefighters resulting from wildland fire suppression and prescribed fire and thinning activities. The preferred alternative provides the best protection since prescribed fire and thinning will help reduce hazardous fuels on the Memorial and minimize the fire danger to the Memorial staff and nearby private residences and communities. Before conducting any prescribed fire, fire management officials would ensure that adequate weather conditions existed to facilitate smoke dispersion, thus minimizing and/or eliminating potential smoke impacts on sensitive receptors and the general public.

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.

As described in the EA, the intent of the action alternatives was to provide the maximum amount of protection for the important natural and cultural resources of the Memorial. The implementation of the preferred alternative would result in no significant adverse effects to cultural resources since these would be marked and avoided during fire management activities. As discussed under the first significance criteria above, the preferred alternative will have a minor beneficial impact on the ponderosa pine forest ecosystem since fire is so important in the perpetuation of that ecosystem. There would be very minor and insignificant impacts to Mount Rushmore National Memorial and to surface water resources resulting from fire management activities. Old growth trees in the Starling Basin would not be cut, thus any thinning from below in this ecologically sensitive area would have minor short-term impacts; however, the forest stands in the Basin would be benefited in the long-term with a reduction in surface and ladder fuels. In the event of wildfire originating in or passing through the Starling Basin, the likelihood of that wildfire becoming stand replacement fire is reduced after thinning and prescribed fire treatments. There are no prime farmlands or wild and scenic rivers affected.

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

There were no controversial impacts identified during the analysis done for the EA, and no controversial issues were raised during the public review of the EA.

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

There are no identified risks associated with the preferred alternative that are unique or unknown, and there are no effects associated with the preferred alternative that are highly uncertain identified during the analysis for the EA or during the public review of the EA.

The 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 preferred alternative does not establish a precedent for any future actions that may have significant effects, nor does it represent decisions about future considerations. The purpose of this action is to develop a fire management plan and program that utilizes the benefits of fire to achieve desired natural resource conditions while minimizing the fire danger to Memorial resources and adjacent lands from hazardous fuel accumulations. Under such a program, prescribed fire and thinning activities would be conducted over several years to restore the ponderosa pine forest ecosystem by promoting fire-adapted plant and wildlife species, reducing the hazardous fuels in the Memorial (surface and ladder fuels) and reducing the extent of noxious weeds. This program will be evaluated and, if necessary, revised during future revisions to the Memorial's Fire Management Plan.

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

Since the vegetation resources thrive under a management scheme that includes fire, the application of fire on an annual basis will cumulatively improve the ponderosa pine forest ecosystem on the Memorial. The air quality impacts associated with prescribed fire would be permitted through the South Dakota Division of Resource Conservation and Forestry and would have a very minor cumulative effect on the region's air quality. The EA determined that there would be no significant cumulative impacts associated with the preferred alternative.

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

Mount Rushmore National Memorial is listed on the National Register of Historic Places. It was registered on the basis of the carving of the faces. The sculpture itself is the Memorial. The only significant historical event was the carving process. The remainder of the land with Rushmore's boundaries is used for scenic protection and administrative facilities.

Numerous designations for historic protection of the Memorial have been made. These include the listing of the entire Memorial on the National Register of Historic Places, establishment of the Historic sub-zone for the Visitor Services Area for management purposes, and creation of a Historic District for an area including the sculpture, the uncompleted Hall of Records, the

Sculptors Studio, the residence, the Borglum View Terrace, and other affiliated facilities from the time of the creation of the sculpture, including the lift platform, the compressor, the water reservoir, a stairway, and remnants of railroad tracks, winches and pulleys. There are no known archeological sites in the Memorial.

Compliance with section 106 of the National Historic Preservation Act was completed with a concurrence with the NPS determination of no effect by the South Dakota State Historic Preservation Officer on **January 18, 2003**. The State Historic Preservation Office of South Dakota and reviewers at the Midwest Regional Office offered the following suggestions:

1. Mount Rushmore should have a level 1 file search completed to determine if there are any previously recorded archeological sites within the project area of potential effects (APE).
2. Prior to commencement, a cursory survey by a qualified archeologist should be completed to relocated any known sites and identify cultural resources that may be negatively impacted by the project.
3. Subsequent to project completion an on-the-ground intensive survey be performed on the project APE by a qualified archeologist. Known archaeological sites and/or those located during an archaeological survey must be evaluated for the National Register of Historic Places. Any structures within the APE should be documented following the guidelines for reconnaissance level survey in the South Dakota Historic Resource Survey Manual.
4. No heavy equipment should be used within the project APE until all cultural resources have been identified and taken into consideration.
5. If during the course of this action any bones, artifacts, foundations, or other indications of past human occupation of the area are uncovered, the project should be temporarily stopped until the State Historic Preservation Officer has been notified and had a chance to comment.

The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

The U.S. Fish and Wildlife Service concurred with the determination of no effect on threatened or endangered species on **December 3, 2002**.

Whether the action threatens a violation of Federal, state, or local law or requirements imposed for the protection of the environment.

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

Impairment

In addition to reviewing the list of significance criteria, the National Park Service has determined that implementation of the proposal will not constitute an impairment to the critical resources and values of the Memorial. This conclusion is based on a thorough analysis of the environmental impacts described in the Fire Management Plan and its EA, public comment, relevant scientific studies, and the professional judgement of the decision-maker guided by the direction in NPS *Management Policies 2001* (December 27, 2000). The plan under the preferred

alternative will result in only negligible to minor adverse impacts to air quality resources, primarily in the form of smoke impacts to visibility, and to wilderness, primarily in the form of elevated noise levels. Overall, the plan results in benefits to park resources and values, opportunities for their enjoyment, and it does not result in their impairment.

PUBLIC INVOLVEMENT

The environmental assessment was made available for public review and comment during a 30-day period ending **November 2002**. A legal notice announcing its availability was published in the local paper on **August 2002**. No one from the general public requested copies of the document and not comments were received. Two letters were received from other agencies (one from the State Historic Preservation Officer, Midwest Regional Office and one from the U.S. Fish and Wildlife Service). Their comments are included above. There were no substantive issues raised upon review of the EA. The lack of comment on the part of the general public and other agencies resulted in no changes to the text of the environmental assessment.

The preferred alternative does not constitute an action that normally requires preparation of an environmental impact statement (EIS). The preferred alternative will not have a significant effect on the human environment. Negative environmental impacts that could occur are negligible or minor in intensity. There are no significant impacts 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.

Recommended: /s/ Don Striker 2/26/03
 Superintendent Date

Approved: /s/ Ernest Quintana 3/19/03
 Midwest Regional Director Date