National Park Service
U.S. Department of the Interior

Little Bighorn Battlefield National Monument
Montana

Fire Management Plan Environmental Assessment / Assessment of Effect

July 2012

This page is intentionally left blank

Fire Management Plan
Environmental Assessment / Assessment of Effect
LITTLE BIGHORN BATTLEFIELD NATIONAL MONUMENT

Montana
July 2012

The National Park Service (NPS) at Little Bighorn Battlefield National Monument, located in Crow Agency, Montana, has prepared this environmental assessment / assessment of effect to analyze the environmental effects of fire management. The National Park Service seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of firefighters, NPS staff, and the public; use fire in a manner that maintains and restores a healthy and sustainable ecosystem; protect cultural and natural resources; and strengthen cooperative fire management partnerships.

Two alternatives were analyzed for meeting the objectives of the plan:

Alternative A - No Action Alternative (Fire Suppression): Fire management activities would be conducted without a formal management plan in place. In lieu of a plan, the National Park Service mandates that all wildland fires be treated using a full suppression strategy and stipulates that fires cannot be used for resource management.

Alternative B – Fire Management with Fuels Reduction and Prescribed Fire: Implementation of a new fire management plan for Little Bighorn Battlefield National Monument would include options for manual fuel load reduction to lower the risk of wildland fires, and prescribed fire as a resource management tool.

Neither of the alternatives analyzed in this environmental assessment would result in major environmental impacts.

PUBLIC COMMENT

This environmental assessment will be available for public review for **30** days. If you wish to comment, you are encouraged to submit your comments directly on the NPS Planning, Environment, and Public Comment (PEPC) website. Please **e-mail comments** through the NPS PEPC planning website: http://parkplanning.nps.gov/libi, and follow the links for the fire management plan environmental assessment. The "Open for Public Comment" link on the left column provides access to the environmental assessment.

Otherwise, you may mail comments to the name and address below. Please note that names and addresses of people who comment become part of the public record. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment. We will make all submissions from organizations, from businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety.

Please address written comments to:
David Harrington, Acting Superintendent
Attn: Fire Management Plan Environmental Assessment
Little Bighorn Battlefield National Monument
PO Box 39
Crow Agency, Montana 59022-0039

This page is intentionally left blank

CONTENTS

Chapter 1: Purpose and Need for Action

Background 1
National Monument Purpose 1
National Monument Significance 1
Fire History in the National Monument 3
Purpose of the Action 3
Need for the Action 4
Objectives 5
Relationship of the Proposed Action to Other Planning Efforts 5
Final General Management and Development Concept Plans 5
Little Bighorn Battlefield National Monument Resource Management Plan 5
Shared Responsibility Memorandum of Understanding 6
Interagency Standards for Fire and Fire Aviation Operations 6
Wildland Fire Management Plan 6
Northern Rocky Mountains Invasive Plant Management Plan 6
Cultural Landscapes Inventory and Cultural Landscape Report 6
Rehabilitation of the Battlefield Tour Road 6
Replacement of the Irrigation and Fire Suppression Systems 7
Public Scoping 7
Issues 7
Impact Topics (Including Topics Considered and Dismissed) 8
Retained Impact Topics 8
Impact Topics Dismissed from Further Consideration 10

Chapter 2: Alternatives

Alternative A, the No-Action Alternative (Fire Suppression) 15
Unplanned Fire Event 15
Treatment Methods 16
Alternative B, Fire Management with Fuels Reduction and Prescribed Fire 17
Unplanned Fire Event Treatment Methods 17
Planned Event Treatment Methods (Alternative B Only) 17
Applicable Mitigation Measures / Best Management Practices 19
General 19
Vegetation and Soil 19
Water Resources 20
Air Quality 21
Health and Safety 21
Special Status Species 21
Cultural Resources 22
The Preferred Alternative and Environmentally Preferable Alternative 23
The Alternative Preferred by the National Park Service 23
Environmentally Preferable Alternative 23
Alternatives Considered but Dismissed 24
Summary Comparison of the Alternatives 25

Chapter 3: Affected Environment and Environmental Consequences

Methods for Analyzing Impacts 31
Cumulative Impacts 31
Impacts to Cultural Resources and Section 106 of the National Historic Preservation Act 32
Cultural Resources Historical Overview 33
Archeological Resources 34
Affected Environment 34
Methods 34
Regulations and Policies 35
Impacts of Alternative A, No Action (Fire Suppression) 35
Impacts of Alternative B, Fire Management with Fuels Reduction and Prescribed Fire 37
Cultural Landscapes 38
Affected Environment 38
Methods 39
Regulations and Policies 40
Impacts of Alternative A, No Action (Fire Suppression) 41
Impacts of Alternative B, Fire Management with Fuels Reduction and Prescribed Fire 42
Historic Structures 43
Affected Environment 43
Methods 44
Regulations and Policies 45
Impacts of Alternative A, No Action (Fire Suppression) 45
Impacts of Alternative B, Fire Management with Fuels Reduction and Prescribed Fire 46
Ethnographic Resources 47
Affected Environment 47
Methods 48
Regulations and Policies 49
Impacts of Alternative A, No Action (Fire Suppression) 49
Impacts of Alternative B, Fire Management with Fuels Reduction and Prescribed Fire 50
Vegetation 52
Affected Environment 52
Methods 53
Regulations and Policies 56
Impacts of Alternative A, No Action (Fire Suppression) 56
Impacts of Alternative B, Fire Management with Fuels Reduction and Prescribed Fire 58
Special Status Species 61
Affected Environment 61
Methods 63
Regulations and Policies 63
Impacts of Alternative A, No Action (Fire Suppression) 63
Impacts of Alternative B, Fire Management with Fuels Reduction and Prescribed Fire 66

Wildlife 69
Affected Environment 69
Methods 69
Regulations and Policies 69
Impacts of Alternative A, No Action (Fire Suppression) 70
Impacts of Alternative B, Fire Management with Fuels Reduction and Prescribed Fire 71
Air Quality 73
Affected Environment 73
Methods 74
Regulations and Policies 75
Impacts of Alternative A, No Action (Fire Suppression) 75
Impacts of Alternative B, Fire Management with Fuels Reduction and Prescribed Fire 76
Visitor Use and Experience 78
Affected Environment 78
Methods 78
Regulations and Policies 79
Impacts of Alternative A, No Action (Fire Suppression) 79
Impacts of Alternative B, Fire Management with Fuels Reduction and Prescribed Fire 81
Health and Safety 83
Affected Environment 83
Methods 83
Regulations and Policies 83
Impacts of Alternative A, No Action (Fire Suppression) 84
Impacts of Alternative B, Fire Management with Fuels Reduction and Prescribed Fire 85
Park Operations 87
Affected Environment 87
Methods 87
Regulations and Policies 88
Impacts of Alternative A, No Action (Fire Suppression) 88
Impacts of Alternative B, Fire Management with Fuels Reduction and Prescribed Fire 89

Chapter 4: Consultation and Coordination

Scoping Process and Public Involvement 91
Internal Scoping 91
External Scoping 91
Agency Consultation 92
Native American Consultation 92
List of Preparers 93
List of Recipients 93
Elected Officials 93
Federal Agencies 94
American Indian Tribes 94
State and Local Agencies 94
Other Agencies and Organizations 94

Chapter 5: References

Bibliography 97
Appendix A National Park Service Memorandum: Use of Healthy Forest Initiative Hazardous Fuels Reduction Categorical Exclusion 101
Appendix B Memorandum of Understanding between the Bureau of Indian Affairs, Crow Indian Agency and the National Park Service, Little Bighorn Battlefield National Monument both of the United States Department of the Interior 104
Appendix C Press Release, Scoping Letters, and Responses 112
Appendix D Nonnative Plant Species that Occur within Little Bighorn Battlefield National Monument 165

FIGURES

Figure 1: Little Bighorn Battlefield National Monument Map 2
Figure 2: A Flapper Fire Fighting Tool 16
Figure 3: Custer Battlefield Draft Vegetation Map 54
Figure 4: Reno-Benteen Battlefield Draft Vegetation Map 55
Figure 5: National Monument Visitation Statistics for 2011 78

TABLES

Table 1: Comparison of the Alternatives 26
Table 2: Impacts of the Alternatives 27
Table 3: Special Status Species with the Potential to Occur at Little Bighorn Battlefield National Monument 62
Table 4: Preparers 93

Chapter 1: Purpose and Need for Action

BACKGROUND

Little Bighorn Battlefield National Monument (LIBI) is located in southeast Montana, 65 miles south of Billings, Montana, and 73 miles north of Sheridan, Wyoming (figure 1). The national monument contains 765.34 acres, in two separate holdings, located within the exterior boundaries of the Crow Indian Reservation. Little Bighorn Battlefield National Monument preserves in perpetuity the natural and cultural resources of the site of the Battle of the Little Bighorn, fought June 25 and 26, 1876 between 12 companies of the 7th U.S. Cavalry under the command of Lt. Col. George Armstrong Custer, including Arikara and Crow Indian scouts and attached civilian personnel, and allied Lakota Sioux, Cheyenne, and Arapaho encamped along the Little Bighorn River and under the spiritual leadership of Tatanka-Iyotanka (Sitting Bull) and other Lakota Sioux and Cheyenne leaders.

The legislation, executive orders, and *General Management Plan* (NPS 1995) for the park provide insights into why the park was created. The *General Management Plan*, for example, says the primary purpose of the national monument is to preserve and protect the historic and natural resources pertaining to the Battle of the Little Bighorn and to provide visitors with a greater understanding of those events which lead up to the battle, the encounter itself, and the various effects the encounter had on the two cultures involved.

In addition, Custer National Cemetery, located in Historic District One of Little Bighorn Battlefield National Monument, memorializes and commemorates casualties and veterans of the Indian Wars (including U.S. Indian scouts and Buffalo Soldiers), Spanish American War, World War I, World War II, Korean War, and the war in Vietnam.

The Indian Memorial, dedicated on June 25, 2003, honors Indian participation in the battle. The memorial's theme, "Peace Through Unity," promotes peace, unity, and friendship among all the tribes that fought at the battle as well as others who visit the living memorial.

NATIONAL MONUMENT PURPOSE

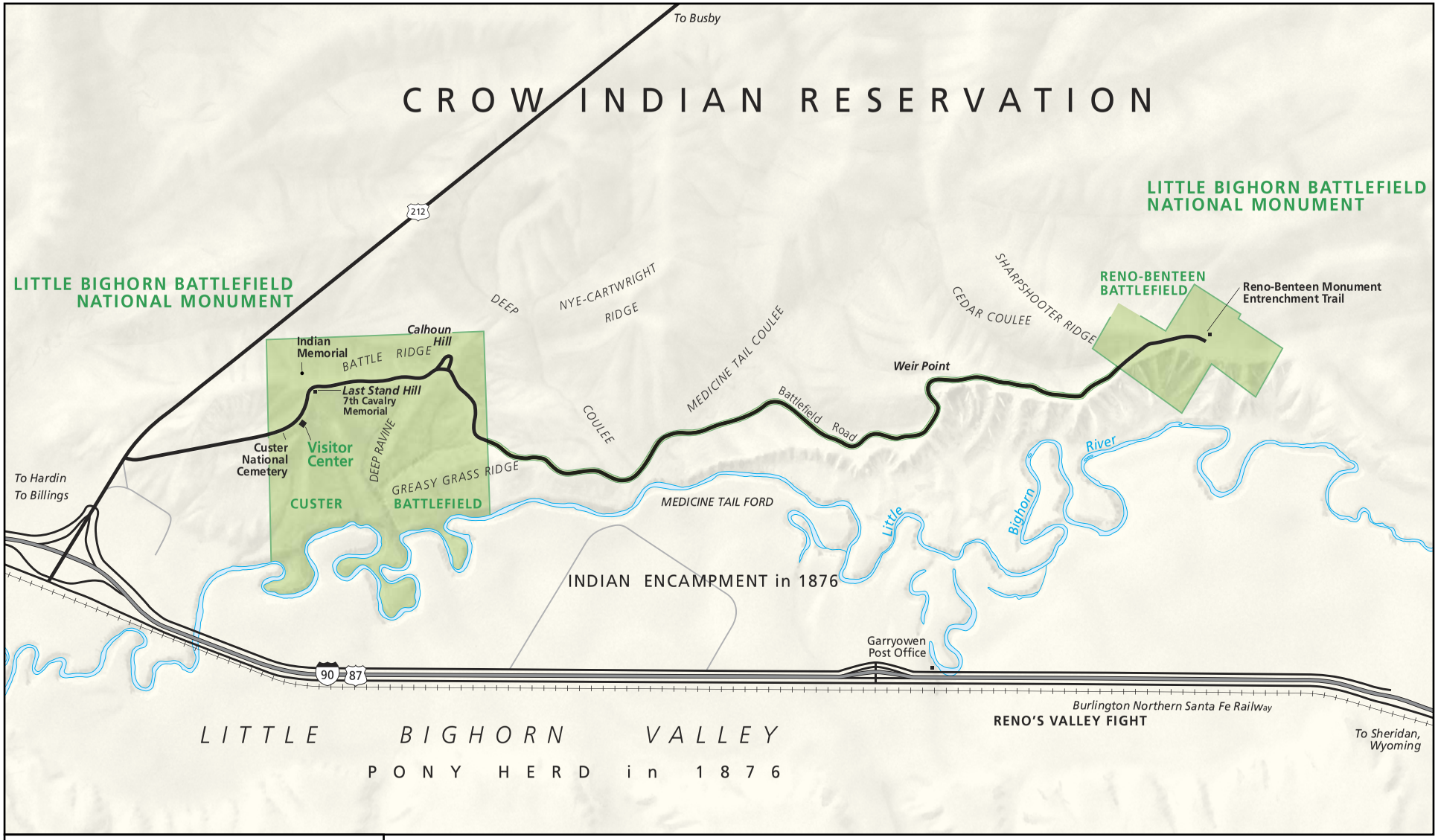
Purpose statements for a national monument express why the national monument was set aside as part of the national park system. They are grounded in a thorough analysis of the national monument's legislation and legislative history, and they provide fundamental criteria against which the appropriateness of plan recommendations, operational decisions, and actions are tested.

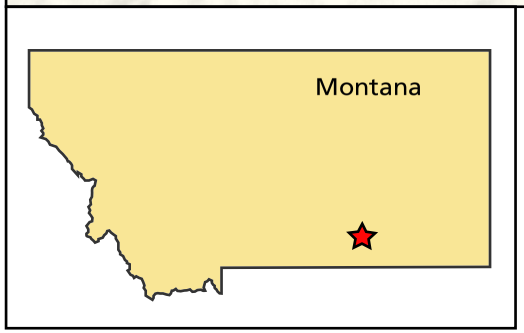
The purpose of Little Bighorn Battlefield National Monument is to preserve, protect, and interpret the historic, cultural, and natural resources, including lands, pertaining to the Battle of the Little Bighorn. Little Bighorn Battlefield National Monument was officially recognized and designated a national cemetery under the headquarters of the Army (NPS 1995).

Subsequently, a boundary, the Reno-Benteen unit, and the erection of a public historic museum were authorized. In 1940, Custer Battlefield National Cemetery was redesignated a national monument. In 1991, the site was redesignated Little Bighorn Battlefield National Monument, and an Indian Memorial to honor Native American participation in the battle was authorized (NPS 2005a).

NATIONAL MONUMENT SIGNIFICANCE

Little Bighorn Battlefield National Monument commemorates one of America's most famous battles, when two culturally divergent forces clashed in a life and death struggle to, on one hand, perpetuate national expansion, and on the other, preserve a nomadic way of life. The battle symbolized a high-water mark in a 400-year struggle between Euro-Americans and Native Americans. The defeat of





North

0 0.5 1 Kilometer

0 0.5 1 Mile

FIGURE 1: PROJECT AREA MAP

Little Bighorn Battlefield National Monument

United States Department of the Interior / National Park Service

12 companies of the Seventh United States Cavalry by Lakota, Cheyenne, and Arapaho warriors, although militarily insignificant, has achieved a symbolic dimension from film, theater, art, and other media. Little Bighorn Battlefield National Monument is a special place, largely unchanged, allowing profound personal reflection on the historic event, and the American consciousness (NPS 2005a).

National monument significance statements capture the essence of the unit's importance to the nation's natural and cultural heritage. They describe the unit's distinctiveness and why an area is important within regional, national, and global contexts. Significance statements help NPS managers focus their efforts and funding on attributes that are directly related to the purpose of the unit.

The Long Range Interpretative Plan (NPS 2011a) includes the following significance statements:

- Battlefield as spiritual/sacred ground - The battlefield has spiritual significance, a special power of place that encourages reflection and triggers emotional connection to natural landscapes that still evoke the 19th century tension between Indian homelands and westward expansion. As sacred ground, it honors sacrifices made during real life struggles for survival.
- Battlefield's iconic significance - The battlefield has iconic and representational significance as a symbol of cultural conflict. The battle narrative possesses the elements of an American epic - larger than life personalities, conflicting views of nature and the world, racism, debates over policies and strategies, promises made and broken, revenge, greed, defense of homeland, tragedy, triumph, and more.
- Battlefield's historic/cultural significance - The Battle of Little Bighorn became one of the most well known events of the Indian Wars. While the outcome of the battle seemed to validate Indian resistance, it shocked the rest of the nation, quieted debate on how to approach Indian policy, and unleashed a harsh, forceful military response that changed the West and Indian communities in ways that are still unfolding.
- Significance of the battlefield's memorial landscape - The monuments, national cemetery, and markers across the battlefield, placed where soldiers and warriors fell in battle, are a distinctive approach to memorialization, simple, somber recognition of battlefield actions by all sides.

FIRE HISTORY IN THE NATIONAL MONUMENT

The land that makes up the present-day Little Bighorn Battlefield National Monument has been subject to fire seven times after the Battle of Little Bighorn – 1876 (the 'retreat fire'), 1908, 1983, 1988, 1991, 1994, and 1995. All seven fires were human-caused, wind-driven, and short in duration. The 1983 fire burned approximately 90% of both the Custer and Reno-Benteen battlefield units, while the 1991 fire event result in the burning of approximately 90% of only the Reno-Benteen unit. The 1983 fire was notable because it burned much of the sagebrush within the national monument, an important element of the historic battlefield (NPS 2011b).

PURPOSE OF THE ACTION

The National Park Service is preparing this fire management plan environmental assessment / assessment of effect (referred to hereinafter as an environmental assessment) because the Secretary of the Interior, through NPS wildland fire policy directives and National Park Service *Director's Order #18: Wildland Fire Management* (NPS 2008b), requires parks with burnable vegetation to have a fire management plan. These plans are intended to be both strategic and operational, guiding the full range of fire program activities that support land and resource management objectives. In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the National Park Service seeks to provide management direction by accommodating the latest national and NPS policies and scientific information.

More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to:

- Ensure the health and safety of firefighters, NPS staff, and the public.
- Use fire in a manner that maintains and restores a healthy and sustainable ecosystem.
- Strengthen cooperative fire management partnerships.

Protect cultural and natural resources. *Management Policies 2006* (NPS 2006), require analysis of potential effects to determine whether actions would impair park resources. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values.

However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within park, the discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise.

The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of these resources or values. An impact to any park resource or value may, but does not necessarily, constitute an impairment, but an impact would be more likely to constitute an impairment when there is a major or severe adverse effect upon a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park; or
- Identified as a goal in the park's general management plan or other relevant NPS planning documents.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to pursue or restore the integrity of park resources or values and it cannot be further mitigated. A written impairment determination will be made for the preferred alternative and will be included in the resulting decision document, or finding of no significant impact.

This environmental assessment has been prepared in accordance with the National Environmental Policy Act and its implementing regulations in 40 *Code of Federal Regulations* parts 1500-1508; *Director's Order #12 and Handbook, Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2001); and section 106 of the National Historic Preservation Act and its implementing regulations in 36 *Code of Federal Regulations* part 800. The environmental assessment process is being used to comply with section 106.

NEED FOR THE ACTION

Fire management planning in the National Park Service has evolved over time as knowledge of fire behavior and effects has grown. Although a fire management plan for Little Bighorn Battlefield National Monument was prepared in 2005, the National Environmental Policy Act compliance used to evaluate the plan's effects was the Healthy Forest Initiative Hazardous Fuels Reduction

Categorical Exclusion. In April 2012, it was determined the categorical exclusion was no longer suitable National Environmental Policy Act compliance for any NPS units. Refer to appendix A for an NPS memorandum documenting this change. As a result, a new fire management plan and this environmental assessment are being prepared. A brief description of the 2005 *Wildland Fire Management Plan* is presented below.

The new plan will incorporate the latest fire management science as well as meet evolving NPS policies and guidance. A fire management plan is an important planning tool for NPS staff and is consistent with the national monument's *General Management Plan* and other related park plans. The proposed new fire management plan includes measures to promote safety within the national monument and also contains provisions for the management of natural and cultural resources.

OBJECTIVES

Objectives are specific statements of purpose, and describe what must be accomplished to a large degree for the project to be considered a success. The objectives are derived from the purpose for the project described above. This will allow the National Park Service to decide on alternative actions. The following objectives will be used in the analysis of alternatives in the environmental assessment:

- Ensure the safety of NPS staff, visitors, and surrounding community.
- Preserve the cultural landscape through the use of fire management tools.
- Conduct ecosystem maintenance and restoration, including the human environment, provided it does not conflict with the cultural landscape.
- Facilitate reciprocal fire management activities through cooperative agreements with partners.

RELATIONSHIP OF THE PROPOSED ACTION TO OTHER PLANNING EFFORTS

Actions undertaken in association with the proposed fire management plan have the potential to contribute to the cumulative effects of other plans and projects in or near the national monument. The following projects and plans have the ability to contribute to cumulative effects of the project. These are included in analyses of the cumulative scenario for the various impact topics addressed in this environmental assessment.

FINAL GENERAL MANAGEMENT AND DEVELOPMENT CONCEPT PLANS

The *Little Bighorn Battlefield National Monument Final General Management Plan and Development Concept Plans* were completed in 1986 and updated in 1995 (NPS 1995). The purpose of the *General Management Plan* is to provide the necessary guidelines and strategies for management and use of Little Bighorn Battlefield National Monument.

LITTLE BIGHORN BATTLEFIELD NATIONAL MONUMENT RESOURCE MANAGEMENT PLAN

The *Resource Management Plan* (NPS 2007) is a tiered planning document, supplementing the *General Management Plan* that is intended to provide a working foundation to support the various legal mandates that bear upon resource management actions at Little Bighorn Battlefield National Monument. It identified actions necessary for the proper long range management of the cultural and natural resources of the park. The objectives of the plan were to give an overview of the park's natural and cultural resources, provide an analysis of both the natural and cultural resource management needs, describe threats to park resources, assess the status of available baseline

information, and prescribe long-term strategies to address the park's most important resource problems and research needs.

SHARED RESPONSIBILITY MEMORANDUM OF UNDERSTANDING

This 2010 agreement between the Bureau of Indian Affairs, Crow Indian Agency, and the National Park Service acknowledges the shared responsibility of adequately protecting the timber, range, watersheds, and other natural resources within their respective jurisdictions, and outlines the interagency cooperation in place for fire prevention, preparedness, suppression and related fire management activities. The memorandum is presented in appendix B.

INTERAGENCY STANDARDS FOR FIRE AND FIRE AVIATION OPERATIONS

The 2012 *Interagency Standards for Fire and Fire Aviation Operations* provides fire and fire aviation program management direction for the Bureau of Land Management, the U.S. Forest Service, the U.S. Fish and Wildlife Service, the Bureau of Indian Affairs, and the National Park Service. It outlines principles and policy statements that guide the philosophy, direction, and implementation of fire management planning, activities, and projects on federal lands.

WILDLAND FIRE MANAGEMENT PLAN

The 2005 *Wildland Fire Management Plan* outlined actions to be taken by Little Bighorn Battlefield National Monument in meeting its fire management goals. The plan is no longer operational because a categorical exclusion used for compliance with the National Environmental Policy Act was found to be inadequate. Nonetheless, the plan stated that the physical characteristics, land ownership patterns, and fuel type on the national monument were not appropriate for wildland fire use. It further indicated prescribed fire could not be applied to the landscape until its effects on archaeological resources were assessed. A suppression only strategy for managing wildfire on the landscape was the objective.

NORTHERN ROCKY MOUNTAINS INVASIVE PLANT MANAGEMENT PLAN

The *Northern Rocky Mountains Invasive Plant Management Plan* (NPS 2011b) is a cooperative effort between the National Park Service Pacific West and Intermountain Regions. It is intended to reduce the adverse effects of nonnative invasive plants on native plant communities and other natural and cultural resources within 10 parks, including Little Bighorn Battlefield National Monument. It is directly related to fire management actions because of the use of fire to control nonnative species.

CULTURAL LANDSCAPES INVENTORY AND CULTURAL LANDSCAPE REPORT

Cultural Landscapes Inventory, Little Bighorn Battlefield National Monument (NPS 2010) identified the cultural landscapes at the national monument. The *Cultural Landscape Report*, which is in preparation, will provide treatment recommendations for the inventoried items. Most likely treatments will be geared toward a rehabilitation management philosophy. The first draft of the report is expected mid-2012 and will be shared with the consulting tribes for comment.

REHABILITATION OF THE BATTLEFIELD TOUR ROAD

This future project would be similar to the alternatives described in the *2005 Rehabilitate Tour Road* environmental assessment.

REPLACEMENT OF THE IRRIGATION AND FIRE SUPPRESSION SYSTEMS

The irrigation and fire suppression systems associated with the developed area of the national monument, including the national cemetery, visitor center, housing, administrative offices, maintenance shop, and Stone House (White Swan Library) would be replaced.

PUBLIC SCOPING

Scoping is an early and open process to determine the breadth of environmental issues and alternatives to be addressed in an environmental assessment/assessment of effect. Little Bighorn Battlefield National Monument conducted both internal scoping with appropriate NPS staff and external scoping with the public and interested and affected groups and agencies.

Internal scoping was conducted by the staff of Little Bighorn Battlefield National Monument, fire management staff from Yellowstone National Park, and a planning professional from the National Park Service's Denver support office. This interdisciplinary process defined the purpose and need, identified potential actions to address the need, determined what the likely issues and impact topics would be, and identified the relationship, if any, of the proposed action to other planning efforts at the national monument.

A press release describing the proposed action was issued on March 9, 2012 (see appendix C). American Indian tribes traditionally associated with the lands of Little Bighorn Battlefield National Monument and others with whom national monument staff regularly consult were also apprised of the proposed action by a March 9, 2012 letter (see appendix C).

Comments were solicited during external scoping until April 13, 2012. No comments were received from the tribes. Three comments were received from agencies and one from the public. Details regarding these comments are provided in chapter 4, Consultation and Coordination.

The undertakings described in this document are subject to section 106 of the National Historic Preservation Act, as amended in 1992 (16 *United States Code,* section 470 *et seq.*). Consultations with the Crow Agency Tribal Historic Preservation Office have been ongoing since the inception of the project. This environmental assessment will also be submitted to the Tribal Historic Preservation Office for review and comment to fulfill Little Bighorn Battlefield National Monument's obligations under section 106 (36 *Code of Federal Regulations* part 800.8[c], Use of the National Environmental Policy Act Process for Section 106 Purposes).

ISSUES

Issues are concerns or topics that need to be considered in the course of developing a successful project that is consistent with governing laws, regulations, and policies and park resources. Issues need to be addressed in the analysis of the proposed project and its alternatives. Issues identified in association with fire management within Little Bighorn Battlefield National Monument include the following:

- The park cannot use tractors or other vehicles towing implements for fuel reduction as a tool because it must avoid any potential disturbances to buried cultural resources.
- The speed that a wildfire would travel through the relatively small national monument and the grassland habitat must be considered before using wildland fire as a resource management tool.
- Fire can result in the spread of nonnative plant species.

- Any fires, whether planned or unplanned, have the potential to affect buried archeological resources and other resources integral to the cultural landscape.
- Because of the small size of the NPS property and the speed at which fire would travel, fire presents safety risks to neighboring properties.

IMPACT TOPICS (INCLUDING TOPICS CONSIDERED AND DISMISSED)

This section identifies the resources and other values (impact topics) that could be affected by the alternatives. Candidate impact topics for this environmental assessment were identified from internal and public scoping; based on federal laws, regulations, and orders; from NPS guidance such as *Management Policies 2006* (NPS 2006); and from NPS knowledge of national monument resources.

Justifications are provided regarding why there was no need to examine some impact topics in detail. Other impact topics were carried forward for further analysis in chapter 3 of this environmental assessment. Effects on these impact topics were evaluated based on the issues that were identified during scoping, which also are presented in chapter 3.

RETAINED IMPACT TOPICS

Cultural Resources – Archeological Resources

Extensive archeological surveys of the Little Bighorn Battlefield National Monument have been conducted, and 10 archeological sites have been identified. These include nine prehistoric lithic scatter sites, and one archeological site pertaining to the historic Battle of the Little Bighorn that encompasses both the Custer and Reno-Benteen Battlefields. Therefore, archeological resources were retained as an impact topic for further analysis.

Cultural Resources – Cultural Landscapes

A cultural landscape inventory was conducted at Little Bighorn Battlefield National Monument in 2010. The inventory indicated that the national monument includes two distinct landscape character areas, the historic battlefield and the national cemetery. According to the inventory, both retain their integrity. As such, cultural landscapes were carried forward for analysis in this environmental assessment.

Cultural Resources – Historic Structures

Many historic structures exist within Little Bighorn Battlefield National Monument. These include resources such as the large stone memorials associated with the battle, the white marble headstones that mark the approximate location for the burial sites of U.S. military soldiers, the Stone House at the national cemetery, and the earthen fortifications at Reno-Benteen Battlefield. Therefore, historic structures are addressed as an impact topic in this environmental assessment.

Cultural Resources – Ethnographic Resources

The National Park Service consults with 17 tribes across six states (North Dakota, South Dakota, Montana, Nebraska, Oklahoma and Wyoming) associated with the Battle of Little Bighorn of 1876. The battlefield on which the Battle of Little Bighorn occurred is not restricted to the administrative boundary of Little Bighorn Battlefield National Monument. The battlefield itself is a culturally

significant site and an ethnographic resource, including the topography, terrain, soundscape, water, vegetation, and wildlife. As a result, ethnographic resources were retained for full evaluation as an impact topic.

Vegetation

The growth of cheatgrass throughout the national monument has been a concern of NPS staff because fire events have the potential to accelerate its spread. Sagebrush is also a significant element of the cultural landscape. Because much of the Wyoming big sagebrush was lost during the 1983 fire that swept through Little Bighorn Battlefield National Monument, vegetation was retained as an impact topic for further analysis.

Special Status Species

The U.S. Fish and Wildlife Service identified federally listed and candidate species and the Montana Natural Heritage Program indicated that state species of concern may be present within Little Bighorn Battlefield National Monument. Because fire could affect these species directly or affect their associated habitats, this topic was carried forward for analysis in this environmental assessment.

Wildlife

Fire could potentially affect wildlife and its habitat within the national monument. Therefore, this impact topic was carried forward for analysis.

Air Quality

Smoke from fires could affect air quality, including visibility in the general vicinity of the national monument. This impact topic was, therefore, retained for further analysis.

Visitor Use and Experience

Visitor use and experience at Little Bighorn Battlefield National Monument includes interpretation and educational experiences associated with the Battle of the Little Bighorn, access and circulation, and visitor safety while visiting the national monument. The use of fire management tools could adversely affect visitor access and the visitor experience, but also provide interpretive opportunities for fire ecology education. As a result, visitor use and experience is addressed as an impact topic in this environmental assessment.

Health and Safety

Operational guidance directs all fire management activities to be conducted to enhance and provide resource benefit and mitigate risk from unwanted wildland fire while providing for firefighter and public safety. Because fires can impact the safety of visitors to the national monument, NPS staff, firefighters, and the surrounding community, health and safety was retained as an impact topic for further analysis.

Park Operations

Operations would be affected to varying degrees by an unplanned wildland fire or by implementing fire management activities as part of a fire management plan. National monument staff would be required to assist visitors during a wildfire, ranging from disseminating information about the fire, to

directing traffic or even evacuating the monument. National monument staff would aid in resource protection efforts if needed. As a result of the potential impacts to the ability of the national monument staff to attend to their normal duties, park operations was retained as an impact topic for full evaluation.

IMPACT TOPICS DISMISSED FROM FURTHER CONSIDERATION

This section explains why some impact topics were not evaluated in more detail. Impact topics were dismissed from further evaluation either because the resource does not occur in the national monument or because implementing the alternatives would have only a negligible or minor effect on the resource or value. Negligible or minor effects would include the following:

- An effect would be negligible if the resource would not be affected or if the effect would be so small that it would not be detectable or measurable.
- A minor effect would be detectable or measurable, but would be of little importance and the impact topic dismissed would not be central to the issues associated with the proposed action.

Because there would be negligible or minor effects on the dismissed impact topics, the contribution from an alternative to cumulative effects for dismissed topics would be low or none.

Geology

No significant or unique geologic features are located in or near the national monument; therefore, there is no potential for fire management actions to affect geologic resources, and this impact topic was dismissed from further analysis.

Ecologically Critical Areas, Wild and Scenic Rivers, or Other Unique Natural Resources

Little Bighorn Battlefield National Monument does not contain any designated ecologically critical areas, wild and scenic rivers, or other unique natural resources, as referenced in 40 *Code of Federal Regulations*, section 1508.27. Therefore, this impact topic was dismissed from further analysis.

Floodplains

Executive Order 11988 instructs federal agencies to avoid to the extent possible the long- and short-term, adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of development in floodplains wherever there is a practicable alternative. Requirements of Executive Order 11988 are applied to NPS facilities in Director's Order # 77-2 and the supporting Procedural Manual 77-2: Floodplain Management (NPS 2003).

The only floodplains located within the national monument are along the western boundary, which abuts the Little Bighorn River. However, fire management activities in this area would not require floodplain occupancy or modifications and would be implemented so that the potential effects of changes to floodplain features would be no greater than negligible. As a result, floodplains were not retained for further analysis.

Wetlands

NPS policy (Director's Order #77-1) (NPS 2002) states that activities with the potential to adversely impact wetlands are subject to the procedures of Executive Order 11990. These are activities with the potential to degrade any of the natural and beneficial ecological, social/cultural, and other functions and values of wetlands. Examples of activities with the potential to adversely impact wetlands

include drainage, water diversion, pumping, flooding, dredging, channelizing, filling, nutrient enrichment, diking, impounding, placing of structures or other facilities, livestock grazing, and other activities that degrade natural wetland processes, functions, or values.

The potential impact of fire management on plant and animal species in wetlands will be assessed in the "Vegetation," "Special Status Species," and "Wildlife sections of this environmental assessment. Otherwise, neither alternative examined in this environmental assessment proposes any fire management activities that would have greater than negligible effects on wetlands. Therefore, this impact topic was not carried forward for further analysis.

Nonnative and Invasive Species

Nonnative, invasive species are addressed under the vegetation topic retained for further analysis. Therefore, this impact topic was dismissed from a separate analysis.

Soundscapes

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. Use of this equipment would be infrequent (on the order of hours, days, or at most weeks per year), and would not be frequent or widespread enough to substantially interfere with the ambient soundscape of the national monument. Such infrequent noise would not chronically impact the solitude and tranquility associated with Little Bighorn Battlefield National Monument. Therefore, this impact topic was dismissed from further analysis.

Energy Requirements and Conservation Potential

This impact topic is based on section 1502.16 of the Council on Environmental Quality (1978) regulations. Increasing concern is reflected by recent executive orders, including 13423, Strengthening Federal Environmental, Energy, and Transportation Management (2007) and 13514, Federal Leadership in Environmental, Energy, and Economic Performance (2009).

Fire management activities within Little Bighorn Battlefield National Monument would generally not be energy-intensive. They primarily would involve the consumption of fuel as personnel travel to and from a fire management activity. Implementation of either alternative would not substantially change the volume of fuel consumed annually at the national monument.

As with all of its actions, the National Park Service would strive to reduce energy costs, eliminate waste, and conserve energy resources by using energy-efficient and cost-effective technology. Energy efficiency and the use of renewable energy sources would be emphasized in the decision-making process. Because the alternatives would not vary substantially in their use of energy or potential for conservation, this impact topic was dismissed from further consideration.

Natural or Depletable Resource Requirements and Conservation Potential

This impact topic is based on the same regulations and executive orders cited for energy requirements and conservation potential. It addresses the quality, recycling, or conservation of petroleum products and other natural resources. The use of fuels and other energy sources, including petroleum products, was discussed above under energy requirements and conservation potential. Because neither alternative would involve any construction or other activities that would require the commitment of other natural or depletable resources, differences between the alternatives for this impact topic would be negligible, therefore this impact topic was dismissed from further analysis.

Indian Trust Resources

The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights. It represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. Environmental Compliance Memorandum Number ECM97-2 provides compliance guidance regarding responsibilities for Indian trust resources. According to national monument staff, Indian trust resources do not occur at Little Bighorn Battlefield National Monument. Therefore, this impact topic was dismissed from further analysis.

Sacred Sites

Executive Order 13007 requires all federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and to avoid adversely affecting the physical integrity of such sacred sites. Fire management activities in Little Bighorn Battlefield National Monument would be so brief in duration that it is not anticipated that they would either alter the ability of Native Americans to access and use sacred sites, or change the physical characteristics of sacred sites in the fire-adapted environment. Therefore, sacred sites were dismissed from further analysis.

Prime and Unique Farmlands

The Council on Environmental Quality (1980) directed that federal agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service as prime or unique. Prime or unique farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. According to NPS staff (NPS 2012a), none of the soils in the national monument are classified as prime and unique farmlands. Therefore, the topic of prime and unique farmlands was dismissed from further analysis.

Socioeconomic Environment

The National Environmental Policy Act requires an analysis of impacts to the “human environment,” which includes economic, social, and demographic elements in the affected area. Fire management activities under either alternative may bring a short-term need for additional personnel in the national monument, but this addition would be minimal and would not affect the neighboring community’s population, income, or employment base. Management actions proposed would not have a measurable impact on the local or regional economy. Therefore, this impact topic is dismissed from further analysis.

Environmental Justice

Executive Order 12898, *General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. The proposed fire management activities would not have disproportionate health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency's Environmental Justice Guidance (1998). Therefore, environmental justice was dismissed from further analysis.

Climate Change

Climate change refers to any significant changes in average climatic conditions (such as mean temperature, precipitation, or wind) or variability (such as seasonality and storm frequency) lasting for an extended period (decades or longer). Recent reports by the U.S. Climate Change Science Program and Intergovernmental Panel on Climate Change (2007a, 2007b) provide evidence that climate change is occurring as a result of rising greenhouse gas emissions and could accelerate in coming decades.

While climate change is a global phenomenon, it manifests differently depending on regional and local factors. General changes that are expected in the future as a result of climate change include hotter, drier summers; warmer winters; warmer water; higher ocean levels; more severe wildfires; degraded air quality; more frequent heavy downpours; and increased drought.

Although some effects of climate change are known or likely to occur, many potential impacts are unknown. Much depends on the rate at which the temperature would continue to rise and whether global greenhouse gas emissions can be reduced or mitigated. Climate change science is a rapidly advancing field and new information is being collected and released continually.

It is not possible to meaningfully link the greenhouse gas emissions of individual project actions to quantitative effects on regional or global climatic patterns. While fire management activities would contribute to increased greenhouse gas emissions, such emissions would be temporary and indiscernible at a regional scale. Therefore, the topic was not retained for further analysis.

Cultural Resources – Museum Collections

Museum collections would not be affected by in a manner any different under the alternatives than they are currently under current management; the collections are protected from fire within the museum structures. Thus, there would be no effect to museum collections that would differ between the implementation of alternatives A or B, and this topic was dismissed from further consideration.

This page is intentionally left blank

Chapter 2: Alternatives

This chapter describes two alternatives for fire management within Little Bighorn National Monument. Alternative A is no action / continue current management, where the National Park Service would suppress all fires without a plan in place.

The National Park Service also developed an action alternative that would implement a new fire management plan for the national monument.

ALTERNATIVE A, THE NO-ACTION ALTERNATIVE (FIRE SUPPRESSION)

In the no action alternative, Little Bighorn Battlefield National Monument would conduct fire management activities without a formal management plan in place. Under alternative A, the national monument would not be in compliance with NPS directives that require park units to have fire management plans in place if there is existing vegetation that is subject to fire.

UNPLANNED FIRE EVENT

In lieu of a plan, the National Park Service stipulates that all wildland fires must be treated using full fire suppression. This means all wildland fires would be extinguished as quickly as possible using all of the tools and resources available to the National Park Service. Allowing fires to burn to potentially benefit resources would not be permitted. In addition, NPS guidance states that, in the absence of a fire management plan, wildland or prescribed fires cannot be used as a resource management tool.

On all wildland fire management actions, use of *minimum impact suppression tactics* is the policy of the National Park Service. Minimum impact suppression tactics are defined as the application of those techniques which effectively accomplish wildland fire management objectives with the least cultural and environmental impact, commensurate with public and firefighter safety (NPS 2008a). Full suppression would involve the use of hand crews, engine crews, or aircraft, as needed. The objectives of minimum impact suppression tactics are to make unique decisions with each fire start to consider the land, resource, and wildland fire incident objectives (NPS 2008a).

According to National Park Service *Director's Order #18: Wildland Fire Management* (NPS 2008b), "The protection of human life is the single, overriding suppression priority. Setting priorities to protect human communities and community infrastructure, other property and improvements, and natural and cultural resources will be done based on human health and safety, the values to be protected, and the costs of protection. Once people have been committed to an incident, these human resources become the highest value to be protected (NPS 2008b)." Fire suppression under alternative A would be implemented with this priority in mind.

The goal of an initial attack on a wildland fire under alternative A would be to limit damage to resources and values to be protected and to prevent the escape of the fire. Additional details regarding the procedures to be followed in establishing command and control on a wildland fire, as well as specific on-the-ground operations instructions, can be found in *Reference Manual 18: Wildland Fire Management* (NPS 2008b) and in the *Fireline Handbook* (NWCG 2004), respectively. The use of a particular fire suppression method to combat a wildland fire would be an incident command decision based on circumstances at the time. Multiple fire suppression methods may be employed at the same time. Little Bighorn Battlefield National Monument resource protection standards may override or eliminate some tactics that are specified in other guidance documents. For example, the *Fireline Handbook* (NWCG 2004) calls for the use of fire retardant foam, but retardants other than water would not be permitted to fight wildland fire within the national monument.

TREATMENT METHODS

Three primary methods would be used to suppress an unplanned wildland fire under alternative A; these methods include hand crew, engine crew, and aircraft. These three methods are frequently used at the same time to accomplish suppression of wildland fire. Indirect and direct suppression tactics can be implemented with any or all of these three methods; tactics will be determined by fire managers to safely accomplish suppression actions.

Hand Crew Suppression Method

A hand-crew is a team of trained personnel that use hand tools such as shovels, Pulaskis, McClouds, rakes, chainsaws, and flappers to extinguish the fire, and typically range from six to twenty people. Some hand tools can be used to suppress fire by removing fuel by digging a fireline, therefore removing vegetation down to mineral soil. Other hand tools, like flappers and backpack pumps, extinguish the fire along the edge of the fire. The flapper (Figure 2) is designed to extinguish fire with minimal ground disturbance, and can successfully be used in grass vegetation.

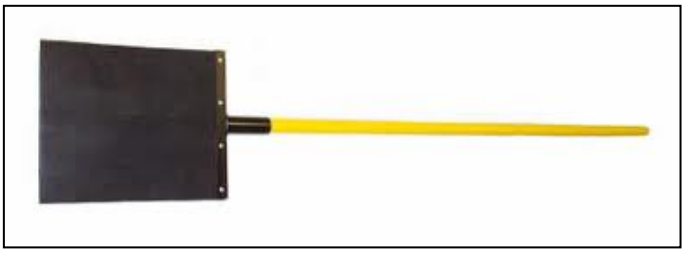


Figure 2: A Flapper Fire Fighting Tool

Engine Crew Suppression Method

An engine crew is a team of trained personnel that uses an engine truck and other support vehicles to extinguish a fire. The fire engine truck typically has self-contained water supply, pumps, and hoses. Portable water tanks can also be used in conjunction with engines. The engine truck would be parked at a safe distance from the fire; all vehicles are restricted to roadways in the monument. Fire hose would be laid from the engine to near the fire, and would be used to spray water to extinguish the fire. Engine crews can provide protection of structures or valuable resources as well as creating a "wet" fire line to block the movement of fire.

Aircraft Suppression Method

This method involves the use of either a fixed-wing aircraft or a helicopter to transport water to the fire location. Water can be dropped on the fire to extinguish it, spread on areas in front of the fire to slow its progress, or dropped on fuels or structures to prevent the start of new ignition points. There is a helicopter stationed at the Crow Agency with the ability to respond to fires at Little Bighorn Battlefield National Monument within five to seven minutes. Depending on the type and size of the helicopter, it is capable of dropping water with a bucket. Helicopter bucket size ranges from 72 to 2,600 gallons. No retardant would be used as specified in the Memorandum of Understanding between the Crow Agency and the National Park Service. A single engine fixed-wing air tanker may also be available if needed, but its availability cannot be guaranteed. The use of aircraft to combat a wildland fire would be an incident commander decision. Aircraft would be used to protect developments and structures, increase defensible space, to soak roadsides as a means of broadening fire breaks, and to cool the edges of a fire line allowing hand crews to attack the fire.

ALTERNATIVE B, FIRE MANAGEMENT WITH FUELS REDUCTION AND PRESCRIBED FIRE

This alternative, the NPS preferred alternative, consists of preparing and implementing a new fire management plan for Little Bighorn Battlefield National Monument. The new fire management plan would include options for suppressing unplanned fire events, options for the manual fuel reduction to lower the intensity and/or risk of wildland fires, and options for using prescribed fire to promote the preservation of the cultural landscape as well as for ecosystem maintenance or restoration. As described in alternative A, unplanned wildland fires requiring suppression would use minimum impact suppression tactics (these tactics are referred to by fire professionals as MIST).

UNPLANNED FIRE EVENT TREATMENT METHODS

All unplanned fires would also be suppressed under this alternative, therefore the fire suppression methods used to combat unplanned wildland fire would be the same as those described for alternative A.

PLANNED EVENT TREATMENT METHODS (ALTERNATIVE B ONLY)

The used of fuel reduction techniques and prescribed fire is what distinguishes alternative B from alternative A.

Manual Thinning

Manual thinning of vegetation would be accomplished using hand-operated tools, including, but not limited to chain saws, hand saws, and line trimmers. Mechanical (including wheeled or tracked vehicles with attached implements), chemical, or biological fuel reduction methods would not be used for fire management at Little Bighorn Battlefield National Monument.

The goal of vegetation thinning would be to reduce the fuel load available to support either a planned or unplanned fire. A number of provisions would guide NPS selection and use of manual equipment and tools. Prior to implementing fuel reduction efforts, the equipment to be used for the specific vegetation being targeted would be clearly identified. Seasonal use restrictions would be considered as well as any restrictions related to weather, species sensitivity, or other concerns that may affect equipment use or operations. Both short- and long-term monitoring of fuel reductions would take place to determine the success of meeting objectives of the thinning projects as well as protecting resources.

Specific objectives of a fuel reduction treatment would be stated in quantifiable and measurable terms. If the purpose of the treatment would be to change fire behavior, at least one objective would address predicted changes in fire behavior after the project is completed. For example, *Reference Manual 18* (NPS 2008b) states an objective could be expressed as "This treatment is intended to reduce flame lengths to less than 3 feet to allow direct attack of the fire by hand crews when fine dead fuel moistures are 4% and eye-level wind speed is 10 miles per hour."

The need for using fuel reduction techniques would be determined in consultations between the NPS resource management specialist(s), fire ecologist(s), and a fire management officer. Fuel reduction could be used alone to reduce the intensity of a potential wildfire or it could be used prior to a prescribed burn to minimize the intensity and help maintain control of the fire.

Prescribed Fire

The use of planned fire, also referred to as a prescribed fire, would be included in the fire management plan to help preserve the cultural landscape, to maintain or restore ecosystem elements, and to temporarily reduce fuel loads for resource and/or structure protection.

The National Park Service would use the *Interagency Prescribed Fire Planning and Implementation Procedures Guide* (USDA and USDOI 2006) as direction for planning, implementing, and evaluating prescribed burns. As stated in the guide, "As one component of fire management, prescribed fire is used to alter, maintain, or restore vegetative communities; achieve desired resource conditions; and to protect life, property, and values that would be degraded and/or destroyed by wildfire." In addition, maintenance of the cultural landscape would be another use for prescribed fire at Little Bighorn Battlefield National Monument. Specifically, prescribed fire could be used to address exotic species invasions in grassland habitats and where silver sagebrush (*Artemisia cana*), a species tolerant of fire, is present. However, because Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), the subspecies of sagebrush that was present on the Custer battlefield prior to the 1983 fires, is extremely slow to recover from burning, prescribed fire would not likely be used as a cultural landscape preservation tool in areas where Wyoming big sagebrush grows.

Operational guidelines for a prescribed fire would be presented for each proposed action in a detailed prescribed fire plan as described in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide* (USDA and USDOI 2006) appendices. The details for each proposed prescribed fire would be dependent on its purpose, the vegetation to be burned, the specific objectives, and the location of the proposed action. These details would be specified in a prescribed fire plan, that would require review and approval by NPS fire specialists and managers.

As described for fuel reduction activities, use of a planned fire would consider seasonal use restrictions, weather restrictions, fire fighter resources, visitor use, species sensitivity, or other concerns that may affect equipment use or operations related to prescribed fire.

Due to the character of the area and surrounding lands, there is a small risk of an escaped planned fire. A burning permit program is in place that requires a local fire protection authority to inspect the area to be burned prior to issuing a burning permit. In this instance, the Bureau of Indian Affairs Forestry Department would be consulted and would issue the permit as per agreement prior to the burn. When any burning takes place, and after a permit is obtained, notification would be made to the Bighorn County Sheriff, Crow Agency Bureau of Indian Affairs Forestry Department, and Billings Interagency Dispatch Center to ensure they know burning would be taking place within Little Bighorn Battlefield National Monument. Traditionally some debris piles (leaves, branches, and posts) have been burned in the winter when snow cover was present to avoid impacts (NPS 2005b).

The use of prescribed fire would likely be limited to the grasslands and silver sagebrush habitats in the national monument. The Wyoming big sagebrush habitat would not be subject to prescribed burning because of its fire intolerance (Cooper 2007). The Wyoming big sagebrush habitat is extremely slow to recover and prescribed burning would contradict a stated goal of reestablishment of this sagebrush. This sagebrush species was a part of the cultural landscape at the Little Bighorn Battlefield National Monument prior to a stand-destroying fire in 1983. The riparian corridor has many woody species that would be adversely affected by fire in the long term, as well as numerous wildlife habitat values that would be compromised by fire.

APPLICABLE MITIGATION MEASURES / BEST MANAGEMENT PRACTICES

The following mitigation measures would minimize adverse impacts that may result from implementing either of the alternatives. The measures are organized by resource topic, although some overlap occurs. The evaluation of impacts in chapter 3 takes these mitigation measures into account.

GENERAL

- Use fire management staff and resource advisors to continuously educate fire crews on the appropriate method of protection of natural and cultural resources during suppression, prescribed fire, and hazardous fuel reduction treatments.
- Choose the methods based on fire behavior and type of resource to be protected.
- Do not initiate any operation until all personnel involved have received a safety briefing describing known hazards and mitigation actions, current fire season conditions, and current and predicted fire weather and behavior.

VEGETATION AND SOIL

- Park vehicles in dedicated areas and have crews walk to project sites to avoid resource damage.
- Do not drive vehicles off pavement or gravel roads without the superintendent's approval.
- Prepare a fire rehabilitation plan and implement it as soon as possible after a fire is out. Return fire lines to as near original condition as possible using existing materials.
- Use protective tactics in areas identified as being sensitive for natural resources.
- Use wetlines in lieu of handline construction if adequate water and pumps are available.
- Keep fire lines to the minimum width necessary to stop the fire's spread and to allow backfiring or a safe blackline to be created. Whenever possible, use natural barriers to avoid unnecessary fire line construction.
- Minimize tree felling. If appropriate, flush-cut stumps to the ground and cover during the rehabilitation phase. During rehabilitation efforts, the bevel technique, which faces the cut away from view, or flush-cutting stumps is preferred.
- Use sprinklers, soaker nozzles, or fogger nozzles during mop-up of fire incidents. Avoid boring and hydraulic action.
- Include rehabilitation of handlines during fire mop-up. Return vegetation to the handline to help prevent erosion.
- Begin efforts to rehabilitate the direct impacts of fire suppression activities as soon as possible, at times even before the fire is declared out.
- Scatter debris such as cut trees, limbs, and brush produced by manual thinning actions. Do not leave debris in piles.
- Rehabilitate all fire lines, spike camps, or other disturbances inside the national monument to maintain a natural appearance.
- Replace organic materials to assist in natural vegetation regeneration.
- Scatter native seed-bearing plants cut along fire lines as mulch to provide a source of indigenous seed for bare soil areas.

- Only seed burned areas with indigenous stock. Seed only when necessary.
- Monitor for occurrences and establishment of invasive vegetation following fuels treatments and suppression activities.
- Use fiber erosion logs, particularly in steep areas, to minimize future channeling of runoff, prevent erosion of disturbed soils, and direct runoff toward areas of natural vegetative filters.
- Schedule prescribed fires based on the priority of resource objectives. Treatment priorities should be based on soil productivity and potential, desired plant community composition, and site preparation and treatment costs.
- Use central refueling stations with ground protection for refueling equipment such as chain saws and brush cutters to minimize chances of gasoline or oil spills.

WATER RESOURCES

- Do not burn slash in locations where surface water could be affected.
- Use water drops instead of fire retardant chemicals.
- Leave a mosaic of vegetation adjacent to streams in prescribed burn areas to minimize the potential for erosion from runoff after a fire event. Plan each burn to retain small areas of unburned islands throughout the burn area to help stabilize soil and reduce runoff in steep areas.
- Do not burn piles of slash within 100 feet of riparian areas. If riparian areas are within or adjacent to the prescribed burn unit, fireline the piles or scatter them prior to burning.
- Do not use drip-torch fuel within 50 feet of a riparian area.
- Refuel all equipment least 150 feet from water sources. If portable pumps are used near water sources, employ a fuel containment system at all times.
- Do not transport water between 5th-level hydrologic unit watersheds unless in an emergency (life or structure loss). If water is transported, contact national monument staff to determine if aquatic invasive species might have been transported. If so, develop and implement a monitoring plan.
- Have national monument staff inspect and confirm decontamination of any equipment that is or previously has been used in an area known or suspected to contain aquatic invasive species. Decontamination should consist of the following:
    - First drain all water from the equipment and compartments. Clean the equipment of all mud, plants, debris, or animals.
    - Dry the equipment for five days during the summer (June, July and August); 18 days during the spring (March, April, and May) and fall (September, October, and November); or three days during the winter (December, January, and February) when temperatures are at or below freezing.
    - Use a high-pressure (3,500 pounds per square inch) hot water (140 degrees Fahrenheit) pressure washer to thoroughly wash equipment and flush all compartments that may hold water.
- Use central refueling stations with ground protection for refueling equipment such as chain saws and brush cutters to minimize chances of gasoline or oil spills.

AIR QUALITY

- Schedule planned fires in the spring, if possible, when inversions are unlikely, and conduct burning when visitation levels are low.
- Use smoke management techniques that are based on computer models to determine smoke dispersion prior to prescribed burns.
- Postpone prescribed fire plans when conditions are unfavorable for smoke dispersion and air quality standards would be threatened.
- Implement air quality plans in conformance with state standards.
- Use current and predicted weather forecasts along with test fires to determine smoke dispersal.
- Visually monitor smoke dispersal on a continuous basis at set intervals during the performance of all prescribed burns. Extinguish the prescribed burn if air quality standards are exceeded or smoke creates a hazard or nuisance, especially in or near smoke-sensitive areas.
- When prescribed fires are conducted, notify the state of Montana, local communities that may experience smoke, national monument staff, concessionaires, and visitors.
- There would be limits on the number of acres and amount of fuel burned as noted in the prescribed fire plans.
- The timing and method of ignition would be selected to limit effects on air quality.
- Burning during optimal fuel moisture conditions would limit effects on air quality.
- The use of prescribed fire would include increased communication, cooperation, and coordination with adjacent agencies and landowners to limit the number of fires occurring simultaneously.
- Prescribed fire plans would be developed for each prescribed fire. Appropriate signs would be posted if smoke would affect roads or designated visitor areas (such as visitor centers or campgrounds) and the appropriate authorities would be contacted regarding other measures to limit smoke or decreased visibility.

HEALTH AND SAFETY

- Consider temporarily closing parts of the national monument to visitors as a safety precaution. This decision would be made by the superintendent or the superintendent's designee.
- When a burn is conducted, place warning signs, such as "Smoke on Road" along all maintained roads.
- Provide a flagman and pilot cars when visibility is less than twice the braking distance required for the posted speed limit.
- When human life or property is not threatened, maximize the use of natural barriers for fire lines even if this requires adjusting the burn area size.

SPECIAL STATUS SPECIES

- Avoid treatments in known habitats of special status species that are not fire-adapted.
- Where treatments in or near special status species are needed, design the activity to minimize the effect. For example, use manual treatments, which provide the greatest control; haul away slash; and/or conduct treatments outside the nesting season.

- Prescribed fire would only be used at sites where listed plants or animals are known to benefit from burning. Otherwise, fire would be excluded, either from certain areas or during certain times to prevent damage to listed plant or wildlife species habitat values.
- Prescribed fire would not be used where species or plant communities would likely respond with an increase in weed species or where sensitive resources were present.

CULTURAL RESOURCES

- Avoid historical structures and archeological sites whenever possible.
- Flag known sites for avoidance during implementation
- Educate fire treatment personnel about known locations and the cultural resources in general.
- Minimize ground disturbance when possible
- Do not install fire control lines through cultural sites or near important cultural structures.
- Locate and isolate sites that are vulnerable to fire or to human activities associated with the burns.
- Remove heavy fuels that could cause long-duration heating.
- If feasible, temporarily remove cultural materials.
- Brief fire crews about the need to protect any cultural resources encountered.
- Implement cultural resource protection measures under the supervision of a qualified cultural resource specialist.
- Use protective tactics in areas identified by the cultural resource specialist as having archeological or historical cultural significance.
- Protect historic structures from wildland fire by maintaining the existing defensible space around each, appropriate to the cultural landscape.

THE PREFERRED ALTERNATIVE AND ENVIRONMENTALLY PREFERABLE ALTERNATIVE

THE ALTERNATIVE PREFERRED BY THE NATIONAL PARK SERVICE

Under alternative A, the national monument would not be in compliance with NPS directives that require park units to have fire management plans in place if there is existing vegetation that is subject to fire. Therefore, alternative B, a new fire management plan including fuels management and prescribed fire, is the NPS' preferred alternative.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

According to the U.S. Department of the Interior regulations in 43 *Code of Federal Regulations* section 46.30 that implement the National Environmental Policy Act, the environmentally preferable alternative "causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources. The environmentally preferable alternative is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources."

Alternative B is the environmentally preferable alternative because it would provide for suppression of unplanned wildland fires, address resource protection in the event of wildland fires, and allow use of manual fuel reduction and prescribed fire as management tools to achieve desired resource conditions.

Alternative A would not provide a framework for the use of fire as a management tool (i.e., planned fire would not be considered under alternative A). Under alternative A, the national monument would respond to all fires with full suppression tactics only. This alternative, therefore, would fail to provide additional fire management actions that could be used to benefit resources at the monument.

ALTERNATIVES CONSIDERED BUT DISMISSED

Other options for managing fire through the reduction of fuel loads in the national monument include using biological agents, chemical controls, and mechanical means of fuel reduction. These methods were dismissed for the following reasons.

The use of biological agents to control nonnative vegetation (heavy contributors to excess fuels) was considered but dismissed from this analysis, because it was considered in the Invasive Plant Management Plan (NPS 2011b). LIBI will utilize biological agents to control nonnative vegetation under the Invasive Plant Management Plan.

Chemical application to control nonnative vegetation was considered but dismissed from this analysis, because it was evaluated in the Invasive Plant Management Plan (NPS 2011b). LIBI will implement chemical applications to control nonnative vegetation under the Invasive Plant Management Plan.

Mechanical fuel reduction utilizing tracked or wheeled vehicles used to reduce vegetation, was considered but dismissed because of the potential impact to cultural resources in the monument. No vehicle traffic of any kind is permitted at the monument to avoid inadvertent impacts to cultural resources.

SUMMARY COMPARISON OF THE ALTERNATIVES

Table 1 provides a summary of the important features of the alternatives. Table 2 summarizes the environmental consequences that would result from each alternative. More detailed summaries of the factors responsible for the effects are presented in the Conclusion sections at the end of each impact topic analysis. The full analyses of the impacts are presented in Chapter 3: Affected Environment and Environmental Consequences.

The purpose of this proposed action was identified at the beginning of chapter 1, with objectives that could be used to determine if an alternative would successfully meet the purpose. Alternative A would not meet the ecosystem maintenance and restoration objective because prescribed fire could not be used. Current NPS fire management policy also requires it to suppress all unplanned fires. Alternative B addresses the NPS directives that requires park units to have fire management plans in place if there is existing vegetation that is subject to fire. Alternative B would not result in any conflicts with any environmental laws or policies.

Table 1: Comparison of the Alternatives

Feature	Alternative A: No Action (Fire Suppression)	Alternative B: Fire Management with Fuels Reduction and Prescribed Fire
Prepare and implement a fire management plan.	A fire management plan would not be prepared. Fire management would continue under the NPS default policy of suppressing of all fires.	A new fire management plan would be prepared and fire management activities would proceed according to that plan.
Suppression of all unplanned wildland fires	Hand crew, engine crew, and aircraft suppression methods would be used to suppress unplanned wildland fire.	Hand crew, engine crew, and aircraft suppression methods would be used to suppress unplanned wildland fire.
Implement manual thinning to reduce fire fuel loads	Manual thinning of vegetation would not be one of the fire management tools available.	Manual thinning of vegetation would be used to reduce fuel available to an unplanned wildland fire as well as to minimize the intensity of planned prescribed burns. Manual thinning would also be used to maintain cultural resource attributes and values as needed.
Use prescribed fire to achieve multiple resource management objectives	Prescribed fire would not be available as a fire management tool to reduce fuel loads and as a resource management tool.	Prescribed fire would be used to help preserve the cultural landscape, maintain or restore ecosystem elements, and as a means of temporary fuel reduction actions for resource management and structure protection.

Table 2: Impacts of the Alternatives

Impact Topic	Alternative A: No Action (Fire Suppression)	Alternative B: Fire Management with Fuels Reduction and Prescribed Fire
Cultural resources – archeological resources	Impacts from a continuation of current fire management would be permanent, negligible to minor and adverse. The cumulative effect combined with other projects and plans would be negligible to minor and adverse.	Impacts from implementation of the proposed fire management plan would be long-term and beneficial, with some negligible to minor adverse impacts. The cumulative effect combined with other projects and plans would be negligible to minor and adverse. The section 106 determination would be *no adverse effect*.
Cultural resources – cultural landscapes	Impacts from a continuation of current fire management would be short-term, negligible to moderate because of the potential for unplanned wildland fire to change the vegetation character of the cultural landscape. The adverse effects would be a small component of the minor, adverse, cumulative impacts of other plans and projects.	Alternative B would have long-term beneficial and short-term, negligible to minor adverse impacts on cultural landscapes and would be a small component of the resulting long-term, minor, adverse, cumulative impacts of other plans and projects. The section 106 determination would be *no adverse effect*.
Cultural resources – historic structures	Alternative A would have negligible to moderate adverse impacts on historic structures and would slightly detract from the resulting long-term, beneficial, cumulative impacts of other plans and projects.	Alternative B would have negligible to moderate adverse impacts and long-term beneficial impacts on historic structures, and would slightly contribute to the resulting beneficial, cumulative impacts of other plans and projects. The section 106 determination would be *no adverse effect*.
Cultural resources – ethnographic resources	Alternative A would have short-term, negligible to minor, adverse impacts on ethnographic resources and would slightly detract from the resulting long-term, beneficial, cumulative impacts of other plans and projects.	Alternative B would have long-term beneficial and short-term, negligible to minor, adverse impacts on ethnographic resources and would slightly detract from the resulting long-term, beneficial, cumulative impacts of other plans and projects. The section 106 determination would be *no adverse effect*.

Table 2: Impacts of the Alternatives (continued)

Impact Topic	Alternative A: No Action (Fire Suppression)	Alternative B: Fire Management with Fuels Reduction and Prescribed Fire
Vegetation	Alternative A suppression methods would have short-term negligible to minor adverse impacts on vegetation. Long-term fire suppression would have negligible to moderate adverse effects ecologically as succession and natural fire regimes were disturbed. The cumulative effects of other plans and projects combined with the effects would be mainly beneficial with some minor adverse impacts associated with fire suppression actions.	The adverse impacts of unplanned wildland fire and suppression efforts on vegetation would be the same as those described for alternative A, namely, negligible to moderate. Manual thinning would result in short- and long-term beneficial effects on vegetation associated with reduced fuel loads. Prescribed fire would cause short-term negligible to moderate adverse impacts on local plant populations as well as short- and long-term beneficial impacts on vegetation from an ecological perspective. The cumulative effects of other plans and projects combined with the effects of alternative B would be beneficial and incrementally greater than those associated with alternative A, with some minor adverse impacts associated with fire suppression actions.
Special status species	Alternative A would have negligible to moderate, short-term adverse effects on special status species, with potential for isolated moderate adverse impacts if a species breeding or reproduction were affected. Adverse impacts of suppression of unplanned wildland fire would be at most moderate and have a relatively small contribution to the long-term, beneficial, cumulative effects of other plans and projects on special status species. There would be *no effect* to the federally endangered black-footed ferret and no critical habitat would be adversely modified.	The effects of alternative B using all suppression methods in each of the species' habitat classifications would be the same as those described for alternative A. Effects of manual trimming and prescribed fire would be short-term, local, adverse, and negligible to minor. The adverse contribution to cumulative effects would be similar to alternative A, with B's contribution incrementally greater because of the additional impacts associated with thinning and prescribed fire. There would be *no effect* to the federally endangered black-footed ferret and no critical habitat would be adversely modified.

Table 2: Impacts of the Alternatives (continued)

Impact Topic	Alternative A: No Action (Fire Suppression)	Alternative B: Fire Management with Fuels Reduction and Prescribed Fire
Wildlife	Suppression method impacts would be short-term, adverse and negligible to minor. Unplanned wildfire would have negligible to minor short-term adverse effects to immobile species affected by fire during breeding season because of the adverse impacts on reproduction. The cumulative effects for wildlife would not differ from the cumulative impacts described for special status species, namely long-term and beneficial.	Suppression method impacts would be the same as alternative A. Unplanned and prescribed fire would have similar negligible to minor short-term adverse impacts on wildlife, with some negligible benefits associated with improved forage. The cumulative effects for wildlife would not differ from the cumulative impacts described for alternative A, namely long-term and beneficial.
Air quality	Suppression methods would have beneficial impacts on air quality. Fire trucks and aircraft would cause negligible adverse short-term impacts to air quality. Unplanned fire would have negligible to moderate adverse short-term impacts on air quality in direct proportion to the intensity and extent of the fire. The beneficial impacts of suppression activities on air quality would have a relatively minor contribution to the long-term, beneficial, cumulative effects on air quality.	Suppression methods would have beneficial impacts on air quality. Fire truck, aircraft, and manual thinning tool emissions would cause negligible adverse short-term impacts to air quality. Unplanned fire would have negligible to moderate adverse short-term impacts on air quality in direct proportion to the intensity and extent of the fire. Prescribed fire adverse impacts would not exceed negligible to minor, local, and short-term. The beneficial impacts of suppression activities on air quality would have a relatively minor contribution to the long-term, beneficial, cumulative effects on air quality.
Visitor use and experience	Alternative A would have short-term negligible to moderate adverse and long-and short-term beneficial effects as fire would disrupt visitors. Cumulative impacts would range from negligible to moderate and adverse to beneficial.	Effects would be the same as alternative A, with an incremental increase in visitor experience disruption as a result of manual thinning and prescribed burning. Cumulative effects would be the same as alternative A.
Health and safety	Alternative A would have short-term negligible to minor adverse and long-term beneficial effects. Cumulative effects would be short-term, negligible to minor, and adverse as well as long- term and beneficial.	Alternative B would have short-term negligible to minor adverse and long-term beneficial effects. Cumulative effects would be short-term, negligible to minor, and adverse as well as long- term and beneficial.

Table 2: Impacts of the Alternatives (continued)

Impact Topic	Alternative A: No Action (Fire Suppression)	Alternative B: Fire Management with Fuels Reduction and Prescribed Fire
Park operations	Alternative A would have short-term negligible to moderate adverse effects. Cumulative effects would be short-term, minor, and adverse as well as long- term and beneficial.	Alternative B would have short-and long-term negligible to minor adverse effects. Cumulative effects would be short-term and long-term, negligible to minor, and adverse as well as long- term and beneficial.

Chapter 3: Affected Environment and Environmental Consequences

METHODS FOR ANALYZING IMPACTS

Effects were evaluated for each retained impact topic in terms of type, context, duration, and intensity. Type describes whether impacts are beneficial or adverse, and direct or indirect:

- *Beneficial*: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
- *Adverse*: A change that moves the resource away from a desired condition or detracts from its appearance or condition.
- *Direct*: An effect that is caused by an action and occurs in the same time and place.
- *Indirect*: An effect that is caused by an action, but is later in time or farther removed in distance, but is still reasonably foreseeable.

Context describes the area or location in which the impact will occur, such as site-specific, local, regional, or even broader. The methods description for each impact topic identifies the geographic area that was considered.

Duration describes the length of time an effect will occur, either short-term or long-term:

- *Short-term* impacts generally last for less than one year.
- *Long-term* impacts last beyond one year.

Intensity describes the degree, level, or strength of an impact. For this analysis, intensity has been categorized into negligible, minor, moderate, and major. Intensity definitions are provided for each impact topic analyzed.

For each impact topic, the alternatives also were evaluated for their contribution to cumulative impacts, consistent with the Council on Environmental Quality (1978) regulations for implementing the National Environmental Policy Act. Cumulative effects are "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions."

CUMULATIVE IMPACTS

The cumulative impact scenario identifies the other past, ongoing, or reasonably foreseeable future actions in the national monument area that, with this action, could contribute to cumulative impacts. Those actions were described earlier in this document under the heading, "Relationship of the Proposed Action to Other Planning Efforts." Cumulative impacts were determined by combining the impacts of the preferred alternative (implementation of a new fire management plan) with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at Little Bighorn Battlefield National Monument and, if applicable, the surrounding region.

IMPACTS TO CULTURAL RESOURCES AND SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT

In this environmental assessment/assessment of effect, impacts to cultural resources are described in terms of type, context, duration, and intensity, which is consistent with the regulations of the Council on Environmental Quality (1978) that implement the National Environmental Policy Act. These impact analyses are intended, however, to comply with the requirements of both National Environmental Policy Act and section 106 of the National Historic Preservation Act. In accordance with the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act (36 *Code of Federal Regulations* part 800, Protection of Historic Properties), impacts to archeological resources and the cultural landscape were identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that were either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and (4) considering ways to avoid, minimize or mitigate adverse effects.

Under the Advisory Council's regulations a determination of either adverse effect or no adverse effect must also be made for affected National Register eligible cultural resources. An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualify it for inclusion in the National Register (including, for example, diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association). Adverse effects also include reasonably foreseeable effects caused by the preferred alternative that would occur later in time, be farther removed in distance or be cumulative (36 *Code of Federal Regulations* part 800.5, Assessment of Adverse Effects). A determination of no adverse effect means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register.

The Council on Environmental Quality regulations and the National Park Service's *Conservation Planning, Environmental Impact Analysis and Decision-making* (Director's Order #12) (NPS 2001) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, e.g. reducing the intensity of an impact from major to moderate or minor. Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under the National Environmental Policy Act only. It does not suggest that the level of effect as defined by section 106 is similarly reduced. Although adverse effects under section 106 may be mitigated, the effect remains adverse.

A section 106 summary is included in the impact analysis sections under the preferred alternative. The section 106 summary is intended to meet the requirements of section 106 and is an assessment of the effect of the undertaking (implementation of the alternative) on cultural resources, based upon the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations.

CULTURAL RESOURCES HISTORICAL OVERVIEW

The Little Bighorn area of southeastern Montana has been home to many Native American tribes since prehistoric times, as evidence indicates that human occupation in the region dates back at least 10,000 years. Throughout most of time, people using the area practiced a nomadic hunting and gathering subsistence. Tribes exhibiting a bison-centered lifestyle characterize the historic period beginning around 200 years ago. The Apsáalooke people had entered the area by the early 1600s, and acquired horses by the beginning of the 1800s. Apsáalooke, meaning "children of the large-beaked bird," was later misinterpreted by white people as "Crow" (NPS 2010).

The Little Bighorn drainage was acquired by the United States as part of the Louisiana Purchase in 1803; however, few American settlers ventured into the area before the late 1800s. The discovery of gold brought increased attention, and a westward migration fueled by manifest destiny increased conflict between the native population and the Anglo newcomers. Tensions were further increased by strife between the Crow and neighboring tribes - the Lakota, Cheyenne, Arapaho, and Blackfeet. These other tribes had also begun to encroach into the area by the mid-1800s. These tensions led to the Great Sioux War of 1876-77, and the Battle of Little Bighorn was one of many skirmishes during the war (NPS 2010).

In the 1870s, the Little Bighorn valley was on a part of the Crow reservation that had been encroached upon by other tribes who were hostile to the U.S. government and settlers that were intruding upon their native land. The area held importance to the Crow and the non-reservation Lakota Sioux and their Cheyenne and Arapaho allies because it provided game and shelter critical for the continuation of their traditional nomadic lifestyle. A few whites had previously arrived for fur trading and trapping, but they began to invade the tribal homelands in greater numbers as priorities shifted to the search for gold or new land (NPS 2010).

The ensuing Battle of the Little Bighorn is one of the most famous battles in American history. On June 25 and 26, 1876, more than 260 soldiers and attached personnel of the U.S. 7th Cavalry died in fighting with the Lakota and Cheyenne. Lt. Colonel G.A. Custer and his 12 companies of the 7th Cavalry had approached the Wolf Mountains from the east. Custer's Crow and Arikara scouts spotted the signs of a large Indian pony herd in the river valley, about 15 miles west. Fearing that his regiments had been spotted by the enemy or that the Sioux and Cheyenne might escape, Custer decided to attack. He divided his regiment into three battalions – one under his own command, and the other two assigned to Officers Major Marcus A. Reno and Captain Frederick Benteen.

By the battle's end, Custer's final stand had become legend. He was reportedly surrounded and destroyed in fierce fighting. In the battle, the 7th Cavalry lost five companies under Custer, about 210 men. Of the other companies of the regiment under Reno and Benteen, 53 men were killed and 52 wounded. The Indians lost at least 60 or more, and the Sioux and Cheyenne scattered. Although the Sioux and Cheyenne won the battle that day, they subsequently lost the war against the U.S. military's effort to end their independent, nomadic way of life. Most returned to the reservation and surrendered over the next few years (NPS 2012b).

After the Battle of Little Bighorn, the Crow regained control of the area as part of their reservation. Meanwhile, the battlefield retained significance to participating cultures for different reasons. The U.S. population saw Custer's defeat as martyrdom in the cause of advancing civilization across the plains. The Lakota Sioux, Cheyenne, and Arapaho viewed it as a place of victory in defense of their way of life. To the Arikara and Crow, it was a site honoring their participation as U.S. Indian scouts fighting their traditional enemies.

ARCHEOLOGICAL RESOURCES

AFFECTED ENVIRONMENT

Archeological resources are the physical evidences of past human activity, including evidences of the effects of that activity on the environment. What makes archeological resources significant are their identity, age, location, and context in conjunction with their capacity to reveal information through the investigatory research designs, methods, and techniques used by archeologists. Archeological resources represent both prehistoric and historic time periods. They are found above and below ground and under water (NPS 2010).

The entirety of Little Bighorn Battlefield National Monument is an archeological site because it contains artifacts that can continue to yield new information about the battle. Known archeological sites within the national monument include the Seventh Cavalry horse cemetery on Last Stand Hill; the defense perimeter, field hospital location, military equipment disposal area (dump), and rifle pits at the Reno-Benteen battlefield; and prehistoric sites and isolated projectile points (NPS 2005b).

Extensive archeological surveys were conducted by the Midwest Archeological Center in 1984, 1985, 1989 and 1994. The 1984 and 1985 archeological inventories covered both the Custer and Reno-Benteen battlefields with 2-meter-wide metal detection and visual techniques (NPS 2005b). Substantial archeological knowledge was gained during survey efforts that followed the 1983 fire which burned 90% of the land within national monument boundaries. Volunteers assisted professional archaeologists in locating and cataloguing numerous items that were exposed, such as cartridges, bullets, iron arrowheads, personal adornment items, army equipment, firearms parts, buttons, and clothing fragments, as well as fragments of human and animal remains (NPS 2010).

METHODS

Certain important research questions about human history can only be answered by the actual physical material of cultural resources. Archeological resources have the potential to answer, in whole or in part, such research questions.

In order for an archeological resource to be eligible for the National Register of Historic Places, it must meet one or more of the following criteria of significance (NPS 1997):

- A: associated with events that have made a significant contribution to the broad patterns of our history;
- B: associated with the lives of persons significant in our past;
- C: embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; and
- D: have yielded, or may be likely to yield, information important in prehistory or history. In addition, the archeological resource must possess integrity of location, design, setting, materials, workmanship, feeling, association.

For purposes of analyzing impacts to archeological resources either listed in or eligible to be listed in the National Register, the thresholds of change for intensity of an impact are defined below:

- *Negligible:* Impact is at the lowest levels of detection - barely measurable with no perceptible consequences, either adverse or beneficial, to archeological resources. For purposes of section 106, the determination of effect would be *no adverse effect*.

- *Minor*: **Adverse**: disturbance of a site(s) results in little, if any, loss of significance or integrity and the National Register eligibility of the site(s) is unaffected. For purposes of section 106, the determination of effect would be *no adverse effect*. **Beneficial**: maintenance preservation of a site(s). For purposes of section 106, the determination of effect would be *no adverse effect*.
- *Moderate*: **Adverse**: disturbance of a site(s) does not diminish the significance or integrity of the site(s) to the extent that its National Register eligibility is jeopardized. For purposes of section 106, the determination of effect would be *adverse effect*. **Beneficial**: stabilization of the site(s). For purposes of section 106, the determination of effect would be *no adverse effect*.
- *Major*: **Adverse**: disturbance of a site(s) diminishes the significance and integrity of the site(s) to the extent that it is no longer eligible to be listed in the National Register. For purposes of section 106, the determination of effect would be *adverse effect*. **Beneficial**: active intervention to preserve the site. For purposes of section 106, the determination of effect would be *no adverse effect*.
- *Short-term:* impacts would last less than five years.
- *Long-term*: impacts would last more than five years.
- *Permanent*: impacts would last indefinitely.

REGULATIONS AND POLICIES

Under the laws and policies listed below, archeological sites are identified and inventoried, their significance is determined and documented, and they are protected in an undisturbed condition unless it is determined through formal processes that disturbance or natural deterioration is unavoidable. In those cases where disturbance or deterioration is unavoidable, the site is professionally documented and salvaged. Current regulations and policies associated with archeological resources include the following:

- National Historic Preservation Act
- Archeological and Historic Preservation Act
- Executive Order 11593 - Protection and Enhancement of the Cultural Environment
- Archeological Resources Protection Act
- Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation
- *Management Policies 2006 (NPS 2006)*; and
- National Park Service *Director's Order #28: Cultural Resources Management* (NPS 1998a).

IMPACTS OF ALTERNATIVE A, NO ACTION (FIRE SUPPRESSION)

Analysis

Hand Crew Suppression Method– Under alternative A, use of hand-held fire fighting tools such as a "flapper," would be used to stamp out fire. This treatment is specifically designed to limit impacts to the surface. Therefore, due to only minimal ground disturbance, hand crew fire management activities would result in negligible impacts to archeological resources.

Engine Crew Suppression Method– Provisions in alternative A for fires requiring an engine crew suppression response stipulate that the engines remain on existing roads. Furthermore, water would be sprayed from hoses in a manner that does not substantially disturb the soil. Therefore, any ground disturbance from use of engine suppression methods would be limited to hoses and foot traffic extending outward from engines parked on the road. As such, impacts to archeological resources would be negligible.

Aircraft Suppression Method– Aircraft suppression methods, whether by helicopter or fixed-wing aircraft, could potentially result in ground disturbance from water dropped from above to the extent that soil strata are mixed or archeological resources are exposed. Such ground disturbance would vary according to several factors – vegetative ground cover, topographic slope, direction/angle of water impact, and height of drop. In general, the grassland areas within the national monument that could support a fire would likely have sufficient ground cover and root mass to resist substantial ground disturbance. In addition, water spray would be broad to cover a large area of flame, reducing impact energy of water stream. Therefore, any ground disturbance associated with aircraft suppression methods would result in permanent, negligible to minor, adverse effects.

Impacts of Unplanned Wildland Fire – Unplanned wildland fire in grasslands can be characterized by short residence time, resulting in very limited heat pulse below ground surface. Much of the grass root mass is unaffected, maintaining soil matrix and archeological resources intact. Some surface artifacts would be adversely affected by smudging, crazing, and cracking. Therefore, the effects of an unplanned fire on archeological resources would be negligible. Surface artifacts and other archeological resources have been collected by previous recovery activities and would therefore not be exposed to the heat effects of an unplanned wildland fire. It is possible since the collection activities some artifacts have been brought to the surface by rodents or burrowing animals or have been exposed by erosion, but the possibility is slight. A survey of the landslides resulting from record precipitation in 2010 resulted in one horse bone that may or may not be related to the battle.

Implementation of alternative A would result in permanent, negligible to minor, adverse impacts to archeological resources.

Cumulative Impacts

The national monument's archeological resources are subject to a variety of disturbances, including erosion and other natural processes and forces that can overturn trees and dislodge adjacent sites; vegetation with deep roots that can disturb buried sites; ground-disturbing construction and rehabilitation activities; inadvertent visitor use impacts; and artifact looting. These factors contribute to permanent, minor adverse impacts on archeological resources. No past or present actions or plans were identified to consider for cumulative actions; however, two proposed actions were identified – rehabilitation of the Battlefield Tour Road and replacement of an irrigation and fire suppression system. Both of these actions would include ground disturbance, but neither are anticipated to result in more than permanent, negligible to minor, adverse effects. As such, cumulative effects to archeological resources would be permanent, negligible to minor, and adverse.

Implementation of alternative A would have permanent, negligible to minor, adverse impacts on the national monument's archeological resources. The impacts of this alternative, in combination with the predominantly negligible to minor adverse impacts of other past, present, and reasonably foreseeable future actions, would result in a permanent, negligible to minor, adverse cumulative impact. The adverse effects of the no-action alternative would be a small component of the adverse cumulative impacts.

Conclusions

Alternative A would have permanent, negligible to minor, adverse impacts on archeological resources.

IMPACTS OF ALTERNATIVE B, FIRE MANAGEMENT WITH FUELS REDUCTION AND PRESCRIBED FIRE

Analysis

Hand Crew and Engine Crew Suppression Methods – Impacts associated with the use of hand crews would be the same as discussed in alternative A; due to only minimal ground disturbance, hand crew and engine crew fire management activities would result in negligible impacts to archeological resources.

Aircraft Suppression Method – Impacts associated with the use of aircraft suppression would be the same as discussed in alternative A; any ground disturbance associated with aircraft suppression methods would result in permanent, negligible to minor adverse effects.

Manual Thinning Method – Under alternative B, hand-held tools such as chainsaws, would be used to thin existing vegetation in order to reduce fuel loads. Any ground disturbance associated with thinning would be surficial and unlikely to disturb archeological resources. Impacts would be negligible. Meanwhile, the use of manual thinning to reduce fuel loading in the national monument would likely reduce the frequency, duration, and intensity of unplanned ignitions, resulting in long-term, beneficial impacts to archeological resources.

Prescribed Fire Method – Under alternative B, prescribed fire would be used as a resource management tool. Many of the park's archeological resources are likely to have been previously subjected to fire at some point in the past. Fires can damage artifacts by destroying or degrading cultural material, rendering identification and documentation more difficult. However, the amount of damage is dependent upon the severity and duration of the fire, as well as whether artifacts are on the surface of the ground or buried. More specifically, fast-moving fires typically burn through an area at a low heat with minimal damage to buried resources, while some damage would likely occur to surface resources. On the other hand, slow fires combined with abundant accumulated fuel tend to burn at more extreme temperatures and can damage both surface and subsurface resources. Fire behavior within the monument align closely with the former scenario, i.e., fires are fast-moving and therefore do not result in substantial impacts to archeological resources. Impacts of the fire, - mostly the production of black or light brown carbonaceous residues, would not impact the scientific value of the objects (Buenger 2003). Therefore, any impacts to archeological resources resulting from fire would be direct, permanent, minor, and adverse.

On the other hand, the use of prescribed fire to reduce fuel loading in the monument would likely reduce the frequency, duration, and intensity of unplanned ignitions, resulting in long-term, beneficial impacts to archeological resources. Other impacts could include additional, localized soil erosion and loss of vegetation, which in turn could potentially increase cases of artifact looting due to the resultant exposure. These indirect impacts would be negligible.

The fire management activities proposed in alternative B would result in long-term beneficial impacts and permanent, negligible to minor, adverse impacts to archeological resources.

Impacts of Unplanned Wildland Fire – Unplanned wildland fire in grasslands can be characterized by short residence time, resulting in very limited heat pulse below ground surface. Much of the grass root mass is unaffected, maintaining soil matrix and archeological resources intact. Some surface artifacts would be adversely affected by smudging, crazing, and cracking. Therefore, the effects of an unplanned fire on archeological resources would be negligible.

Cumulative Impacts

The cumulative impacts on archeological resources would be the same as described in alternative A, plus potential impacts from manual fuel reduction and prescribed burn projects. Implementation of alternative B would have long-term beneficial impacts, as well as permanent, negligible to minor, adverse impacts on the national monument's archeological resources. The impacts of this alternative, in combination with the negligible to minor adverse impacts of other past, present, and reasonably foreseeable future actions, would result in a permanent, negligible to minor, adverse cumulative impact.

Conclusions

Alternative B would have long-term beneficial impacts, and permanent, negligible to minor, adverse impacts on archeological resources.

Section 106 Summary

After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 *Code of Federal Regulations* section 800.5, Assessment of Adverse Effects), the National Park Service concludes that implementation of the preferred alternative would have *no adverse effect* on the archeological resources of Little Bighorn Battlefield National Monument.

CULTURAL LANDSCAPES

AFFECTED ENVIRONMENT

A cultural landscape is a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions.

The National Park Service recognizes four cultural landscape categories. Historic designed landscapes are deliberate artistic creations reflecting recognized styles. Historic vernacular landscapes illustrate peoples' values and attitudes toward the land and reflect patterns of settlement, use, and development over time. Vernacular landscapes are found in large rural areas and small suburban and urban districts. Agricultural areas, fishing villages, mining districts, and homesteads are examples. Historic sites are significant for their associations with important events, activities, and persons. At these areas, existing features and conditions are defined and interpreted primarily in terms of what happened there at particular times in the past. Ethnographic landscapes are associated with contemporary groups and typically are used or valued in traditional ways. These four cultural landscape categories are not mutually exclusive. A landscape may be associated with a significant event, include designed or vernacular characteristics, and be significant to a specific cultural group.

A cultural landscape inventory was completed for the national monument in 2010. The cultural landscape inventory includes evaluation of landscape characteristics, archeological sites, buildings

and structures, circulation, cluster arrangement, cultural traditions, land use, natural systems and features, spatial organization, topography, vegetation, and battlefield views and vistas both historic and contemporary. Completion of a cultural landscape report, which would include treatment recommendations for the cultural landscape, constitutes the next step for NPS planning staff.

The 2010 cultural landscape inventory indicated that Little Bighorn Battlefield National Monument is comprised of two distinctly different landscape character areas: the historic battlefield of June 25-26, 1876, and the Custer National Cemetery. The historic battlefield, made up of two separate units (the Custer Battlefield and the Reno-Benteen Defense Site), was deemed to retain its integrity as representative of the natural landscape on the dates of battle, overlain with memorial elements. Meanwhile, the national cemetery also retains its integrity as a designed cultural landscape representative of the U.S. War Department ownership of the site, which ended in 1940 (NPS 2010).

A wide range of landscape elements were determined to contribute to the national monument's significance, such as the following:

- The number of archaeological artifacts uncovered from the battlefield, as well as the potential for future discoveries;
- The national monuments and headstones on the battlefield and in the national cemetery;
- The Anglo-American cultural traditions of battlefield commemoration and orderly military cemeteries, as well as Native American tributes of stone cairns; and
- The native grass prairie ecosystem that was used for grazing buffalo before the battle (NPS 2010).

The 2010 cultural landscape inventory indicated the spatial organization, topography, and vegetation have changed little since the period of significance while circulation patterns and visual characteristics of the landscape have been significantly compromised. Of the seven aspects defined by the National Register program, however, the cultural landscape of Little Bighorn Battlefield National Monument was reported to retain integrity in all seven (NPS 2010).

METHODS

Cultural landscapes are the result of the long interaction between people and the land, the influence of human beliefs and actions over time upon the natural landscape. Shaped through time by historical land-use and management practices, as well as politics and property laws, levels of technology, and economic conditions, cultural landscapes provide a living record of an area's past, a visual chronicle of its history. The dynamic nature of modern human life, however, contributes to the continual reshaping of cultural landscapes; making them a good source of information about specific times and places, but at the same time rendering their long-term preservation a challenge.

In order for a cultural landscape to be listed in the National Register, it must meet one or more of the following criteria of significance (NPS 1997):

- A: associated with events that have made a significant contribution to the broad patterns of our history;
- B: associated with the lives of persons significant in our past;
- C: embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; and
- D: have yielded, or may be likely to yield, information important in prehistory or history.

The landscape must also have integrity of those patterns and features - spatial organization and land forms; topography; vegetation; circulation networks; water features; and structures/buildings, site furnishings or objects - necessary to convey its significance (NPS 1995b).

For purposes of analyzing potential impacts to cultural landscapes, the thresholds of change for the intensity of an impact are defined as follows:

- *Negligible*: Impact(s) is at the lowest levels of detection - barely perceptible and not measurable. For purposes of section 106, the determination of effect would be *no adverse effect*
- *Minor:* **Adverse:** impact would not affect a character defining pattern(s) or feature(s) of a National Register of Historic Places eligible or listed cultural landscape. For purposes of section 106, the determination of effect would be *no adverse effect*. **Beneficial:** preservation of character defining patterns and features in accordance with (NPS 1995b). For purposes of section 106, the determination of effect would be *no adverse effect*.
- *Moderate*: **Adverse:** impact would alter a character defining pattern(s) or feature(s) of the cultural landscape but would not diminish the integrity of the landscape to the extent that its National Register eligibility is jeopardized. For purposes of section 106, the determination of effect would be *no adverse effect*. **Beneficial:** rehabilitation of a landscape or its patterns and features in accordance with (NPS 1995b). For purposes of section 106, the determination of effect would be *no adverse effect*.
- *Major*: **Adverse:** impact would alter a character defining pattern(s) or feature(s) of the cultural landscape to the extent that it is no longer eligible to be listed in the National Register. For purposes of section 106, the determination of effect would be *adverse effect*. **Beneficial:** restoration of a landscape or its patterns and features in accordance with (NPS 1995b). For purposes of section 106, the determination of effect would be *no adverse effect*.
- *Short-term:* impacts would last less than five years.
- *Long-term*: impacts would last more than five years.
- *Permanent*: impacts would last indefinitely.

REGULATIONS AND POLICIES

The treatment of a cultural landscape will preserve significant physical attributes, biotic systems, and uses when those uses contribute to historical significance. Treatment decisions will be based on a cultural landscape's historical significance over time, existing conditions, and use. Treatment decisions will consider both the natural and built characteristics and features of a landscape, the dynamics inherent in natural processes and continued use, and the concerns of traditionally associated peoples.

The treatment implemented will be based on sound preservation practices to enable long-term preservation of a resource's historic features, qualities, and materials. There are three types of treatment for extant cultural landscapes: preservation, rehabilitation, and restoration.

Cultural landscapes are listed in the National Register when their significant cultural values have been documented and evaluated within appropriate thematic contexts and physical investigation determines they retain integrity. Cultural landscapes are classified in the National Register as sites or districts or may be included as contributing elements of larger districts. Current regulations and policies associated with cultural landscapes include the following.

- National Historic Preservation Act;
- Archeological and Historic Preservation Act;

- Executive Order 11593 - Protection and Enhancement of the Cultural Environment;
- Archeological Resources Protection Act;
- Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation;
- *Management Policies 2006* (NPS 2006); and
- *Director's Order #28: Cultural Resources Management* (NPS 1998a).

IMPACTS OF ALTERNATIVE A, NO ACTION (FIRE SUPPRESSION)

Analysis

Hand Crew Suppression Method– Under alternative A, use of hand-held fire fighting tools such as a "flapper," would be used to smother fire. This treatment would not affect many of the characteristics of the landscapes either on the historic battlefield or in the National Cemetery, e.g. – the topography, spatial organization, or views and vistas. However, native vegetation contributing to the battlefield landscape could be damaged by hand-held tools to a certain extent. Nevertheless, it is expected the vegetation would recover in time. Therefore, hand crew fire management activities would result in short-term, negligible to minor, adverse impacts to the cultural landscape.

Engine Crew Suppression Method – Provisions in alternative A for fires requiring an engine suppression response stipulate that the engines remain on existing roads. Therefore, any disturbance to native vegetation contributing to the cultural landscape would be limited to hoses and foot traffic extending outward from engines parked on the road. Otherwise, no elements of the cultural landscape would be appreciably affected by the use of engine suppression methods. Impacts to the cultural landscape would be short-term, negligible to minor, and adverse.

Aircraft Suppression Method – Water dropped during the use of aircraft suppression methods, whether by helicopter or fixed-wing aircraft, would not result in any appreciable effects to elements that contribute to the cultural landscape, for example, changes in topography or vegetation. Impacts would be negligible.

Impacts of Unplanned Wildland Fire – The effects of an unplanned fire on the cultural landscape would range from negligible to moderate adverse impact because, depending on the intensity and frequency of future unplanned fire events and the success of fire suppression efforts in managing the fire, vegetation conditions could remain in their current conditions or they could shift towards a landscape with less sagebrush steppe dominance under conditions of more frequent and widespread fire events in the national monument. A long-term shift in the sagebrush steppe portions of the monument to predominantly grasslands without sagebrush would represent a change in vegetation character of the cultural landscape.

Implementation of alternative A methods would result in short-term, negligible to minor, adverse impacts to the cultural landscape.

Cumulative Impacts

The presence of nonnative and invasive species within the national monument must be considered relative to cumulative impacts to the cultural landscape. A recent study concluded that, "the most obvious ongoing and increasing threat to Battlefield biodiversity comes from the enormous visitor pressure on this famous spot in American history. The potential visitor impacts on grasslands include the destruction of native vegetation through trampling, and increased abundance and distribution of nonnative species through propagule dispersal and creation of bare ground for colonization (NPS 2010)." The national monument was included in the NPS *Northern Rocky Mountains Invasive Plant*

Management Plan (NPS 2011b). The continued presence of nonnative and invasive species, in combination with the newly implemented *Invasive Plant Management Plan* that seeks to restore native vegetation conditions, results in a long-term, minor to moderate, adverse impact to the cultural landscape.

The national monument successfully completed a cultural landscape inventory (NPS 2010) and is currently producing a cultural landscape report, which will include treatment recommendations for future planning. This current plan and proposed action are anticipated to have long-term beneficial impacts on the cultural landscape stemming from the proper identification of contributing elements of the landscape already in place, in addition to the upcoming implementation of a plan for treatments.

Implementation of alternative A would have short-term, negligible to minor, adverse impacts on the national monument's cultural landscape. The adverse impacts of this alternative, in combination with the long-term, minor to moderate, adverse, and long-term beneficial impacts of other past, present, and reasonably foreseeable future actions, would result in long-term, minor, adverse cumulative impacts. The adverse effects of the no-action alternative would be a very small component of the adverse cumulative impacts.

Conclusions

Alternative A would have short-term, negligible to moderate, adverse impacts on the cultural landscape.

IMPACTS OF ALTERNATIVE B, FIRE MANAGEMENT WITH FUELS REDUCTION AND PRESCRIBED FIRE

Analysis

Hand Crew and Engine Crew Suppression Methods – Impacts associated with hand crew and engine crew suppression methods would be the same as described under alternative A; Hand crew and engine crew suppression methods would result in short-term, negligible to minor, adverse impacts to the cultural landscapes.

Aircraft Suppression Method – Impacts associated with the use of aircraft suppression would be the same as described under alternative A; aircraft suppression methods would be negligible to cultural landscapes.

Manual Thinning Method – Under alternative B, hand-held tools would be used to thin existing vegetation in order to reduce fire fuel loads. By reducing fuel loads in the national monument, unplanned ignitions would be less likely to impact many elements that contribute to the cultural landscape such as buildings and structures, mature trees in the national cemetery, and sagebrush associated with the battlefield. Therefore, manual thinning would result in long-term, beneficial impacts to the cultural landscape.

Prescribed Fire Method – Under alternative B, prescribed fire would be used as a cultural resource management tool to reduce the presence of certain invasive nonnative plant species. This action would serve to preserve the vegetative qualities that contribute to the cultural landscape of the battlefield, resulting in long-term, beneficial impacts. As with manual thinning methods discussed above, prescribed fire could also be used to reduce fuel loading within the national monument,

thereby decreasing the likelihood or severity of unplanned ignitions, an additional long-term, beneficial impact.

Impacts of Unplanned Wildland Fire – The effects of an unplanned fire on the cultural landscape would range from negligible to moderate adverse impact because, depending on the intensity and frequency of future unplanned fire events and the success of fire suppression efforts in managing the fire, vegetation conditions could remain in their current conditions or they could shift towards a landscape with less sagebrush steppe dominance under conditions of more frequent and widespread fire events in the national monument. A long-term shift in the sagebrush steppe portions of the monument to predominantly grasslands without sagebrush would represent a change in vegetation character of the cultural landscape. Alternative B includes fuel reduction efforts, which may reduce the intensity of wildland fires in the monument.

Impacts from alternative B would be long-term beneficial and short-term, negligible to minor, and adverse.

Cumulative Impacts

The cumulative impacts on cultural landscapes would be the same as described in alternative A, plus the impacts from manual fuel reduction and prescribed burn projects. Implementation of alternative B would have long-term beneficial and short-term, negligible to minor adverse impacts on the national monument's cultural landscape. The beneficial and adverse impacts of this alternative, in combination with the long-term, minor to moderate, adverse, and long-term beneficial impacts of other past, present, and reasonably foreseeable future actions, would result in long-term, minor, adverse cumulative impacts. The beneficial and adverse effects of alternative B would be a small component of the adverse cumulative impacts.

Conclusion

Alternative B would have long-term beneficial and short-term, negligible to minor impacts on cultural landscapes.

Section 106 Summary

After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 *Code of Federal Regulations* section 800.5, Assessment of Adverse Effects), the National Park Service concludes implementation of the preferred alternative would have *no adverse effect* on the cultural landscape of Little Bighorn Battlefield National Monument.

HISTORIC STRUCTURES

AFFECTED ENVIRONMENT

Historic structures are defined as constructed works, consciously created to serve some human activity. Examples include buildings and monuments, dams, canals, nautical vessels, bridges, roads, fences, defensive works, ruins of all structural types and outdoor sculpture.

There are no structures within the national monument that are directly related to the 1876 Battle of the Little Bighorn except earthen rifle pits. Two monuments, along with the hundreds of white marble headstones that represent each fallen soldier, were placed on the battlefield later by the U.S. Army (NPS 2011b). The first permanent monument was erected on Last Stand Hill in 1881 to commemorate the 7th Cavalry and is the oldest structure within the national monument. The obelisk

is made of granite which is inscribed with the names of U.S. Army personnel that fell on the battlefield. An iron fence was constructed around the obelisk two years later to prevent vandalism. A granite monument was also erected on the Reno-Benteen battlefield in 1929. The largest concentration of individual marble markers is found near the top of Last Stand Hill, surrounding a stone that indicates where General George Armstrong Custer died (NPS 2010).

There are several historic structures within the national cemetery. Chief among these is a stone building constructed by the U.S. War Department in 1894. The two-story, stone building was constructed of locally quarried Parkman sandstone and retains a high degree of integrity, although the interior has been modified for adaptive use (NPS 2011b). Several smaller scale historic structures are found in the national cemetery. A flagpole fashioned from a ship's mast was erected by the U.S. Army in 1908 within the approximate center of the cemetery, as well as iron gates at the cemetery entry that date to 1931 (NPS 2010).

METHODS

In order for a structure or building to be listed in the National Register of Historic Places, it must meet one or more of the following criteria of significance (NPS 1997):

- A: associated with events that have made a significant contribution to the broad patterns of our history;
- B: associated with the lives of persons significant in our past;
- C: embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; and
- D: have yielded, or may be likely to yield, information important in prehistory or history.

In addition, the structure or building must possess integrity of location, design, setting, materials, workmanship, feeling, and association.

For purposes of analyzing potential impacts to historic structures/buildings, the thresholds of change for the intensity of an impact are defined as follows:

- *Negligible*: Impact(s) is at the lowest levels of detection - barely perceptible and not measurable. For purposes of section 106, the determination of effect would be no adverse effect.
- *Minor* - **Adverse***:* impact would not affect the character defining features of a National Register of Historic Places eligible or listed structure or building. For purposes of section 106, the determination of effect would be *no adverse effect*. **Beneficial**: stabilization/preservation of character defining features in accordance with (NPS 1995a). For purposes of section 106, the determination of effect would be *no adverse effect*.
- *Moderate* - **Adverse***:* impact would alter a character defining feature(s) of the structure or building but would not diminish the integrity of the resource to the extent that its National Register eligibility is jeopardized. For purposes of section 106, the determination of effect would be *no adverse effect*. **Beneficial**: rehabilitation of a structure or building in accordance with NPS (1995a). For purposes of section 106, the determination of effect would be *no adverse effect*.
- *Major* - **Adverse**: impact would alter a character defining feature(s) of the structure or building, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed in the National Register. For purposes of section 106, the determination of effect would be *adverse effect*. **Beneficial**: restoration of a structure or building in accordance with NPS (1995a).
- *Short-term:* impacts would last less than five years.

- *Long-term*: impacts would last more than five years.
- *Permanent*: impacts would last indefinitely.

REGULATIONS AND POLICIES

Historic properties are inventoried and their significance and integrity are evaluated under National Register criteria. The qualities that contribute to the eligibility for listing or listing of historic properties in the National Register of Historic Places are protected in accordance with the Secretary of the Interior's Standards (unless it is determined through a formal process that disturbance or natural deterioration is unavoidable). Current laws and policies associated with historic structures include the following.

- National Historic Preservation Act;
- Archeological and Historic Preservation Act;
- Executive Order 11593 - Protection and Enhancement of the Cultural Environment;
- Archeological Resources Protection Act;
- Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation;
- *Management Policies 2006 (NPS 2006);* and
- National Park Service *Director's Order #28: Cultural Resources Management* (NPS 1998a).

IMPACTS OF ALTERNATIVE A, NO ACTION (FIRE SUPPRESSION)

Analysis

Hand Crew Suppression Method –Hand-held fire fighting tools, such as a flapper, would be used to suppress fire. This treatment method could have some small effect to the rifle pits, but would generally have no adverse impact the historic structures located in the monument. Therefore, hand crew fire management activities would result in negligible adverse impacts to historic structures.

Engine Crew Suppression Method – Given the requirement for engines to remain on existing roads, engine suppression responses contain no elements with the ability to affect historic structures. Impacts to historic structures would be negligible.

Aircraft Suppression Method – Water dropped during the use of aircraft suppression methods, whether by helicopter or fixed-wing aircraft, would not be expected to possess the force necessary to affect historic structures. Impacts would be negligible.

Impacts of Unplanned Wildland Fire – Historic structures (and modern structures) would be the focus of fire protection during wildland fires. Adverse effects of an unplanned fire on historic structures would be mitigated, and would likely be negligible. The historic structures in the national cemetery are in landscape settings that would not be susceptible to fire damage. Impacts to the white marble headstones on the battlefield would range from negligible to moderate as seen in the 1983 fire where some makers were replaced due to charring. Adverse impacts on historic structures from unplanned wildland fire would be negligible to moderate.

Implementation of alternative A would result in negligible to moderate long-term adverse impacts to historic structures.

Cumulative Impacts

The monument's 2010 cultural landscape inventory (NPS 2010), as well as a follow-on cultural landscape report which is in progress, include both an inventory and treatment recommendations for the historic structures located within the monument boundaries. These current and future plans and actions would be expected to result in long-term beneficial impacts to historic structures within the monument.

The impacts associated with implementation of alternative A would have negligible to moderate impacts on the park's historic structures. The negligible to moderate impacts of this alternative, in combination with the long-term, beneficial impacts of other past, present, and reasonably foreseeable future actions, would result in a long-term beneficial cumulative impact. The negligible to moderate effects of the no-action alternative would slightly detract from the beneficial cumulative impact.

Conclusion

Alternative A would have negligible to moderate adverse long-term impacts on historic structures.

IMPACTS OF ALTERNATIVE B, FIRE MANAGEMENT WITH FUELS REDUCTION AND PRESCRIBED FIRE

Analysis

Hand Crew, Engine Crew, and Aircraft Suppression Method – Impacts associated with hand crew, engine crew, and aircraft suppression methods would be the same as described under alternative A; hand crew, engine crew, and aircraft suppression methods would result in negligible adverse impacts to historic structures.

Manual Thinning Method – Under alternative B, hand-held tools would be used to thin existing vegetation in order to reduce fire fuel loads. These tools would not come into direct contact with historic structures; therefore, there would be no adverse impacts. However, by reducing fuel loading within the monument, unplanned fire events would be less likely to impact historic structures. Thus, manual thinning would result in long-term, beneficial impacts to historic structures.

Prescribed Fire Method – Any planned prescribed fire treatments occurring under alternative B would account for the presence of historic structures, thereby avoiding any adverse impacts. As with manual thinning methods discussed above, prescribed fire could also be used to reduce fuel loading within the monument, thereby decreasing the likelihood or severity of unplanned fire events, which would be a long-term, beneficial impact to historic structures.

Impacts of Unplanned Wildland Fire – Historic structures (and modern structures) would be the focus of fire protection during wildland fires. Adverse effects of an unplanned fire on historic structures would be mitigated, and would likely be negligible.

Cumulative Impacts

The cumulative impacts on historic structures would the same as described in alternative A, plus impacts from manual fuel reduction and prescribed burn projects. Implementation of alternative B would have negligible and long-term beneficial impacts on the national monument's historic structures. The impacts of this alternative, in combination with the long-term beneficial impacts of

other past, present, and reasonably foreseeable future actions, would result in long-term beneficial cumulative impacts. The beneficial and negligible effects of the preferred alternative would slightly contribute to the beneficial cumulative impact.

Conclusion

Alternative B would have negligible, long-term adverse impacts, and negligible and long-term beneficial impacts on historic structures.

Section 106 Summary

After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 *Code of Federal Regulations* section 800.5, Assessment of Adverse Effects), the National Park Service concludes that implementation of the preferred alternative would have *no adverse effect* on the historic structures of Little Bighorn Battlefield National Monument.

ETHNOGRAPHIC RESOURCES

AFFECTED ENVIRONMENT

Ethnographic resources are sites, structures, objects, landscapes, or natural resource features assigned significance in the cultural system of a group traditionally associated with it. Ethnographic resources typically hold significance for traditionally associated groups whose sense of purpose, existence as a community, and development as an ethnically distinctive people are closely linked to particular resources and places. Ethnographic studies emphasize resources significant to traditional users, such as Native American tribes, national monument neighbors, traditional residents, and former residents who remain attached to the area despite having relocated.

Traditional users generally differ as a group from recreational visitors. Although they may value park units that symbolize U.S. nationhood, a shared identity, and nationally significant processes, events, and people, the groups associated with particular parks typically assign significance to places closely linked with their own sense of purpose, existence as a community, and development as ethnically distinctive peoples. These places may support subsistence or ceremonial activities, represent birthplaces of significant individuals or group origin sites, or they may be migration routes. To be considered traditional, associations to park resources will usually have endured at least two generations.

From an ethnographic perspective, the Battle of Little Bighorn became, and remains to this day, a significant symbolic event for two major cultural groups (Native American and Anglo-American) seeking to maintain their respective values and life ways in the face of cross-cultural contact and conflict. The battlefield on which the Battle of Little Bighorn occurred is not restricted to the administrative boundary of Little Bighorn Battlefield National Monument and is an ethnographic resource that includes associated topography, terrain, soundscape, water, vegetation, and wildlife.

The national monument has important ties to 17 historically associated tribes involved in the battle. They include some of the Lakota, Nakota and Dakota bands, the Northern and Southern Cheyenne, the Northern and Southern Arapaho, the Crow and the Arikara tribes. None of the Native American dead were buried on the battlefield after the battle. Instead, their bodies were removed from the battle site and laid to rest in tipis, on scaffolds, or in rock crevices in the Little Bighorn valley. Native American casualty sites were identified on the battlefield and marked by stone cairns erected within a few years after the battle and based on oral tradition. Eventually, each stone cairn was replaced with a red granite marker (NPS 2011c).

The national monument also contains certain plant species that possess ethnographic importance, either holding spiritual or medicinal value to a tribe or tribes.

In addition to ethnographic ties associated with Native American tribes, Anglo-American cultural traditions at Little Bighorn Battlefield National Monument include battlefield commemoration and the national cemetery. The establishment of Custer National Cemetery and setting aside Custer and Reno-Benteen battlefields are examples of commemoration. Significant sites and structures within the monument that hold ethnographic ties to Anglo-Americans include the monuments and markers, Custer National Cemetery, Last Stand Hill, and several battle-related points of interest.

METHODS

Certain important questions about human culture and history can only be answered by gathering information about the cultural content and context of cultural resources. Questions about contemporary peoples or groups, their identity, and heritage have the potential to be addressed through ethnographic resources. As defined by the National Park Service, an ethnographic resource is a site, structure, object, landscape, or natural resource feature assigned traditional, legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it. Some places of traditional cultural use may be eligible for inclusion in the National Register of Historic Places as traditional cultural properties because of their association with cultural practices or beliefs of a living community that (a) are rooted in that community's history and (b) are important in maintaining the continuing cultural identity of the community (NPS 1998b). For purposes of analyzing potential impacts to ethnographic resources, the thresholds of change for the intensity of an impact are defined as follows:

- *Negligible:* Impact(s) would be barely perceptible and would neither alter resource conditions, such as traditional access or site preservation, nor alter the relationship between the resource and the affiliated group's body of beliefs and practices. There would be no change to a group's body of beliefs and practices. For purposes of section 106, the determination of effect on ethnographic resources would be *no adverse effect.*
- *Minor*: **Adverse:** impact(s) would be slight but noticeable and would neither appreciably alter resource conditions, such as traditional access or site preservation, nor alter the relationship between the resource and the affiliated group's body of beliefs and practices. For purposes of section 106, the determination of effect on ethnographic resources would be *no adverse effect.* **Beneficial:** would allow traditional access and/or accommodate a group's traditional practices or beliefs. For purposes of section 106, the determination of effect on ethnographic resources would be *no adverse effect.*
- *Moderate:* **Adverse:** impact(s) would be apparent and would alter resource conditions. Something would interfere with traditional access, site preservation, or the relationship between the resource and the affiliated group's beliefs and practices, even though the group's beliefs and practices would survive. For purposes of section 106, the determination of effect on ethnographic resources would be *adverse effect.* **Beneficial:** would facilitate a group's beliefs and practices. For purposes of section 106, the determination of effect on ethnographic resources would be *no adverse effect.*
- *Major:* **Adverse:** impact(s) would alter resource conditions. Something would block or greatly affect traditional access, site preservation, or the relationship between the resource and the affiliated group's body of beliefs and practices, to the extent that the survival of a group's beliefs and/or practices would be jeopardized. For purposes of section 106, the determination of effect on ethnographic resources would be *adverse effect.* **Beneficial:** would encourage a group's beliefs or practices. For purposes of section 106, the determination of effect on ethnographic resources would be *no adverse effect.*

- *Short-term:* impacts would last less than five years.
- *Long-term*: impacts would last more than five years.
- *Permanent*: impacts would last indefinitely.

REGULATIONS AND POLICIES

Current regulations and policies associated with ethnographic resources include the following.

- *Management Policies 2006* (NPS 2006);
- Executive Order 13007 on American Indian Sacred Sites;
- National Historic Preservation Act;
- *Director's Order #28: Cultural Resources Management* (NPS 1998a);
- Executive Order 11593, American Indian Religious Freedom Act;
- Native American Graves Protection and Repatriation Act; and
- Presidential Memorandum of April 29, 1994 on Government-to-Government Relations with Tribal Governments.

IMPACTS OF ALTERNATIVE A, NO ACTION (FIRE SUPPRESSION)

Analysis

Hand Crew Suppression Method – The use of hand-held fire fighting tools such as a flapper to smother fire could potentially damage plants that hold ethnographic importance to certain tribes. While tribal consultation can help to potentially avoid such impacts, the possibility of damage to plants of medicinal or spiritual significance to tribal groups cannot be eliminated. It is anticipated that any particular plant species of ethnographic importance also grows in areas outside of the national monument and/or could repopulate within the national monument, and thus the impacts would be minor. Any interruptions to traditional access would be very brief. Therefore, hand crew fire management activities would result in short-term, negligible to minor, adverse impacts to ethnographic resources.

Engine Crew Suppression Method– Given the requirement for engines to stay on existing roads, engine suppression would not appreciably impact plants of ethnographic importance to associated tribes, nor would it affect sites or structures with Anglo-American significance. In addition, any interruptions to traditional access would be very brief. Impacts would be negligible.

Aircraft Suppression Method– Water dropped during the use of aircraft suppression methods, whether by helicopter or fixed-wing aircraft, would not be expected to possess the force necessary to impact ethnographic resources. As with engine suppression, any interruptions in access would be brief. Impacts would be negligible.

Impacts of Unplanned Wildland Fire – The effects of an unplanned fire on ethnographic resources would be negligible to minor adverse impacts because unplanned fire could burn and kill plants that are of ethnographic importance. The intensity of the impact would depend on the location and size of an unplanned fire relative to the locations of plant species of concern. Any particular plant species of ethnographic importance also grows in areas outside of the monument and could repopulate the monument after the fire. Also, it is possible these plant species are adapted to periodic fire events and would not suffer long-term decreases. Some fire-adapted species benefit from wildland fire. Thus, the impacts would be minor and short-term.

Implementation of alternative A would result in short-term, negligible to minor, adverse impacts to ethnographic resources.

Cumulative Impacts

The national monument's 2010 cultural landscape inventory (NPS 2010), as well as a follow-on cultural landscape report which is in progress, include both an inventory and treatment recommendations for the national monument's cultural landscape. As the cultural landscape predominantly includes elements that are also held as ethnographic resources to either Native American tribes, Anglo-Americans, or both, these current and future plans and actions are expected to result in long-term beneficial impacts to ethnographic resources.

The impacts associated with implementation of alternative A would have short-term, negligible to minor, adverse impacts on the national monument's ethnographic resources. The impacts of this alternative, in combination with the long-term, beneficial impacts of other past, present, and reasonably foreseeable future actions, would result in a long-term beneficial cumulative impact. The negligible to minor, adverse effects of the no-action alternative would very slightly detract from the beneficial cumulative impact.

Conclusion

Alternative A would have short-term, negligible to minor, adverse impacts on ethnographic resources.

IMPACTS OF ALTERNATIVE B, FIRE MANAGEMENT WITH FUELS REDUCTION AND PRESCRIBED FIRE

Analysis

Hand Crew Suppression Method – Impacts associated with hand crew methods would be the same as described under alternative A; hand crew fire management activities would result in short-term, negligible to minor, adverse impacts to ethnographic resources.

Engine Crew and Aircraft Suppression Methods – Impacts associated with the use of engine crew or aircraft suppression methods would be the same as described under alternative A; engine crew and aircraft suppression activities would be negligible.

Manual Thinning Method – Under alternative B, hand-held tools would be used to thin existing vegetation in order to reduce fire fuel loads. Use of these tools would avoid areas containing plants of ethnographic importance to tribal groups, and would not impact sites or structures ethnographically significant to Anglo-Americans. Manual thinning activities would be coordinated so that they would not restrict traditional access to ethnographic resources within the monument. By reducing fuel loading within the monument, unplanned ignitions would be less likely to impact ethnographic plants and sites or structures. Therefore, manual thinning would result in long-term, beneficial impacts to ethnographic resources.

Prescribed Fire Method – Planned prescribed fire treatments occurring under alternative B would account for the presence of ethnographic resources and would be conducted so that they would not restrict traditional access, thereby avoiding any adverse impacts. As with manual thinning methods discussed above, prescribed fire could also be used to reduce fire fuel loads within the monument,

thereby decreasing the likelihood or severity of unplanned fire events, a long-term, beneficial impact to ethnographic resources.

Impacts of Unplanned Wildland Fire – The effects of an unplanned fire on ethnographic resources would be negligible to minor and adverse because unplanned fire could burn and kill plants that are of ethnographic importance. The intensity of the impact would depend on the location and size of an unplanned fire relative to the locations of plant species of concern. Any particular plant species of ethnographic importance also grows in areas outside of the monument and could repopulate the monument after the fire. Also, it is possible these plant species are adapted to periodic fire events and would not suffer long-term decreases. Some fire-adapted species benefit from wildland fire. Thus, the impacts would be minor and short-term.

Impacts from alternative B would be long-term beneficial and short-term, negligible to minor, and adverse.

Cumulative Impacts

The cumulative impacts on ethnographic resources would the same as described in alternative A, plus impacts from manual fuel reduction and prescribed burn projects. Implementation of alternative B would have long-term beneficial and short-term, negligible to minor, adverse impacts on the national monument's ethnographic resources. The beneficial and adverse impacts of this alternative, in combination with the beneficial impacts of other past, present, and reasonably foreseeable future actions, would result in long-term, beneficial cumulative impacts. The beneficial and adverse effects of the preferred alternative would very slightly detract from the beneficial cumulative impact.

Conclusion

Alternative B would have long-term beneficial and short-term, negligible to minor, adverse impacts on ethnographic resources.

Section 106 Summary

After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 *Code of Federal Regulations* section 800.5, Assessment of Adverse Effects), the National Park Service concludes that implementation of the preferred alternative would have *no adverse effect* on the ethnographic resources of Little Bighorn Battlefield National Monument.

VEGETATION

AFFECTED ENVIRONMENT

The following description of the vegetation at Little Bighorn Battlefield National Monument is from the *Northern Rocky Mountains Invasive Plant Management Plan* (NPS 2011b).

Over 200 species of native vascular plants are found at the national battlefield. The battlefield is located along the banks of the Little Bighorn River in a northern high plains environment. Natural resources at the battlefield are heavily influenced by climate and topography. Moderate precipitation with abundant sunshine, low relative humidity, and clay soils combine to produce a suitable environment for middle to tall grass prairies. Two community types found in Little Bighorn Battlefield National Monument include northern mixed grass prairie and sagebrush-dominated shrub steppe (NPS 2007). Two common sagebrush species in the national monument are Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) and silver sagebrush (*A. cana*). Cottonwood (*Populus* spp.) and sedge (*Carex* spp.) riparian areas exist along the Little Bighorn River.

A threat to the native vegetation is the alteration of the natural fire regime (NPS 2007). A 1983 fire removed vegetation from 90% of the area. This presented a unique opportunity to determine post-fire responses of a high plains ecosystem protected from livestock grazing. Other fires burned over the entire Reno-Benteen site and the east side of Battle Ridge on the battlefield. Fire at the Custer Battlefield, because of the virtual 100% mortality of Wyoming big sagebrush, converted what appeared to be a shrub-steppe ecosystem into a grassland. The sensitivity of Wyoming big sagebrush to fire and the estimated fire recovery time ranging from 100 to 240 years (Cooper *et al.* 2007) indicates the reestablishment of the sagebrush on the Custer Battlefield requires the absence of fire for long periods.

The northern mixed grass prairie in the national monument is typically dominated by bluebunch wheatgrass (*Pseudoroegneria spicata*) which makes up about a third of the vegetation at the national monument. *Bouteloua -Stipa-Pseudoroegneria* grass associations are the dominant cover type. The northern mixed grass prairie evolved under a fire return interval of approximately 10 to 70 years (Tirmenstein 1999).

Bluebunch wheatgrass usually survives fires because its buds are protected by soil and/or plant material. Fire frequencies for bluebunch wheatgrass-dominated habitats vary considerably, depending on the associated species, although most mean fire intervals are less than 30 years (Zlatnik 1999).

Other grasses include Idaho fescue (*Festuca idahoensis*), western wheatgrass (*Agropyron smithii*), green needlegrass (*Stipa viridula*), prairie Junegrass (*Koeleria cristata*), and blue grama (*Bouteloua gracilis*). The main shrubs are hawthorn (*Crataegus* spp.), chokeberry (*Prunus* spp.), silver sage and Wyoming big sagebrush.

The Wyoming big sagebrush community, an important historical component of the Little Bighorn Battlefield National Monument, has a fire return interval ranging from 100 to 240 years or more (Cooper *et al.* 2007). Tirmenstein (1999) noted that given the wide range of fuel loads and the yearly climatic variation in sagebrush ecosystems, a naturally wide variation in fire frequency for this community should be expected.

Spruce trees (*Picea* spp.), used for landscaping, line the sidewalks in the national cemetery. Cottonwood trees are prominent in areas along the Little Bighorn River, very little of which lies within the present national monument boundary (NPS 2007).

Native willows (*Salix* spp.) appear to have declined since the time of the battle. Willows deserve special attention at Little Bighorn Battlefield National Monument not only for their intrinsic value as part of the native flora, but also because of their particular significance to native peoples (NPS 2007).

Approximately 51 species of nonnative plants occur within Little Bighorn Battlefield National Monument. A list of these species is included in appendix D.

Data regarding nonnative plant species from a Montana State University plant resurvey (2010) show cheatgrass (*Bromus tectorum*) occurring widely across the national monument, bulbous bluegrass (*Poa bulbosa*) is prevalent on the northeast side of the Custer battlefield, new populations of St. Johnswort (*Hypericum perforatum*) occur across the Custer battlefield, and new populations of Dalmatian toadflax (*Linaria dalmatica*) occur across the national monument. Russian olive (*Elaeagnus angustifolia*), salt cedar (*Tamarix* spp.), and Tatarian honeysuckle (*Lonicera tatarica*) have largely been removed from the riparian area, since they were first inventoried in 2006 (NPS 2011b). Cheatgrass is of particular note in the national monument because it can outcompete native grasses for dominance and its relatively short fire return interval of 3 to 5 years (Zouhar 2003). Cheatgrass promotes more frequent fires by increasing the biomass and horizontal continuity of fine fuels that persist during the summer lightning season. Cheatgrass expansion also allows fire to spread across landscapes where fire was previously restricted to isolated patches because the abundant flammable plant materials provides fuel (Zouhar 2003).

Maps showing the vegetation types found at Little Bighorn Battlefield National Monument in both the Custer and Reno-Benteen battlefield units are presented in figures 3 and 4.

METHODS

Impacts on vegetation were evaluated using the process described in "Methods for Analyzing Impacts." Impact threshold definitions are as follows.

- *Negligible*: The impact on individual plants and/or vegetation communities would not be measurable. The abundance or distribution of individuals would not be affected or would be slightly affected. Ecological processes and biological productivity would not be affected.
- *Minor*: The action would not necessarily decrease or increase the area's biological productivity. An action would affect the abundance or distribution of individual plants in a localized area but would not affect the viability of local or regional populations or communities.
- *Moderate*: The action would change biological productivity in a small area. An action would affect a local population sufficiently to change plant abundance or distribution, but it would not affect the viability of the regional population or communities. Changes to ecological processes would be of limited extent.
- *Major*: The action would change biological productivity in a relatively large area. The action would affect a regional or local population of a species sufficiently to change abundance or distribution to the extent that the population or communities would not be likely to return to its/their former level (adverse), or would return to a sustainable level (beneficial). Important ecological processes would be altered.
- *Short-term*: Recovers in less than one year.
- *Long-term*: Recovers in one or more years.

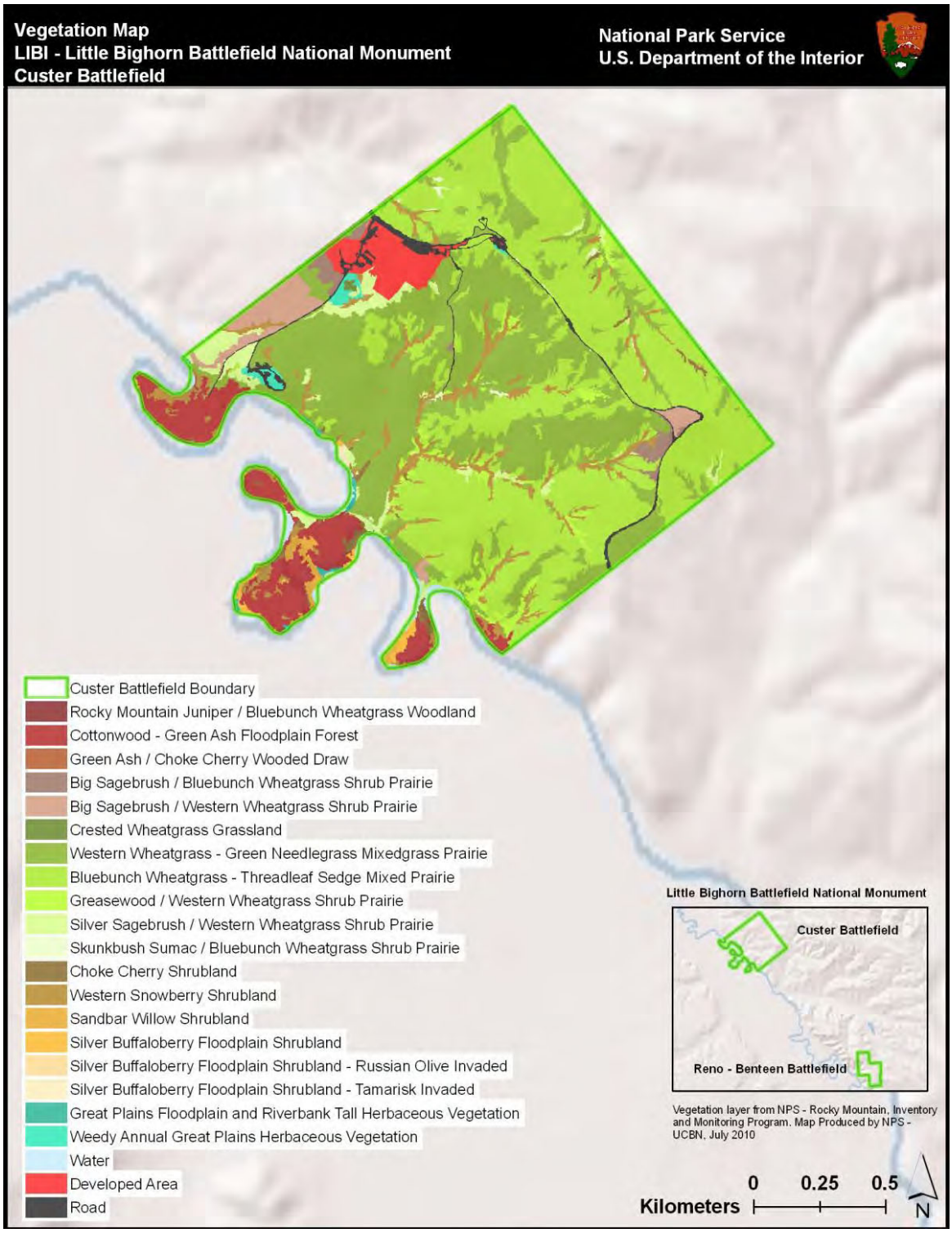


Figure 3: Custer Battlefield Draft Vegetation Map

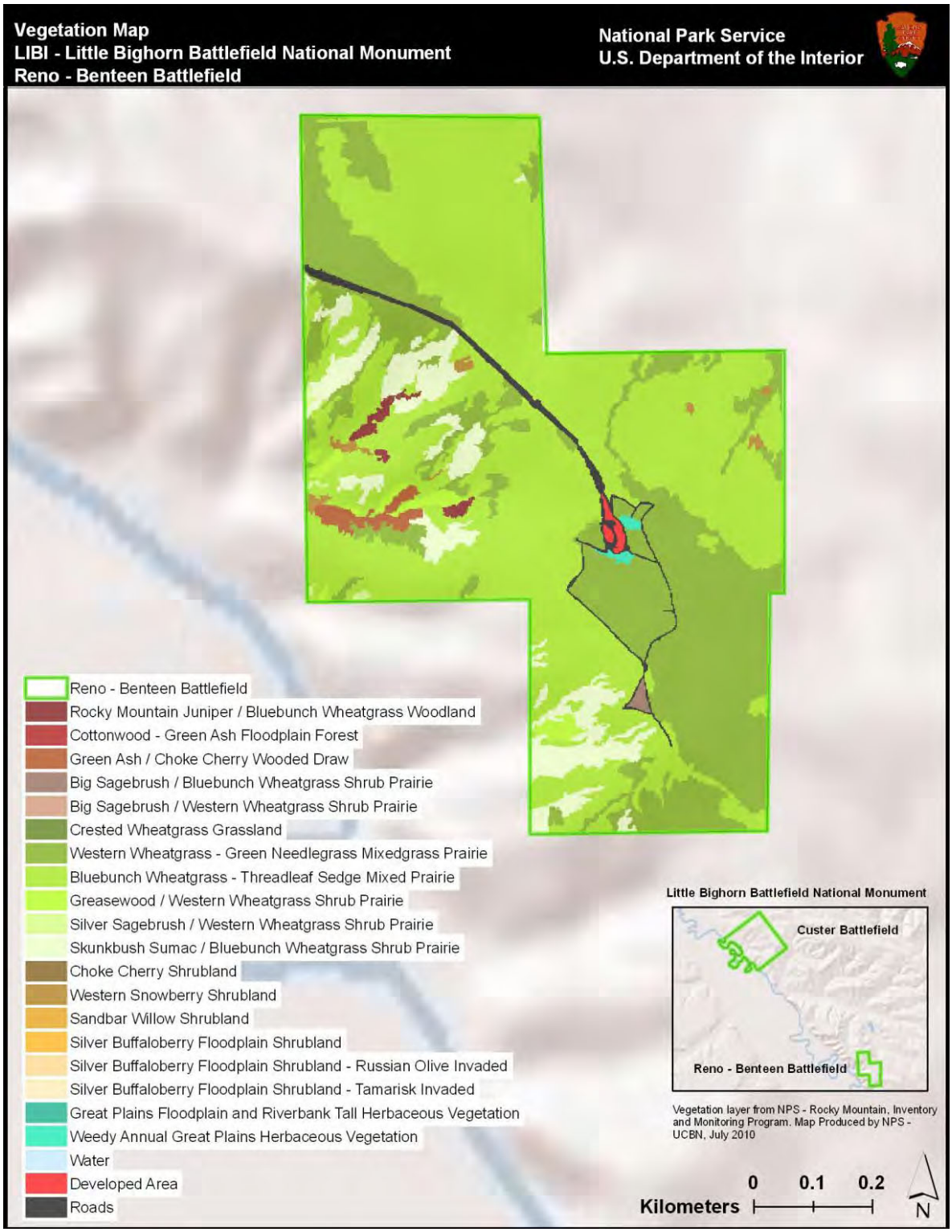


Figure 4: Reno-Benteen Battlefield Draft Vegetation Map

REGULATIONS AND POLICIES

Current regulations and policies associated with vegetation include the following.

- Plant Protection Act (Plant Protection Act of 2000, 7 *United States Code* 7701 *et seq*.) (supersedes the Federal Noxious Weed Act of 1974, except Sections 1 and 15) (2000)
- Consolidated Natural Resources Act of 2008 (Public Law 110-229)
- Executive Order 13112 (February 1999) Control of Invasive Species as amended by Executive Order 13286)
- Montana County Weed Control Act
- NPS-77: Natural Resources Management Guideline (1991); and
- *Management Policies 2006* (NPS 2006).

IMPACTS OF ALTERNATIVE A, NO ACTION (FIRE SUPPRESSION)

Analysis

In the event of an unplanned wildfire, fire suppression efforts would affect vegetation to different degrees, depending on the community type, time of year, and extent of the fire, particularly in the short term.

Hand Crew Suppression Method – The effects of fire suppression actions would primarily include the area where vegetation would be flattened using flappers when extinguishing flames or removed along firelines to prevent further spread of a fire. Crews would access the fireline on foot and fight the fire along the fire front, only if conditions provide for safe operations. The magnitude of these short-term adverse effects would be commensurate with the size of the fire and extent of fireline building. The removal of vegetation or the effects of field crews repeatedly traversing an area would result in some limited soil compaction and reduced vegetative growth (McNearney *et al*. 2002). These adverse impacts would be localized, short-term and likely range from negligible to minor.

Engine Crew Suppression Method – The effects of using fire engines to suppress a wildfire would be similar to the hand crews with the additional effects of crews laying hose and walking repeatedly through vegetation. Engines would not leave established roads or travel corridors. The magnitude of these short-term, adverse effects would be commensurate with the size of the fire and extent of fireline building. Repeated travel along a single path by firefighters laying hose could result in some limited soil compaction and reduced vegetative growth (McNearney *et al*. 2002). The adverse impacts would likely range from negligible to minor. Intensity would be related to the magnitude of the fire and suppression actions and would be restricted to small and local areas. The use of water to suppress a wildfire, whether delivered by engine hose or aerial attack, would not typically result in adverse impacts to vegetation, and in some cases, could be beneficial in a short-term, local manner, particularly during dry periods.

Aircraft Suppression Method – Using aircraft to suppress a wildfire would have fewer direct adverse impacts on vegetation than hand or engine crews because there would be no ground disturbance. The use of water to suppress a wildfire, whether delivered by engine hose or aerial attack, would not typically result in adverse impacts to vegetation, and in some cases, could be beneficial in a short-term, local manner, particularly during dry periods.

Impacts of Unplanned Wildland Fire – The direct effects of wildfire would include burned vegetation. The intensity of the effects on vegetation would be directly related to the size of the area burned and the plant species that were burned. Plant species vary substantially in their tolerance of fire damage. Some species, like junipers, are intolerant and die after a single expose to fire, while others like cheatgrass are tolerant to repeated fires and resprout quickly after fire exposure. Thus, wildland fire effects could have both adverse and beneficial effects on vegetation, depending on the plant species and plant communities that are burned. The local adverse effects would be short-term for herbaceous species as recovery within a year would be likely and possibly long-term for woody species in the event of high-intensity fire. Ecologically, the long-term impacts of burning would depend on the community affected, the fire's intensity, and when the fire occurred (Zlatnik 1999), as some species would respond positively to fire while fire could result in mortality for other species. The discussion of the effects of prescribed fire on ecological systems under alternative B provides additional information on the benefits of fire in grassland habitats.

In the long term, the ecological effects of suppressing a natural fire regime on the vegetative communities in the national monument would vary depending on the community type. For example, fire suppression allows grasses, including invasive species such as cheatgrass, to proliferate as a substrate in big sagebrush communities. Cheatgrass has a fire return interval of about 5 years and has a high continuity, which allows for more intense fires to carry farther and faster. This would adversely affect Wyoming big sagebrush communities because subsequent fires would be more intense as a result of the increased fuel load and would likely kill sagebrush plants (Baker 2006, Brooks *et al*. 2004). This could represent a moderate, long-term, local adverse effect on highly valued Wyoming big sagebrush communities in the national monument.

In native wheatgrass-dominated mixed grass prairie communities, fire suppression would likely have less adverse impact than in Wyoming big sagebrush, although in the absence of fire, regions of the mixed grass prairie may be susceptible to woody plant invasion (Montana Field Guide 2012). The establishment of junipers on the Reno-Benteen battlefield is currently identified by NPS staff as an unwanted consequence of fire suppression. Also, fire suppression and the invasion of nonnative species have altered succession and fire regimes from those of presettlement plant communities (Zlatnik 1999). These ecological effects of fire suppression would represent negligible to minor adverse impacts to mixed grass prairie vegetation communities at Little Bighorn Battlefield National Monument under the no action alternative.

Cumulative Impacts

The other plans and projects identified in chapter 1 are primarily management and resource oriented plans and policies that assist the National Park Service in meeting the national monument's mandate now and in the future. As a result, these plans and policies would contribute beneficially to cumulative impacts on vegetation by their inherent resource protection nature. The Memorandum of Understanding between the Bureau of Indian Affairs, the Crow Indian Agency and the National Park Service has a very direct relationship to the fire management plan and the national monument's vegetation, and once again would contribute to long-term beneficial cumulative impacts. The *Invasive Plant Management Plan* also has an innate direct relationship with the fire management plan as the control of invasive nonnative plants is an objective of both plans. Implementation of the *Invasive Plant Management Plan* would complement the fire management plan and contribute beneficially to long-term cumulative effects on vegetation. There would be some short-term adverse impacts of the Battlefield Tour Road rehabilitation project during construction, but in the long term the cumulative effect on vegetation would be beneficial as the resource protection elements of the project would be realized.

The contribution of alternative A to the cumulative effects on vegetation would be mixed, as some benefits to vegetation would occur as a result of unplanned fire. The magnitude of fire suppression actions would largely determine the intensity and contribution of adverse effects. Effects would be substantial and beneficial in the long term, as nonnative plant control objectives would be undertaken, and ecosystem restoration efforts would be implemented.

The cumulative effects of the other plans, projects, and policies combined with the effects of alternative A on vegetation would be mainly beneficial with some minor adverse impacts associated with fire suppression actions.

Conclusion

Hand and engine crew suppression methods under alternative A would result in adverse impacts that would be short-term and range from negligible to minor, depending on the magnitude of the fire and suppression efforts. The use of water under any suppression method could provide a short-term benefit to vegetation, particularly during periods of drought.

The local adverse impacts from unplanned wildland fire, aside from those resulting from fire suppression, would be short-term for herbaceous species because plant recovery within a year would be likely. Long term, adverse effects to woody species would be likely in the event of high-intensity fire.

Ecologically, the impacts of long-term fire suppression would be moderate, local, and adverse on Wyoming big sagebrush communities because of increased grass densities with the potential to support more frequent, higher-intensity fires that would kill Wyoming big sagebrush. Wyoming big sagebrush has a long recovery period.

In native wheatgrass-dominated mixed grass prairie communities, long-term fire suppression would represent negligible to minor adverse impacts.

The cumulative effects of the other plans, projects, and policies combined with the effects of alternative A on vegetation would be mainly beneficial with some minor adverse impacts associated with fire suppression actions.

IMPACTS OF ALTERNATIVE B, FIRE MANAGEMENT WITH FUELS REDUCTION AND PRESCRIBED FIRE

Analysis

Hand Crew, Engine Crew, and Aircraft Suppression Methods – The impacts of unplanned wildland fire and suppression efforts on vegetation under alternative B would be the same as those described for alternative A because the same fire suppression methods and techniques would be used.

Manual Thinning Method – The purposes of manual thinning of vegetation to reduce fuel loads would be twofold. First, reduced fuel loads would lessen the intensity of unplanned or planned wildland fire and second, less plant materials would make prescribed burns easier to manage. Successful thinning would result in short- and long-term beneficial effects on vegetation as these purposes were met, as explained below.

Reduced fuel loads would reduce the intensity of an unplanned wildfire potentially allowing hand or engine crews to operate along a fireline safely. A more intense fire could require crews to retreat and establish firelines at a distance from an intense fire, thus resulting in a larger area burned and a longer time to suppress the fire. Additionally, the mortality of some species (Wyoming big sagebrush, for

example) could be lowered if fire intensity were reduced. This is particularly true in the case where cheatgrass invasions have increased the fuel load and the potential for fast-moving, more intense fires in sagebrush habitat (Tirmenstein 1999).

In the event of an unplanned wildland fire, reduced fuel loads would aid suppression efforts and minimize the potential adverse effects on vegetation from fire fighting activities that would be necessary to protect human life, property, and national monument resources. Additionally, the potential for planned fire to escape the national monument and affect surrounding vegetation would be lowered with enhanced ability to manage prescribed burns. These effects would represent short-term, local and regional benefits.

Prescribed Fire Method – Fire would be intentionally introduced to vegetated areas to achieve three purposes: to help preserve the cultural landscape, maintain or restore ecosystem elements, and reduce fuel loads for resource and/or structure protection.

In the short-term, prescribed fire would have negligible to moderate adverse effects over a relatively small area and only affect local populations because the burns would be limited in scope. Vegetation would recover in the subsequent growing season.

Prescribed fire would be used to preserve the cultural landscape in areas where nonnative species invasions threaten the native plant populations. The use of fire would likely be in grasslands and in areas where silver sagebrush is present. Control and suppression of nonnative plant species would represent a local short- and long-term beneficial effect by encouraging the maintenance of and replacement by native plant species. Prescribed fire would not be effective in preserving the small area of remaining Wyoming big sagebrush because this species, notable for the population on the Custer Battlefield, has an extremely long recovery time of at least 100 years (Cooper *et al.* 2007).

Better management of prescribed burns would better protect national monument resources and lessen potential adverse effects on vegetation. Better control over fire intensity following manual thinning, combined with proper seasonal timing, would increase the ability to develop a vegetation community similar to that occurring under a natural fire regime (Knapp *et al.* 2009). This would represent both short- and long-term beneficial impacts on vegetation as the plant communities that have evolved with natural fire would benefit from the regenerative effects of fire.

Prescribed fire's effects at the ecosystem level would simulate a return to a more natural fire regime. Fire suppression and the invasion of nonnative species have altered succession and fire regimes from presettlement communities (Zlatnik 1999). Burning the wheatgrass-dominated grassland would stimulate flowering and seed setting (Patton *et al.* 1988). The buds of bluebunch wheatgrass are well protected from fire by the foliage of the plant or by being located underground. However, the season of burning affects mortality (Zlatnik 1999), so dormant-season burns would result in less mortality. The reduction of litter following a burn would increase primary plant production for periods of two to four years, and would increase bacterial populations in the soil. Both changes would represent benefits to the local ecosystem (Higgins *et al.* 1989). The simulation of a more natural fire regime would reduce litter, make nutrients more available (Higgins *et al.* 1989), and enhance plant species diversity (Knapp *et al.* 2009). For these reasons, the effects of prescribed burning on the grassland ecosystem in Little Bighorn Battlefield National Monument would be beneficial both in the short and long term.

Prescribed fire is an important tool in the fight against nonnative species. Such burns are usually timed for periods where the target nonnative species may be more vulnerable to fire than the native species. Controlling nonnative herbaceous species with fire is likely to be more effective in grasslands than many other vegetation types found in the western United States, because of the relatively high importance of annuals in this vegetation type. Herbaceous perennial species that emerge from underground roots and growth buds are typically more difficult to kill with fire than shallow-rooted and short-lived annuls (Knapp *et al.* 2009). As a result, prescribed fire would

generally have a short- and long-term beneficial effects by controlling nonnative weed or noxious plant species.

However, the use of prescribed fire in cheatgrass infested grasslands could result in an increase in cheatgrass dominance (Tirmenstein 1999). Cheatgrass is more likely to invade after fire if the dominant native grass is not a fire-resistant species (for example, Thurber needlegrass or Idaho fescue) or if native grasses were in poor condition prior to fire (Tirmenstein 1999). As a result, the benefits of controlling nonnative species with prescribed burning would depend substantially on the timing of the prescribed fire in the target plant populations or community.

Impacts of Unplanned Wildland Fire – The effects of unplanned wildland fire on vegetation under alternative B would be similar to those described for alternative A. However, it is possible that fuel reduction actions taken in association with alternative B could reduce the potential intensity of an unplanned wildland fire. Nonetheless, the adverse effects would only be incrementally different than alternative A and the conclusions described for alternative A would apply to alternative B.

Cumulative Impacts

The other plans and projects identified in chapter 1 are primarily management and resource-oriented plans that would contribute beneficially to cumulative impacts on vegetation because of their inherent resource protection nature. Implementation of the *Invasive Plant Management Plan* would complement the prescribed fire actions associated with alternative B and contribute beneficially to long-term cumulative effects on vegetation. The impacts of the Battlefield Tour Road rehabilitation project and the contribution to cumulative effects would be the same as those described for alternative A.

The contribution of alternative B to the cumulative effects on vegetation would be mixed, with both the adverse and beneficial impacts associated with fire suppression. Additionally, there would be beneficial long-term effects from manual thinning and prescribed fire actions with alternative B. The contribution of alternative B would be beneficial in the long term, as nonnative plant control would occur, and ecosystem restoration efforts would be implemented.

The cumulative effects of the other plans, projects, and policies combined with the effects of alternative B on vegetation would be mainly beneficial and incrementally greater than those associated with alternative A. Some minor adverse impacts associated with fire suppression actions would occur.

Conclusion

The impacts of unplanned wildland fire and suppression efforts on vegetation under alternative B would be the same as those described for alternative A for the same reasons previously described.

Manual thinning would result in short- and long-term beneficial effects on vegetation associated with reduced fuel loads and by accomplishing objectives identified in specific burn plans.

Prescribed fire would cause short-term negligible to moderate adverse impacts on local plant populations and short- and long-term beneficial effects on vegetation as the plant communities that have evolved with natural fire would benefit from the regenerative effects of fire, as well as the ability to use fire for nonnative species control. Also, prescribed fire would be used to preserve the cultural landscape in areas where nonnative species invasions threaten the native plant populations and result in local short- and long-term beneficial effects.

The cumulative effects of the other plans, projects, and policies combined with the effects of alternative B would be mainly beneficial and incrementally greater than those associated with alternative A, with some minor adverse impacts associated with fire suppression actions.

SPECIAL STATUS SPECIES

AFFECTED ENVIRONMENT

To comply with the Endangered Species Act of 1973, the National Park Service is responsible for protecting federally listed, candidate, and proposed species (collectively referred to as "special status species") and their designated critical habitats. Species of concern identified by the Montana Natural Heritage Program are also evaluated for potential effects from fire suppression and management. Table 3 lists 22 special status species with potential to occur in Little Bighorn Battlefield National Monument. They include six plant species, one amphibian, four reptiles, six birds, and five mammal species. For more information about each species' life history, distribution, habitat preference, and other details, refer to the Montana Field Guide websites shown in table 3.

There is no designated or proposed critical habitat for any federally listed species in Little Bighorn Battlefield National Monument.

The special status species section of this environmental assessment will serve as the biological assessment of potential impacts to those species with federal listing. The environmental assessment will be submitted to the U.S. Fish and Wildlife Service to meet the Endangered Species Act section 7 consultation requirements.

The species shown in Table 3 were broadly grouped by similarities in their general or preferred habitat associations. Three general habitat types used to categorize the species are riparian areas, grasslands, and sagebrush shrublands. The effects of fire management actions on each habitat was then analyzed. This approach served as a surrogate for analyzing the effects on each species independently, and is considered valid because the effects of fire management actions would be similar for species sharing similar habitats. In the event a particular species had distinctive characteristics that would result in different impacts, they were addressed in additional detail. This approach eliminated unnecessary repetition in the environmental consequences, while still providing accurate analyses of effects.

Additionally, implementing mitigation measures after an unplanned wildfire under alternative A or prior to prescriptive burning or manual fuel reduction treatments under alternative B could offset potential direct adverse impacts to species and to habitats.

Riparian habitat in Little Bighorn Battlefield National Monument occurs in the Little Bighorn River corridor along the southwestern boundary of the Custer Battlefield portion of the national monument. Cottonwoods, willows, and silver buffaloberry (*Shepherdia argentea*), with a herbaceous understory of grasses and sedges characterize riparian habitat. Lists of species associated with Great Plains riparian habitat as well as details regarding the distribution, ecology, and restoration considerations for this habitat can be found on the Montana Field Guide website at: http://fieldguide.mt.gov/displayES_Detail.aspx?ES=9326 and in the vegetation section of this document.

Northern mixed grass prairie habitat, which is the dominant habitat in the national monument, is found across most of the Custer and Reno-Benteen battlefields. The plant species associated with this habitat are described in the vegetation section. Additional details can be obtained at the Montana Field Guide website at: http://fieldguide.mt.gov/displayES_Detail.aspx?ES=7114.

The sagebrush / shrub steppe habitat, once a major component of the national monument, was greatly reduced by a 1983 fire. Much of what was Wyoming big sagebrush habitat on the Custer Battlefield unit was converted to grassland after this fire. More information regarding sagebrush steppe habitat is presented in the vegetation section and at the Montana Field Guide website at: http://fieldguide.mt.gov/displayES_Detail.aspx?ES=5454.

Table 3: Special Status Species with the Potential to Occur at Little Bighorn Battlefield National Monument

Common Name	Scientific Name	Status [a/]	Habitat Type	Detailed Species Information
Plants				
Cushion (sweetwater) milkvetch	*Astragalus aretioides*	MTSC	Grassland, on exposed ridges and slopes	http://fieldguide.mt.gov/detail_PDFAB0F0R0.aspx
Barr's milkvetch	*Astragalus barrii*	MTSC	Grassland, on sparsely vegetated knobs and buttes	http://fieldguide.mt.gov/detail_PDFAB0F150.aspx
Heavy (pregnant) sedge	*Carex gravida*	MTSC	Riparian/wetland area	http://fieldguide.mt.gov/detail_PMCYP035G0.aspx
Yellow beeplant	*Cleome lutea*	MTSC	Sagebrush / grassland	http://fieldguide.mt.gov/detail_PDCPP03070.aspx
Spotted joe-pye-weed	*Eupatorium maculatum*	MTSC	Riparian/wetland area	http://fieldguide.mt.gov/detail_PDAST3P140.aspx
Spiny hopsage	*Grayia spinosa*	MTSC	Shrubland	http://fieldguide.mt.gov/detail_PDCHE0C020.aspx
Amphibian				
Plains spadefoot	*Ptychocheilus lucius*	MTSC	Riparian/wetland area	http://fieldguide.mt.gov/detail_AAABF02010.aspx
Reptiles				
Western hog-nosed snake	*Heterodon nasicus*	MTSC	Grassland	http://fieldguide.mt.gov/detail_ARADB17010.aspx
Milk snake	*Lampropeltis triangulum*	MTSC	Rock outcrops in grassland	http://fieldguide.mt.gov/detail_ARADB19050.aspx
Greater short-horned lizard	*Phrynosoma hernandesi*	MTSC	Grassland with sandy / gravelly soils	http://fieldguide.mt.gov/detail_ARACF12080.aspx
Snapping turtle	*Chelydra serpentina*	MTSC	Riparian/wetland area	http://fieldguide.mt.gov/detail_ARAAB01010.aspx
Birds				
Sprague's pipit	*Anthus spragueii*	FC	Grassland	http://fieldguide.mt.gov/detail_ABPBM02060.aspx
Bald eagle	*Haliaeetus leucocephalus*	MTSC	Riparian/wetland area	http://fieldguide.mt.gov/detail_ABNKC10010.aspx
Great blue heron	*Ardea herodias*	MTSC	Riparian/wetland area	http://fieldguide.mt.gov/detail_ABNGA04010.aspx
Brewer's sparrow	*Spizella breweri*	MTSC	Sagebrush shrubland	http://fieldguide.mt.gov/detail_ABPBX94040.aspx
loggerhead shrike	*Lanius ludovicianus*	MTSC	Shrubland	http://fieldguide.mt.gov/detail_ABPBR01030.aspx
Veery	*Catharus fuscescens*	MTSC	Riparian/wetland area	http://fieldguide.mt.gov/detail_ABPBJ18080.aspx
Mammals				
Hoary bat	*Lasiurus cinereus*	MTSC	Riparian/wetland area	http://fieldguide.mt.gov/detail_AMACC05030.aspx
Meadow jumping mouse	*Zapus hudsonius*	MTSC	Riparian/wetland area	http://fieldguide.mt.gov/detail_AMAFH01010.aspx
Merriam's shrew	*Sorex merriami*	MTSC	Sagebrush shrubland	http://fieldguide.mt.gov/detail_AMABA01230.aspx
Black-tailed prairie dog	*Cynomys ludovicianus*	MTSC	Grassland	http://fieldguide.mt.gov/detail_AMAFB06010.aspx
Black-footed ferret	*Mustela nigripes*	FE, MTE	Grassland	http://fieldguide.mt.gov/detail_AMAJF02040.aspx

a/ Key to status: FE = federally endangered; FC = federal candidate for listing; MTE = Montana endangered; MTSC = Montana species of concern

METHODS

The following definitions of impact intensity are used in the analysis of effects on special status species:

- *Negligible*: State- and federally listed species and their habitats would not be affected or the effects to an individual of a listed species or its designated critical habitat would be at or below the level of detection. Effects would not be measurable or of perceptible consequence to the protected individual or its population. Negligible effect would equate with a "*no effect*" determination in Endangered Species Act section 7 terms.
- *Minor*: The action would result in detectable effects to an individual (or individuals) of a state- or federally listed species or its critical habitat, but the effects would not result in population-level changes with measurable long-term effects on species, habitats, or natural processes sustaining them. Minor effects would equate with a "*may affect but is not likely to adversely affect*" determination in Endangered Species Act section 7 terms.
- *Moderate*: An action would result in detectable effects on individuals or population of a state- or federally listed species, its critical habitat, or the natural processes sustaining them. Key ecosystem processes may experience disruptions that may result in population or habitat condition fluctuations that would be outside the range of natural variation. Moderate level adverse effects would equate with a "*may affect / likely to adversely affect / adversely modify critical habitat*" determination in Endangered Species Act section 7 terms.
- *Major*: Individuals or the population of a state- or federally listed species, its critical habitat, or the natural processes sustaining them would be measurably affected. Key ecosystem processes might be permanently altered resulting in long-term changes in population numbers and permanently modifying critical habitat. Major adverse effects would equate with a "*is likely to jeopardize the continued existence of a listed species / adversely modify critical habitat*" determination in Endangered Species Act section 7 terms.

Duration is not applicable to federally listed, candidate, or proposed species because of definitions in accordance with Endangered Species Act section 7 terminology.

- *Short-term* (Montana species of concern): Effects last less than one year.
- *Long-term* (Montana species of concern): Effects last longer than one year.

REGULATIONS AND POLICIES

Current regulations and policies associated with special status species include the following.

- Endangered Species Act of 1973;
- Bald and Golden Eagle Protection Act of 1940;
- *Management Policies 2006* (NPS 2006); and
- Montana Nongame and Endangered Species Conservation Act of 1973.
- Plant Protection Act (Plant Protection Act of 2000, 7 *United States Code* 7701 *et* seq.) (supersedes the Federal Noxious Weed Act of 1974, except Sections 1 and 15) (2000)
- Consolidated Natural Resources Act of 2008
- *NPS-77: Natural Resources Management Guideline* (1991)

IMPACTS OF ALTERNATIVE A, NO ACTION (FIRE SUPPRESSION)

Analysis

The impact analysis of special status species is grouped by their habitat affiliation as was previously described. Effects of the fire suppression and management tools are analyzed within this framework.

There are no designated or proposed critical habitats for any federally listed species in Little Bighorn Battlefield National Monument. Thus there would be no potential to adversely modify critical habitat by implementing alternative A.

Riparian/Wetland Habitat Species – The special status species associated with riparian/wetland habitat along the Little Bighorn River on the national monument's western boundary are all Montana species of concern and include heavy sedge, spotted Joe-Pye-weed, plains spadefoot, snapping turtle, bald eagle, great blue heron, veery, hoary bat, and meadow jumping mouse. Riparian/wetland habitats are valuable to many species, as numerous resources, including cover, food, travel corridors, and nesting / breeding habitat are provided.

In the event of an unplanned wildfire in riparian/wetland habitat, fire suppression actions would be implemented by hand and engine crews using minimum impact suppression tactics. Although adverse wildfire impacts to the important riparian/wetland habitat elements would likely occur, the effects of suppression actions would be minimized with the use of minimal impact suppression tactics. In the event of a large unplanned wildfire in riparian/wetland habitat, aircraft suppression using water drops from a helicopter could be deployed to combat the fire.

Depending on numerous variables, including seasonal and weather conditions that would affect the magnitude of a wildfire, the adverse local, short-term impacts of alternative A would range from negligible to moderate on special status species using riparian/wetland habitats.

For plant species and species with restricted movement capabilities (plains spadefoot, snapping turtle, and meadow jumping mouse, for example), the potential for more severe effects would be higher because of their inherent inability to escape from the fire or to avoid necessary suppression actions. The more mobile species, including all the avian species and the hoary bat, would encounter fewer adverse impacts because of their ability to leave the area. However, if a wildfire occurs during the breeding season for any of the special status species, the adverse impacts would be at a greater intensity because of the potential for adversely affecting reproduction and recruitment of young into their populations.

None of the special status species are federally listed as endangered or threatened, thus there is no potential for adverse effects or jeopardizing the continued existence of a species under section 7 of the Endangered Species Act.

Grassland Habitat Species – The special status species most typically associated with grassland habitats include cushion milkvetch, Barr's milkvetch, western hog-nosed snake, milk snake, greater short-horned lizard, Sprague's pipit, black-tailed prairie dog, and black-footed ferret. Although no endangered black-footed ferrets are known to occur in the 71-acre black-tailed prairie dog colony outside the northern border of the national monument or anywhere nearby, there would be potential for a future reintroduction in Big Horn County (NPS 2007), thus the black-footed ferret is considered in this assessment.

Species that use underground burrows or rocky outcrop habitat islands in grasslands, including the western hog-nosed snake, milk snake, greater short-horned lizard, black-tailed prairie dog, and black-footed ferret would have the ability to take refuge from a fire and any suppression activities (Higgins *et al.* 1989). As a result, neither the fire nor suppression actions would affect these species to any appreciable degree. The effects of fire suppression would be discountable because of the ability

of burrowing species to avoid the actions of hand crews and the quantity of water used by either engine crews or aircraft water drops.

Hand crew and engine crew suppression efforts would potentially affect the cushion milkvetch, Barr's milkvetch, and Sprague's pipit under alternative A if they were present in an area affected by suppression of an unplanned wildfire. Although the pipit could fly away, the plants would be subject to trampling and/or fireline construction by hand or engine crews. The adverse effects would likely be limited to a small number of individual plants. The worst case for the pipit would be a wildfire during breeding season where its nest would be directly affected by suppression efforts. These short-term, local adverse impacts to special status species from hand and/or engine crew suppression methods would range from negligible to minor, with the intensity dependent on the magnitude of a fire and the degree of suppression that would be required to combat the fire.

Although aircraft suppression methods would not have the ground-level effects associated with the hand and engine crews, the noise and inundation from water drops could adversely affect Sprague's pipit. Although mature birds could fly away from a fire and resulting airborne suppression efforts, adverse impacts on this ground-nesting species could be as great as minor if a fire occurred in active breeding territory. Such effects would be short-term, local, and up to minor in intensity. As described above, burrowing species and those that use isolated rock outcrops could find refuge from both fire and aircraft suppression tactics. Short-term, negligible adverse impacts could result from disturbance caused by low-flying aircraft and/or inundation from water drops.

The only federally listed species with preferred grassland habitat is the endangered black-footed ferret, which is not currently present in or near Little Bighorn Battlefield National Monument. It was included in the evaluation of effects because of a potential future reintroduction in Bighorn County. In the event the ferret would be reintroduced, it would still be unlikely to use the 71-acre black-tailed prairie dog colony north of the national monument, or any of the approximately 230 acres of prairie dog colonies within 6 miles of the monument, because ferrets were thought to rely on colonies of 5,000 acres or larger (USFWS 1988). However, some reintroductions have been successful on smaller colony complexes (including 1,000 to 2,000 acres at Wind Cave National Park). As a result of the unlikely presence of black-footed ferrets in or near the national monument, alternative A would have *no effect* to the black-footed ferret. This would equate to a negligible impact under the NPS conventions for complying with National Environmental Policy Act.

Sagebrush Steppe Habitat – Wyoming big sagebrush and other sagebrush species, including silver sagebrush, provide habitat conditions suitable for the yellow beeplant, spiny hopsage, Brewer's sparrow, loggerhead shrike, and Merriam's shrew. The effects of hand crew suppression methods would include potential trampling of plants, direct loss of individual plants during fireline construction, and disturbance of the avian or mammal species, especially if a fire were to occur during nesting or breeding periods. Engine crew suppression methods would impact these species relying on sagebrush similarly, with the impacts of hose being dragged through the sagebrush added to that of the crews on foot. These impacts would be local, short-term, adverse, and range from negligible to minor, with the magnitude of impact directly related to the size and intensity of the wildfire and fire suppression efforts.

Impacts of Unplanned Wildland Fire – The effects of an unplanned fire on special status species, aside from the effects of fire suppression by any means, would be commensurate with the magnitude of the fire and the type of habitat burned. For special status plant species, a fire would likely result in the loss of that individual, although such an effect would be short-term, local and, at most, minor. For ground nesting bird species, fire would not have an effect outside the nesting season. However, the adverse effect would be short-term, local, and up to minor if a nest were destroyed. As described above, the burrowing species and those capable of finding refuge in isolated rock outcrops would only experience local, short-term, negligible adverse impacts because they could escape from the effects of flames.

Cumulative Impacts

The other plans and projects identified in chapter 1 are primarily management and resource oriented that assist the National Park Service in meeting the national monument's mandate now and in the future. As a result, these plans and policies would contribute beneficially to cumulative impacts on habitats of these species because of their resource protection nature. The potential adverse impacts of suppression activities used to fight unplanned wildland fire would be at most minor and have a relatively small contribution to the long-term beneficial cumulative effects of other plans and projects on special status species under alternative A.

Conclusion

There is no designated or proposed critical habitat for any federally listed species in Little Bighorn Battlefield National Monument, thus no potential to adversely modify critical habitat under alternative A.

For special status species in riparian habitat, the adverse local, short-term impacts of alternative A would range from negligible to moderate, depending on numerous variables, including seasonal and weather conditions that would affect the magnitude of a wildfire.

Grassland special status species that use underground burrows or rocky outcrops, including the western hog-nosed snake, milk snake, greater short-horned lizard would have the ability to take refuge from a fire and suppression activities and would experience negligible adverse effects. Hand crew and engine crew suppression efforts would potentially adversely affect the cushion milkvetch and Barr's milkvetch in a negligible to minor manner because of the potential for trampling. Sprague's pipit, a federal candidate species, would experience negligible to minor local adverse effects as a result of a fire or fire suppression efforts. There would be *no effect* to the black-footed ferret, a federal endangered species, from alternative A because the species is not present in the national monument. This would also be a negligible impact.

Species in sagebrush steppe habitat, including yellow beeplant, spiny hopsage, Brewer's sparrow, loggerhead shrike, and Merriam's shrew could experience local, short-term, negligible to minor adverse effects, with the magnitude of impact directly related to the size and intensity of the wildfire and suppression efforts.

The potential adverse impacts of suppression activities used to fight unplanned wildland fire would be at most minor and would have a relatively small contribution to the long-term beneficial cumulative effects of other plans and projects on special status species under alternative A.

IMPACTS OF ALTERNATIVE B, FIRE MANAGEMENT WITH FUELS REDUCTION AND PRESCRIBED FIRE

Analysis

There is no designated or proposed critical habitat for any federally listed species in Little Bighorn Battlefield National Monument, thus no potential to adversely modify critical habitat under alternative B.

All Unplanned Wildland Fire Suppression Methods in All Habitats – In the event of an unplanned wildfire, the effects of alternative B using all suppression methods in each of the species' habitat classifications would be the same as those described for alternative A. Because fire suppression methods applied to unplanned fire would be the same under either alternative, there would be no difference in effects.

However, alternative B includes manual thinning actions and the use of prescribed fire, each of which would have different effects. Because alternative B would involve planned actions, there would be an ability to better account for the presence of special status species or to implement actions during less sensitive periods of the species' life histories (outside breeding season, for example). These adjustments would generally minimize adverse impacts.

Riparian/Wetland Habitat Species – The use of line trimmers or other hand-held tools to thin either herbaceous or woody vegetation would have minimal effects on the Montana species of concern that rely on riparian/wetland habitat. Crews would avoid avian nests and the areas to be thinned would be of a size that impacts to individual plants, even if one of the special status species, would be limited to a few individuals at most and the plants would recover by the following growing season. This potential adverse impact to riparian/wetland special status plant species would be local, short-term, and negligible to minor.

Prescribed burning would not be used in the riparian habitat along the Little Bighorn River because the potential impacts to woody species and highly valued wildlife habitat would be too great.

Grassland Habitat Species – The effects of manual thinning on special status species using grassland habitats would be similar to those described for riparian habitats. Staff would avoid ground nesting birds and their nests. Restrictions would be in place to minimize conducting activities during the breeding season for species using grasslands. The result would be local, short-term, negligible to minor adverse impacts on special status species as a result of prescribed fire use under alternative B.

Sagebrush Steppe Habitat – Manual thinning would likely be the primary proactive fire management tool used under alternative B because of the long recovery time for Wyoming big sagebrush after a fire, and its importance as part of the cultural landscape in the monument. The thinning would target dense stands of nonnative plants among the sagebrush that could create potential fire fuels, such as cheatgrass. This targeted approach would have field technicians acting selectively while implementing thinning and would also aid in identifying grassland bird nests. This would enable thinning activities to avoid adversely affecting most avian nests in sagebrush habitat. In particular, this approach to manual thinning would enable technicians to identify and avoid Sprague's pipit nests and minimize potential adverse effect to this federal candidate species. Manual thinning would use the avoidance, minimization, and mitigation measures presented in appendix K of the *Invasive Plant Management Plan* (NPS 2011b). As a result, there would be negligible, local, short-term adverse effects to special status species associated with manual thinning under alternative B.

Although prescribed fire would be used sparingly in sagebrush habitat, it could be a used where sagebrush species have a shorter fire return interval (silver sagebrush, for example). In such cases, there would be more potential for the fire to adversely affect one of the Montana species of concern or Sprague's pipit. The use of prescribed burning, especially to control nonnative plant invasions, would use the avoidance, minimization, and mitigation measures presented in appendix K of the *Invasive Plant Management Plan* (NPS 2011b). Specifically, the following measure would be used to avoid unnecessary adverse impacts.

During the planning phase of invasive plant control activities, the National Park Service would determine whether special status plant species are present in the area. If special status species occur proximate to invasive plant control activities, botanists would develop site-specific mitigations to ensure no adverse effects on special status plant species.

As a result, the potential adverse effects of prescribed burning on special status species in sagebrush habitat would be local, short-term, and negligible to minor.

Impacts of Unplanned Wildland Fire – The effects of unplanned wildland fire on special status species under alternative B would be similar to those described for alternative A. However, it is

possible that fuel reduction actions taken in association with alternative B could reduce the potential intensity of an unplanned wildland fire. Nonetheless, the adverse effects would only be incrementally different than alternative A and the conclusions described for alternative A would apply to alternative B.

Cumulative Impacts

The cumulative impacts of alternative B would be similar to those described for alternative A because the cumulative benefits of other plans and projects would be the same. The potential adverse impacts of alternative B, like alternative A, would range from negligible to minor, but would be incrementally greater because of the potential for additional impacts associated with prescribed fire. The cumulative effect of alternative B on special status species would be long-term and beneficial.

Conclusion

There is no designated or proposed critical habitat for any federally listed species in Little Bighorn Battlefield National Monument. Thus, there would be no potential to adversely modify critical habitat under alternative B.

The effects of alternative B using all suppression methods in each of the species' habitat classifications would be the same as those described for alternative A.

For special status species in riparian/wetland and sagebrush habitats, the adverse effects would be related to manual trimming and would be local, short-term, and negligible to minor. In grassland habitats, the adverse effects would be associated with both manual trimming and prescribed burning and would also be local, short-term, and negligible to minor.

The cumulative impacts of alternative B would be similar to those described for alternative A because the cumulative benefits of other plans and projects would be the same, but the adverse contribution of alternative B would be incrementally greater because of the additional impacts associated with thinning and prescribed fire.

WILDLIFE

AFFECTED ENVIRONMENT

Mammals such as whitetail deer, cottontail rabbits, porcupines, skunks, coyotes, and foxes are present in the national monument. A growing colony of prairie dogs, with their associated commensurate wildlife species, lies adjacent to the northwest boundary of the Custer Battlefield unit of the national monument. Rattlesnakes and bull snakes represent 95% of the reptile population; bull snakes alone accounts for about three-quarters of all sightings. Birds frequently seen within the national monument include western meadowlark, robins, several species of sparrows, sharp tail grouse, and magpies.

An amphibian and reptile survey targeting 90% census of the amphibian and reptile inventory was completed in 2002 by the U.S. Geological Survey Northern Rocky Mountain Science Center. The survey yielded only a partial list of species present, due to the absence of standing water in the riparian corridor. A small mammal survey targeting 90% census of the small mammal inventory was completed by Dean Pearson of U.S. Department of Agriculture Forest Service Rocky Mountain Research Station in 2003. Although the survey yielded only a 40% census of the small mammal species, it contributed to the reptile species inventory by adding three new species. A fish survey was completed by the University of Montana Missoula in 2002 concluding the Little Bighorn River consisted primarily of native species and the species diversity represented considerable native biodiversity conservation value (Bramblett and Zale 2002).

METHODS

Impacts on wildlife were considered for all parts of the national monument that could be affected by fire management activities. The analysis recognizes that many wildlife species are highly mobile and can easily move beyond the national monument boundaries. Impact threshold definitions for wildlife and their habitats are as follows. The mitigation measures in chapter 2 would be implemented as part of the project and are accounted for in the analyses of effects, which are organized by fire management tool.

- *Negligible*: Wildlife would not be affected or the effects would be at or below the level of detection and so slight that they would not be of any measurable consequence to the population.
- *Minor*: Effects on individual animals and/or their respective habitats would be detectable, although the effects would be localized and would be small and of little consequence to the species' population.
- *Moderate*: Effects on individual animals and their habitat would be readily detectable, with consequences occurring at a local population level.
- *Major*: Effects on individual animals and their habitat would be obvious and would have substantive consequences on a population level.
- *Short-term*: Effects last less than one year
- *Long-term*: Effects last longer than one year

REGULATIONS AND POLICIES

Current regulations and policies related to the analyses of effects on wildlife in the national monument:

- Migratory Bird Treaty Act of 1918;

- Consolidated Natural Resources Act of 2008;
- *NPS-77: Natural Resources Management Guideline* (1991);
- *Management Policies 2006* (NPS 2006); and
- Montana Nongame and Endangered Species Conservation Act of 1973.

IMPACTS OF ALTERNATIVE A, NO ACTION (FIRE SUPPRESSION)

Analysis

Hand Crew and Engine Crew Suppression Methods – The effects of hand and engine crew fire suppression methods on wildlife would be similar because the primary impact would be disturbance of wildlife species by human presence and movements. However, because the suppression actions would be in response to an active unplanned wildfire, it is likely that wildlife would already be disturbed. Mobile species would likely disperse away from the fire area. As a result, the adverse impacts of alternative A suppression methods on wildlife would range from negligible to minor, and would be local and short-term.

Aircraft Suppression Method – While aircraft suppression would likely be supported by fire suppression crews on the ground, the effects of the hand and engine crews would be augmented by the impacts associated with the low-level aircraft flights and/or the hovering of helicopters. Mobile wildlife directly in the path of low-level aircraft overflights would likely disperse. However, because the low-level flights would be in response to an active fire on the ground, it is likely that mobile wildlife would have already dispersed. As a result, these impacts would be adverse, local, and short-term because of the short duration, intense disturbance from aircraft engines at low altitudes.

Impacts of Unplanned Wildland Fire – The effects of an unplanned fire on wildlife, aside from the effects of any kind of fire suppression, would be commensurate with the size of the fire, its duration, and the types of habitat burned. For ground nesting bird species, fire would not have an effect outside the nesting season. However, the adverse effect would be short-term, local, and up to minor if a nest was destroyed. Mobile species would experience negligible short-term adverse effects because they could escape from the effects of flames. More immobile species, if unable to find refuge, could experience up to minor adverse effects, including some individual mortalities, but the unplanned wildland fire in the national monument would not have population level effects.

Cumulative Impacts

The cumulative effects of other plans and projects combined with the impacts of alternative A on wildlife would be the same as those described for special status species. The primary differences between the wildlife and special status species impact topics are the agency characterizations conveying special status and the inclusion of plants in the special status species section. Otherwise, the cumulative effects of alternative A for wildlife would not differ from the cumulative impacts described for special status species.

Conclusion

The effects of hand and engine crew fire suppression methods on wildlife, primarily human presence and traffic, would be negligible to minor, local, and short-term. Aircraft suppression would be represented by the short duration, intense disturbance associated with aircraft engines at low altitudes, although wildlife would likely have already dispersed in reaction to the fire that aircraft would be attacking, so no additional effects would be likely.

The effects of unplanned wildland fire would be directly related to the size and duration of the fire with short-term impacts ranging from negligible to minor for mobile species and those outside breeding season. Up to minor adverse impacts would occur to immobile species unable to escape the fire or for ground-nesting birds with unhatched eggs or unfledged young.

The cumulative effects of alternative A for wildlife would not differ from the cumulative impacts described for special status species, namely long-term and beneficial.

IMPACTS OF ALTERNATIVE B, FIRE MANAGEMENT WITH FUELS REDUCTION AND PRESCRIBED FIRE

Analysis

Hand Crew, Engine Crew, and Aircraft Suppression Methods – The effects of alternative B using hand, engine crew and aircraft fire suppression methods would be the same as those described for alternative A. Because fire suppression methods used on unplanned fire would be the same under either alternative, there would be no difference in effects.

Manual Thinning Method – The effects of manual thinning on wildlife would be related to the disturbance caused by human presence and movement; noise generated by line trimmers, chain saws, or other hand-held power tools; and the amount and types of habitat that would be affected by thinning activities. Mobile wildlife species would likely disperse if in or near the area where thinning takes place. Planning would take into account the general breeding seasons of wildlife and avoid undertaking actions that would adversely affect reproduction and recruitment. Encounters with relatively immobile wildlife species such as amphibians or reptiles would be addressed by avoiding the individuals and discontinuing thinning operations in the immediate area surrounding the animal. The disturbance associated with manual thinning under alternative B would represent a short-term, local, negligible to minor adverse effect as wildlife would be forced to disperse or react to human activities and to local habitat alterations.

Prescribed Fire Method – Pre-fire monitoring to identify potential areas to be treated with prescribed fire would also identify sensitive resources, including breeding wildlife. As a result, the use of fire would not be used in keeping with the mitigation measures presented in appendix K of the *Invasive Plant Management Plan* (NPS 2011b). Specifically, two of the measures that would offset potential adverse effect to wildlife include:

Prescribed fire would only be used at sites where listed plants or animals are known to benefit from burning. Otherwise, fire would be excluded, either from certain areas or during certain times to prevent damage to listed plant or wildlife species habitat values.

Prescribed fire would not be used where species or plant communities would likely respond with an increase in weed species or where sensitive resources were present.

Implementing these measures would reduce potential adverse effects to nesting birds or other breeding wildlife species. Outside the breeding season, avian species would be able to fly away from a prescribed fire, avoiding adverse impacts. Thus, the adverse effects to wildlife species from the direct effects of fire would be minor, short-term and local, as population-level impacts would be absent.

Indirectly, fire could adversely affect some wildlife species because habitat and cover they rely upon would be lost by burning. This could result in decreased security cover and increased predation because less security cover would increase prey visibility for predators (Higgins *et al*. 1989). This effect on some wildlife species could include the potential of increased predation, a short-term, local, negligible to minor, adverse impact.

For larger wildlife browsers and grazers, prescribed burning would increase the amount of green forage available (Higgins *et al.* 1989). Additionally, burning in bluebunch wheatgrass, the dominant grassland species in the national monument, is reported to increase the nutritional content and digestibility of browse for wildlife (Norland *et al.* 1996). These prescribed fire effects would represent short-term, local, benefits to wildlife.

Impacts of Unplanned Wildland Fire – The effects of unplanned wildland fire on wildlife under alternative B would be similar to those described for alternative A. However, it is possible that fuel reduction actions taken in association with alternative B could reduce the potential intensity of an unplanned wildland fire. Nonetheless, the adverse effects would only be incrementally different than alternative A and the conclusions described for alternative A would apply to alternative B.

Cumulative Impacts

The cumulative effects of other plans and projects combined with the impacts of alternative B on wildlife would be basically the same as those described for special status species. The primary differences between the wildlife and special status species impact topics are the agency characterizations conveying special status and the inclusion of plants in the special status species section. Otherwise, the effects of alternative B for wildlife would not differ from the impacts described for special status species.

Conclusion

The effects of alternative B using hand and engine crew, and aircraft fire suppression methods would be the same as those described for alternative A.

The effects of manual thinning on wildlife under alternative B would represent a short-term, local, negligible to minor adverse effect because wildlife would be forced to disperse or react to human activities and the local alteration of habitat.

The adverse effects to wildlife species from the direct effects of fire, whether planned or not, would be minor, short-term and local, as population-level impacts would be absent. Indirect effects of prescribed fire would be a loss of cover, representing a short-term, local negligible to minor adverse impact and benefits associated with increased forage and increased the nutritional content and digestibility of browse.

The cumulative effects of alternative B for wildlife would not differ from the cumulative impacts described for alternative A, namely long-term and beneficial.

AIR QUALITY

AFFECTED ENVIRONMENT

With the Clean Air Act, Congress addressed the need to protect and enhance the quality of the nation's air resources and to deal with air pollution effects to public health and welfare. Most of the nation is identified as class II with regard to air quality protection and enhancement. However, national parks greater than 6,000 acres that existed before 1977 were automatically designated as class I, which conveys the highest level of protection and allows very little deterioration of air quality.

Because of its size, Little Bighorn Battlefield National Monument is a class II air quality area. Under the Clean Air Act, the U.S. Environmental Protection Agency established federal standards for pollutants from stationary and mobile sources. Goals include preventing significant deterioration in areas where air quality exceeds national standards, and improving air quality in areas that do not meet standards (known as nonattainment areas).

Federal land managers have an affirmative responsibility to protect the air quality related values and to consider whether any proposed major emitting facility within or outside the area would have an adverse effect on such values. As defined by the Federal Land Managers' Air Quality Related Values Workgroup (2008), an air quality related value is "A resource . . . that may be adversely affected by a change in air quality. The resource may include visibility or a specific scenic, cultural, physical, biological, ecological, or recreational resource . . . for a particular area."

National Ambient Air Quality Standards

The Clean Air Act requires the U.S. Environmental Protection Agency to set National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards; primary and secondary. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, and damage to animals, crops, vegetation, and buildings. Standards have been set for six principal pollutants, called "criteria" pollutants (USEPA 2010).

Air Quality at Little Bighorn Battlefield National Monument

The national monument participates in an air quality monitoring program conducted in conjunction with the National Atmospheric Deposition Program. Baseline air quality data are generated for the national monument from a weather monitoring station maintained by the Bureau of Indian Affairs. The air quality monitoring station records a variety of parameters, from wet and dry deposition of sulfate, nitrate, and ammonium to ozone, mercury, and visibility.

In general, the national monument experiences very little air pollution due to its remote location. Sources of pollution in the area include vehicle emissions, particulate matter transported by winds, and agricultural burning. To date, there have been no exceedances of prescribed class II air quality criteria under the ambient air quality standards. However, the collected data are used to analyze trends and determine if sensitive resources may be affected at pollutant concentrations below those established in the air quality standards.

The national monument is in the "Airshed 10 - Yellowstone" administrative unit of the Montana/Idaho Airshed Group. The National Park Service is a member of this air quality regulating and permitting agency. The group coordinates closely with the Montana Department of Environmental Quality in reviewing and approving burn and smoke permits. Burn permits are

required to be submitted on a quarterly basis for debris burning, while smoke permit applications are reviewed within the 24-hour period immediately preceding a planned burn. There are a number of detailed seasonal regulations associated with burn and smoke permits that need to be considered. Permit information would be included as part of the approved prescribed fire plan. More detailed information regarding the permitting process and responsibilities is on the Montana/Idaho Airshed Group website at: http://www.smokemu.org.

The national monument lies in a slight valley with an abundance of agricultural use in the region. Agricultural activities, including plowing and burning, in the spring and fall would be the most notable activities to impair viewsheds. Inversions in the area do not pose any problems for air quality (NPS 2005b).

Air quality impacts from wildland fires are distinguished from the air quality impacts from prescribed fires because emissions from these two sources have in the past been treated separately under the Clean Air Act and state fire regulations (Sandberg *et al*. 2002). The primary air pollutant from wildland and prescribed fire is smoke. Wildland fire can occur at any time of the year, and may occur when prevailing winds would move smoke into sensitive areas. Prescribed fires are generally designed so that smoke does not move into sensitive areas.

Smoke contains particulate matter, and it is difficult to measure the effects of smoke on a community because particulate standards are based on 24-hour and annual averages. Further, smaller smoke plumes may degrade air quality for only a few hours while large wildland fires may have smoke plumes that persist for several days or as long as the fire is active. In addition to particulate matter, globally, fires are a significant contributor of carbon dioxide and other greenhouse gasses in the atmosphere (Sandberg *et al*. 2002). Gas emissions are highly dependent on specific fire weather conditions, the size of the area burned, and fuel loads.

An air quality related value is a resource that may be adversely affected by a change in air quality. Air quality related values include visibility and specific scenic, cultural, physical, biological, ecological, or recreational resources. Research has identified certain air quality related values as sensitive, such as lakes with low acid-buffering capacity and plant species that display injury symptoms at ambient ozone concentrations. Little Bighorn Battlefield National Monument has three air quality related values known to be, or likely to be, sensitive to air pollution: visibility, vegetation, and wildlife (NPS 2007). Ozone-sensitive plants that occur at the national monument include spreading dogbane (*Apocynum androsaemifolium*), white sagebrush (*Artemisia ludoviciana*), common milkweed (*Asclepias syriaca*), green ash (*Fraxinus pennsylvanica*), chokecherry (*Prunus virginiana*), and skunkbush sumac (*Rhus trilobata*) (NPS 2007).

METHODS

Air quality was analyzed for both alternatives based on the effects of fire in Little Bighorn Battlefield National Monument. Impacts on air quality were evaluated using the process described in "Methods for Analyzing Impacts" and applying the mitigation measures in chapter 2.

The predicted intensities of adverse impacts are defined as follows:

- *Negligible:* No changes would occur or changes in air quality or air quality related values would be below or at the level of detection. If detected, effects would be slight with no perceptible consequences to health and visibility.
- *Minor:* Changes in air quality and air quality related values would be measurable. The changes would be small and the effects on health and/or visibility would be localized.

- *Moderate:* Changes in air quality and air quality related values would be readily apparent and measurable and would have consequences to health and/or visibility. Air quality mitigation measures would be necessary and would likely be successful.
- *Major:* Changes in air quality and air quality related values would be obvious and measurable, have substantial consequences to health and/or visibility, and be noticed regionally. Air quality mitigation measures would be necessary, though the success of the measures could not be guaranteed.
- *Short-term:* Air quality would recover in seven days or less following the action.
- *Long-term*: Air quality recovery would take more than seven days following the action.

REGULATIONS AND POLICIES

Current regulations and policies related to the analyses of effects on air quality in the national monument:

- Clean Air Act as amended in 1991;
- Consolidated Natural Resources Act of 2008;
- *NPS-77: Natural Resources Management Guideline* (1991)
- *Management Policies 2006* (NPS 2006); and
- Clean Air Act of Montana.

IMPACTS OF ALTERNATIVE A, NO ACTION (FIRE SUPPRESSION)

Analysis

Hand Crew, Engine Crew, and Aircraft Suppression Methods – The impacts of all the fire suppression methods under alternative A would have one common result; successful suppression of the fire. Fire suppression would represent a short-term, local, beneficial effect because the adverse impacts of smoke emissions on air quality would be eliminated. Pollutant transport, primarily particulate matter in the form of smoke, would be stopped and benefits to visibility, recreational pursuits, and respiratory health would result. There would be negligible effects on air quality associated with fire engine and / or aircraft emissions. These effects would be no greater than the short-term, local, negligible, baseline adverse impacts to air quality resulting from vehicles and aircraft that typically transit the region.

Impacts of Unplanned Wildland Fire – The intensity of the impacts of wildland fire on air quality would be directly related to the size, duration, and intensity of the fire; the type of fuels burned; and the local atmospheric conditions (including wind and weather). For unplanned wildfire the impacts on air quality would be related to smoke and particulate matter dispersed into the air. Wildland fire would adversely affect visibility, reductions in recreational values at scenic vistas, and potential health effects to residents and visitors with respiratory ailments. Because wildland fires in the national monument's habitats are typically small, fast-moving grassland fires, the adverse impacts would likely be negligible to minor, short-term, and local. There is a small potential for a larger event, driven by strong winds or during severe drought conditions, to have up to moderate regional adverse effects, as fire-generated pollutants were released to the atmosphere outside the national monument.

Cumulative Impacts

The other plans and projects identified in chapter 1 are primarily management and resource oriented plans and policies that assist the National Park Service in meeting the national monument's mandate now and in the future. As a result, these plans and policies would contribute beneficially to cumulative impacts on air quality by their inherent resource protection nature. The beneficial impacts of suppression activities on air quality would have a relatively minor contribution to the long-term beneficial cumulative effects on air quality under alternative A.

Conclusion

Fire suppression methods would have beneficial impacts on air quality because the release of particulate matter and visibility restrictions would be reduced. The use of fire trucks and aircraft would cause negligible adverse short-term impacts to air quality associated with combustion engine emissions. Unplanned wildland fire would have negligible to moderate (for a large event), adverse, short-term impacts on air quality in direct proportion to the intensity and extent of the fire.

The beneficial impacts of suppression activities on air quality would have a relatively minor contribution to the long-term, beneficial, cumulative effects on air quality under alternative A.

IMPACTS OF ALTERNATIVE B, FIRE MANAGEMENT WITH FUELS REDUCTION AND PRESCRIBED FIRE

Analysis

Hand Crew, Engine Crew, and Aircraft Suppression Methods – In the event of an unplanned wildfire at Little Bighorn Battlefield National Monument, the effects of alternative B on air quality using all fire suppression methods would be the same as those described for alternative A; primarily those effects would be beneficial, local, and short-term as particulate matter and smoke releases were controlled and suppressed.

Manual Thinning Method – The use of hand-held tools to reduce fuel loads, including gasoline-powered line trimmers and chain saws, would have negligible, local adverse impacts on air quality because of combustion engine emissions. Reduced fuel loads would have a beneficial impact on air quality in the event of either an unplanned or planned fire as reduced fuel loads would lead to lower smoke and particulate matter emissions from the fire, either unplanned or planned.

Prescribed Fire Method– In addition to the mitigation measures presented in chapter 2, appendix K of the *Invasive Plant Management Plan* (NPS 2011b) includes the following measures to reduce impacts of fire.

- There would be limits on the number of acres and amount of fuel burned as noted in the prescribed fire plans.
- The timing and method of ignition would be selected to limit effects on air quality.
- Burning during optimal fuel moisture conditions would limit effects on air quality.
- The use of prescribed fire would include increased communication, cooperation, and coordination with adjacent agencies and landowners to limit the number of fires occurring simultaneously.
- Prescribed fire plans would be developed for each prescribed fire. Appropriate signs would be posted if smoke would affect roads or designated visitor areas (such as visitor centers or

campgrounds) and the appropriate authorities would be contacted regarding other measures to limit smoke or decreased visibility.

The measures to manage prescribed fires, including the measures to protect air quality presented above, would limit fire intensity and extent. Fire impacts under alternative B would be decreased visibility, increased airborne particulate matter, and potentially increased respiratory effects to persons downwind. Considering the limitations on burning, the adverse impacts of alternative B prescribed fire would not exceed negligible to minor, local, short-term impacts to air quality.

Impacts of Unplanned Wildland Fire – The effects of unplanned wildland fire on air quality under alternative B would be similar to those described for alternative A. However, it is possible that fuel reduction actions taken in association with alternative B could reduce the potential intensity of an unplanned wildland fire. Nonetheless, the adverse effects would only be incrementally different than alternative A and the conclusions described for alternative A would apply to alternative B.

Cumulative Impacts

The cumulative effects of alternative B on air quality would not differ from those described for alternative A, with the exception of negligible emissions from hand-held power tools used to thin vegetation.

Conclusion

Fire suppression methods would have impacts on air quality similar to those described for alternative A, namely beneficial and short-term. Engine emissions from fire trucks, aircraft, and hand-held power tools would cause negligible, adverse, short-term impacts to air quality. Thinning would have beneficial effects to air quality as a result of reduced particulates and less smoke. The impacts of unplanned wildland fire would have negligible to moderate, adverse, short-term impacts on air quality, with the effects being directly proportional to the intensity, duration, and extent of the fire.

Considering the mitigation measures that would be implemented, the adverse impacts of alternative B prescribed fire would not exceed negligible to minor, local, short-term impacts to air quality.

The beneficial impacts of suppression activities on air quality would have a relatively minor contribution to the long-term beneficial cumulative effects on air quality under alternative B.

VISITOR USE AND EXPERIENCE

AFFECTED ENVIRONMENT

Little Bighorn Battlefield National Monument is located in southeastern Montana, near Interstate 90. The national monument's visitor center is located near the entry and includes a bookstore, orientation movie, museum, and a visitor center. Many visitors are traveling to or from Black Hills attractions or Yellowstone National Park, and most arrive in family groups and are from western states (NPS 2011a). The average duration of a visit is 1.5 to 2 hours, and most visitors observe the national monument from the northern end, near the national cemetery and Last Stand Hill. Fewer visitors travel the tour road to Reno-Benteen Battlefield and back (Stops, personal communication 2012). The national monument offers self-guided opportunities with the use of many interpretive signs, guided tours hosted by national monument rangers, and a cell phone audio tour. Hiking trails, picnic tables, and auto touring are also available for visitors.

Over the past 10 years, annual visitation has averaged about 333,000 visitors, with a peak of 425,995 visitors in 2002 and a low of 282,233 in 2008 (NPS 2012b). As shown in figure 5, the number of monthly visits is particularly low during the offseason months of November through March. Visitation rises during the spring before peaking in the warmer months of June through September, and then quickly declines in the fall (NPS 2012b). Several events create spikes in visitation, including the anniversary of the battle, the Crow Fair, the Sturgis Motorcycle Rally in South Dakota, July 4th, Memorial Day, and Labor Day.

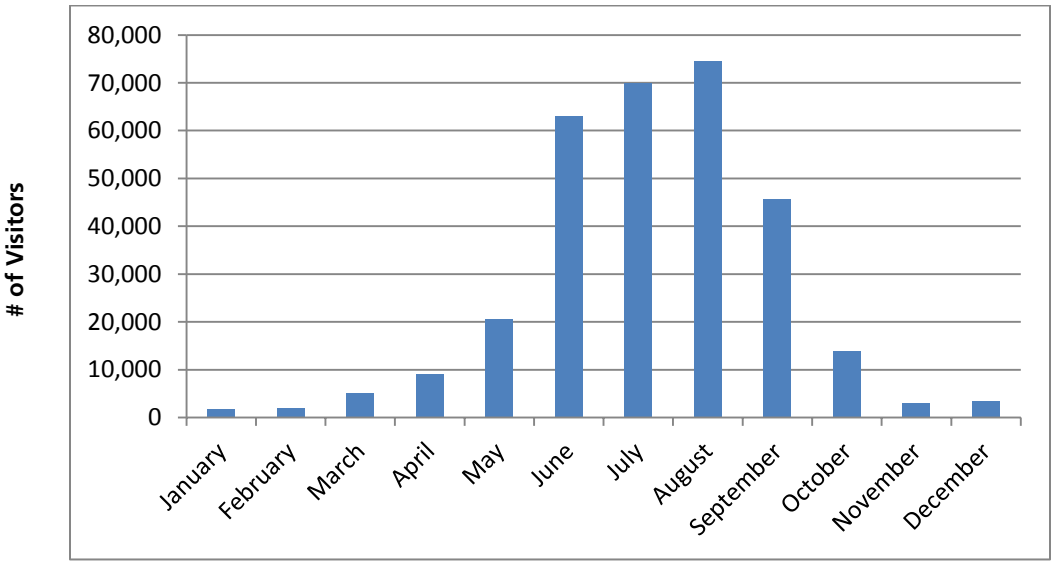


Figure 5: National Monument Visitation Statistics for 2011

METHODS

The impact on the ability of the visitor to experience a full range of national monument resources was analyzed by examining resources mentioned in the national monument significance statement. The following definitions are used to define intensity levels:

Negligible: Visitors would not be affected or changes in visitor use and/or experience would be below or at the level of detection. The visitor would not likely be aware of the effects associated with the alternative.

Minor: Changes in visitor use and/or experience would be detectable, although the changes would be slight. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.

Moderate: Changes in visitor use and/or experience would be readily apparent. The visitor would be aware of the effects associated with the alternative and would likely be able to express an opinion about the changes.

Major: Changes in visitor use and/or experience would be readily apparent. The visitor would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.

Short-term: Effects would occur only during and shortly after a specified action or treatment.

Long-term: Effects would persist well beyond the duration of a specified action or treatment, or would not be associated with a particular action.

REGULATIONS AND POLICIES

Current regulations and policies associated with visitor use and experience include the following:

- Americans with Disabilities Act;
- Architectural Barriers Act;
- 1998 Executive Summary to Congress;
- Little Bighorn National Monument enabling legislation;
- National Parks and Recreation Act of 1978;
- *Management Policies 2006* (NPS 2006);
- National Park Service Organic Act; and
- Rehabilitation Act

IMPACTS OF ALTERNATIVE A, NO ACTION (FIRE SUPPRESSION)

Analysis

Hand Crew and Engine Crew Suppression Method– Implementation of these methods in response to the burning of unplanned fires could result in temporary disruption of access and use to national monument visitors in certain areas, including roads, visitor facilities, or other interpretive areas. Due to the limited accessibility of the national monument on Battlefield Road and because most visitors spend less than two hours in the national monument, these temporary closures would result in short-term negligible to moderate adverse effects to visitor use depending on the time of year, location, and the duration of the closure.

Aircraft Suppression Method– Similar to hand crew and engine fire suppression methods, use of the aircraft suppression method to control unplanned fire could result in temporary disruption of access by and use of the national monument by visitors. These temporary closures would result in short-term, negligible to moderate, adverse effects, depending on the time of year, location, and duration of the closures. Additionally, aircraft use would increase noise levels within portions of the national monument. Aircraft noise intrusions would be short-term, minor to moderate, and adverse, depending on the visitor's distance from the area being treated and the number of aircraft in operation.

Impacts of Unplanned Wildland Fire – Possible impacts to visitor use and experience during an unplanned fire event would include reduced visibility, adverse health and safety effects, temporary road closures, and noise intrusions (depending on suppression methods). Depending on an individual's sensitivity and location, these impacts would produce short-term, negligible to moderate, adverse effects.

Following an unplanned wildfire, possible impacts to visitor use and experience would include altered viewsheds, potential loss of interpretative media, and increased interpretative opportunities. Impacts to viewsheds and interpretive media would be short-term and negligible to minor, depending on the severity of damage. Interpretive opportunities could educate visitors about the national monument's fire adapted ecosystem and resource management goals, providing long-and short-term beneficial effects.

Cumulative Impacts

The other plans and projects identified in chapter 1 are primarily management and resource oriented plans and policies that assist the National Park Service in meeting the national monument's mandate now and in the future. As a result, these plans and policies would contribute beneficially to cumulative impacts on visitor use and experience inherently.

Natural resource management activities, including management of invasive species would continue to provide long-term beneficial effects to visitor use and experience.

Rehabilitation of the Battlefield Tour Road would provide visitors with better access, safety, and viewing opportunities. These improvements would include rehabilitating, restoring, resurfacing, and reconstructing the road. During construction, there could be temporary road closures that would most likely occur during the off-season and would result in short-term, minor to moderate adverse impacts. Long-term impacts to visitor use and experience from the road improvements would be beneficial.

When the short-term minor to moderate adverse and long-term beneficial effects of other past, on-going, and future plans, projects, and activities affecting visitor use and experience are combined with the short-term negligible to moderate adverse and long- and short-term beneficial effects under alternative A, the cumulative effects would be short-term, negligible to moderate, adverse and long- and short-term beneficial. The beneficial and adverse effects of alternative A would contribute slightly to the beneficial and adverse cumulative impact.

Conclusion

Alternative A would have short-term negligible to moderate adverse and long-and short-term beneficial effects on visitor use and experience. When the short-term minor to moderate adverse and long-term beneficial effects of other past, on-going, and future plans, projects, and activities affecting visitor use and experience are combined with the short-term negligible to moderate adverse and long- and short-term beneficial effects under alternative A, the cumulative effects would be short-term negligible to moderate adverse and long-and short-term beneficial. The beneficial and adverse effects of alternative A would contribute slightly to the beneficial and adverse cumulative impact.

IMPACTS OF ALTERNATIVE B, FIRE MANAGEMENT WITH FUELS REDUCTION AND PRESCRIBED FIRE

Analysis

Hand Crew, Engine Crew, and Aircraft Suppression Method and Unplanned Wildfire – The impacts of unplanned wildland fire and suppression efforts on visitor use and experience under alternative B would be the same as those described for alternative A for the same reasons. Short-term impacts would be negligible to moderate and both adverse and beneficial. Long-term impacts would be beneficial.

Manual Thinning Method – Thinning of vegetation to reduce fuel load prior to a prescribed fire or during an unplanned fire would utilize hand-operated mechanized tools. Use of these tools would result in noise intrusions to the visitor experience. However, if manual thinning was taking place during an unplanned fire, the area would most likely be closed to visitors and would therefore not impact their experience. The noise intrusions produced from the use of mechanized hand-tools prior to a prescribed fire would result in short-term, negligible to minor impacts to visitor use and experience depending on their proximity to the area being thinned. Any temporary closures associated with manual thinning would have similar impacts to those closures described under alternative A and would be short-term, negligible to moderate, adverse impacts.

Visual impacts to the visitor experience from manual thinning would be associated with the presence of work crews and the visual evidence of the manual thinning. Grassland and shrub thinning would be targeted towards invasive vegetation species. At times, swaths of grasslands may be cut to control the spread of an unplanned or prescribed fire. These swath cuts would be temporarily noticeable to national monument visitors until the grasses grew back. Due to their temporary nature, the visual presence of work crews and visual evidence of manual thinning on the landscape would result in short-term, negligible to minor, adverse impacts to the visitor experience.

Prescribed Fire Method – Prescribed fires would occur on a small scale and would be in contained areas within the national monument. They would be planned in accordance with weather conditions and lower visitation times to minimize road closures, impacts to health and safety, and concession activities. Any temporary closures would have similar impacts to those closures described above and under alternative A, which would be short-term, negligible to moderate adverse effects. Other possible impacts to visitor use and experience would be similar to those described for unplanned fires under alternative A; however, due to planning efforts prior to a prescribed fire and their contained nature, impacts to visitor use and experience would be short-term, negligible to minor, and adverse.

Following a prescribed fire, impacts to visitor use and experience would include the visual evidence of the fire. Prescribed fire would be limited to grasslands and silver sagebrush and would be used to preserve the cultural landscape and maintain or restore ecosystem elements. Grassland and shrub habitat would recover quickly and therefore visual impacts to the visitor experience from prescribed fire would be short-term, minor, and adverse. The long-term effects of prescribed fire would result in beneficial effects to visitor experience from the preservation of the cultural landscape and ecosystem restoration.

Impacts to the visitor experience from the use of prescribed fire as a temporary fuel reduction action for resource protection during an unplanned fire would be similar to those impacts described from unplanned wildfire under alternative A.

Impacts of Unplanned Wildland Fire – The effects of unplanned wildland fire on visitor use and experience under alternative B would be similar to those described for alternative A. However, it is possible that fuel reduction actions taken in association with alternative B could reduce the potential

intensity of an unplanned wildland fire. Nonetheless, the adverse effects would only be incrementally different than alternative A and the conclusions described for alternative A would apply to alternative B.

Cumulative Impacts

Past, current, and foreseeable future actions within and outside the national monument that cumulatively could impact visitor use and experience would be the same as those described for alternative A. Collectively, these other actions would have short-term minor to moderate adverse and long-term beneficial effects on visitor use and experience.

Conclusion

Alternative B would have short-term negligible to moderate adverse and long- term beneficial effects on visitor use and experience. When the short-term minor to moderate adverse and long-term beneficial effects of other past, on-going, and future plans, projects, and activities affecting visitor use and experience are combined with the short-term negligible to moderate adverse and long- term beneficial effects under alternative B, the cumulative effects would be short-term negligible to moderate adverse and long- term beneficial. The beneficial and adverse effects of alternative B would contribute slightly to the beneficial and adverse cumulative impact.

HEALTH AND SAFETY

AFFECTED ENVIRONMENT

The health and safety of visitors, fire personnel, national monument staff, and adjacent landowners is a high priority of the National Park Service. Wildland fires and other fire management activities can present risks to the public, firefighters, and national monument staff. Fire could affect either the public or firefighters when an individual is burned, trapped by fire, or inhales smoke. In addition, there are hazards associated with fighting a fire or reducing fuels, including being hit by falling rocks or trees, suffering accidents with firefighting tools or equipment, tripping or falling, or suffering vehicular accidents.

No deaths or serious injuries to visitors, adjacent property owners, national monument staff, or firefighters from fire management activities have occurred at Little Bighorn Battlefield National Monument.

METHODS

The larger context for analyzing the impact of each alternative on public health and safety is established by the legislation establishing the national monument, as well as *Management Policies* (NPS 2006). NPS policies provide service-wide guidelines and mandates for public health and safety. The saving of human life takes precedence over all other management actions as the National Park Service strives to protect human life. The National Park Service does this within the constraints of the 1916 Organic Act. The primary—and very substantial—constraint imposed by the Organic Act is that discretionary management activities may be undertaken only to the extent that they will not impair park resources and values.

Effects on public health and safety were evaluated and determined qualitatively based on the professional judgment of NPS staff and consultants. The primary sources of information used in this analysis included existing national monument management documents, NPS policy documents, and unpublished observations and insights from knowledgeable national monument staff.

The predicted intensity of impacts was based on the following criteria:

Negligible: Public health and safety would not be affected, or the effects would be at low levels of detection and would not have an appreciable effect on public health or safety.

Minor: The effect would be detectable, but would not have an appreciable effect on public health and safety.

Moderate: The effects would be readily apparent and would result in substantial, noticeable effects to public health and safety.

Major: The effects would be swiftly apparent and would result in substantial, noticeable effects to public health and safety.

Short-term: Effects would occur only during and shortly after a specified action or treatment.

Long-term: Effects would persist well beyond the duration of a specified action or treatment, or would not be associated with a particular action.

REGULATIONS AND POLICIES

Current regulations and policies associated with health and safety include the following:

- Director's Order #50 and *Reference Manual 50, Safety and Health*;

- Director's Order #58 and *Reference Manual 58, Structural Fire Management*;
- Director's Order #83 and *Reference Manual 83, Public Health*;
- Director's Order #51 and *Reference Manual 51, Emergency Medical Services*;
- Director's Order #30 and *Reference Manual 30, Hazard and Solid Waste Management*;
- *Management Policies 2006* (NPS 2006); and
- Occupational Safety and Health Administration regulations in 29 *Code of Federal Regulations*.

IMPACTS OF ALTERNATIVE A, NO ACTION (FIRE SUPPRESSION)

Analysis

Hand Crew, Engine, and Aircraft Suppression Method – The health and safety of visitors, fire personnel, national monument staff, and adjacent landowners are high priorities of the National Park Service. In keeping with these priorities, fire suppression methods would be selected based on fire conditions and the safety consideration. Implementation methods would be performed by trained staff, using the appropriate safety gear and tools, and would follow safety procedures laid out by both the national monument and the Crow Agency Bureau of Indian Affairs. Implementation of hand crew and engine suppression methods would require that fire fighting personnel be in closer to an unplanned fire than during implementation of aircraft suppression methods. However, while the use of aircraft would distance personnel from the fire, the use of the aircraft itself would provide some inherent risk and therefore impacts from all three suppression methods would be similar. Due to safety procedures and the use of trained personnel, impacts to the health and safety of firefighting and national monument personnel would be short-term, minor, and adverse.

In the event of an unplanned fire, the impacted areas of the national monument would be temporarily closed to visitors and any visitors within these areas would be safely escorted out of the area. National monument and fire fighting staff would monitor the fire to establish safe boundaries for firefighting crews, national monument staff, and public visitors. As a result, impacts to visitor health and safety from these fire suppression methods would be short-term, negligible, and adverse. The suppression of unplanned wildfires would reduce the duration and extent of a fire and would result in long-term beneficial effects to health and safety within the national monument.

Impacts of Unplanned Wildland Fire – During an unplanned wildfire event, impacted areas of the national monument that were deemed unsafe for visitors would be temporarily closed and any visitors in these areas would be escorted to safety. As a result, impacts to visitors and national monument staff would be short-term, negligible, and adverse.

Smoke and particulate matter in the atmosphere resulting from an unplanned wildfire at the national monument could affect the respiratory systems and vision of national monument staff and visitors. The severity of the fire's effect would depend on each individual's sensitivity to these irritants. It is assumed that the duration of their exposure would range from a few hours to a full day (fires in this region rarely burn for more than a day). Due to closures of the immediate area and the short duration of most fires within the national monument, smoke exposure from unplanned wildfire under alternative A would have short-term, negligible to minor, adverse effects on health and safety.

Cumulative Impacts

The other plans and projects identified in chapter 1 are primarily management and resource oriented plans and policies that assist the National Park Service in meeting the national monument's mandate

now and in the future. As a result, these plans and policies would contribute beneficially to cumulative impacts on health and safety inherently.

The recent and future rehabilitation of the Battlefield Tour Road would result in long-term impacts on both visitor and national monument staff health and safety. These improvements would improve visitor safety in parking areas and along the road where lanes were widened and shoulders were improved. These improvements would result in long-term beneficial impacts to health and safety.

In the event of a structural fire, proposed actions to update the fire suppression sprinkler systems in some of the national monument facilities would result in long-term, beneficial impacts to national monument staff and visitor health and safety.

The 2012 *Interagency Standards for Fire and Fire Aviation Operations* and Memorandum of Understanding between the Bureau of Indian Affairs, the Crow Indian Agency and the National Park Service, Little Bighorn Battlefield National Monument outline principles and policy statements and interagency cooperation in place for fire prevention, preparedness, suppression and related fire management activities. These safety standards provide long-term beneficial impacts to health and safety within the national monument in regards to fire management and fire suppression.

When the long-term beneficial effects of other past, on-going, and future plans, projects, and activities affecting visitor health and safety are combined with the short-term negligible to minor adverse and long-term beneficial effects under alternative A, the cumulative effects would be short-term, negligible to minor, adverse and long-term beneficial.

Conclusion

Alternative A would have short-term, negligible to minor, adverse and long-term beneficial effects on health and safety in the national monument. When the long-term beneficial effects of other past, on-going, and future plans, projects, and activities affecting visitor health and safety are combined with the effects under alternative A, the cumulative effects would be short-term, negligible to minor, adverse and long- term beneficial.

IMPACTS OF ALTERNATIVE B, FIRE MANAGEMENT WITH FUELS REDUCTION AND PRESCRIBED FIRE

Analysis

Hand Crew, Engine, and Aircraft Suppression Method and Unplanned Wildfire – Under alternative B, the impacts of unplanned wildland fire and suppression efforts on health and safety within the national monument would be the same as those described for alternative A for the same reasons. Impacts would be short-term, negligible to minor adverse and long-term beneficial.

Manual Thinning Method – Manual thinning of vegetation with hand-operated tools to reduce fuel load prior to a prescribed fire would be completed by trained national monument staff. The area being thinned would be closed to national monument visitors if there were any risk associated with the debris. As a result, impacts to health and safety from manual thinning of vegetation would be short-term, negligible, and adverse.

Manual thinning of vegetation to reduce fuel load during an unplanned fire could be completed by fire fighting staff from Crow Agency Bureau of Indian Affairs and/or national monument staff. Impacts associated with manual thinning would be similar to those described under alternative A for hand crew, engine, and aircraft fire suppression methods. Staff implementing the manual thinning would be trained and the area being thinned would be temporarily closed to visitors. For these

reasons impacts to the health and safety of firefighting and national monument personnel during an unplanned wildfire would be short-term, minor, and adverse.

Implementation of manual thinning would help control a prescribed fire, and/or reduce the duration and extent of an unplanned wildfire and therefore result in long-term beneficial effects to health and safety.

Prescribed Fire Method – Prescribed fires would be planned to minimize impacts to health and safety and the risk of the fire expanding beyond the intended boundaries. Prescribed fires would be conducted with trained fire fighting staff from Yellowstone National Park and/or other nearby NPS units. Due to planning efforts, use of interagency and National Park Service safety procedures, application of mitigation measures, and use of trained personnel, impacts to the health and safety of firefighting and national monument personnel from prescribed fire would be short-term, minor, and adverse.

During a prescribed fire event, affected areas of the national monument would be temporarily closed. As a result impacts to visitors and national monument staff would be short-term, negligible, and adverse.

Impacts from the smoke and particulate matter in the atmosphere resulting from a prescribed fire would be similar to those described under alternative A for unplanned wildfire. However, prescribed fires could be smaller and burn for less time than unplanned fires. Impacts to health and safety would vary based on an individual's sensitivity and proximity to smoke or other irritants but typically would be short-term, negligible to minor, and adverse.

The use of prescribed fire would help reduce fuels and could minimize the frequency and intensity of an unplanned wildlife and, therefore, result in long-term beneficial effects to health and safety.

Impacts of Unplanned Wildland Fire – The effects of unplanned wildland fire on health and safety under alternative B would be similar to those described for alternative A. However, it is possible that fuel reduction actions taken in association with alternative B could reduce the potential intensity of an unplanned wildland fire. Nonetheless, the adverse effects would only be incrementally different than alternative A and the conclusions described for alternative A would apply to alternative B.

Cumulative Impacts

Past, current, and foreseeable future actions within and outside the national monument that cumulatively could impact health and safety within the national monument would be the same as those described for alternative A. Collectively, these other actions would result in long-term beneficial cumulative impacts on health and safety within the national monument.

When the long-term beneficial effects of other past, on-going, and future plans, projects, and activities affecting visitor use and experience are combined with the short-term negligible to minor adverse and long-term beneficial effects under alternative B, the cumulative effects would be short-term negligible to minor adverse and long-term beneficial.

Conclusion

Alternative B would have short-term negligible to minor adverse and long-term beneficial effects on health and safety within Little Bighorn Battlefield National Monument. When the long-term beneficial effects of other past, on-going, and future plans, projects, and activities affecting visitor use and experience are combined with the short-term negligible to minor adverse and long- term beneficial effects under alternative B, the cumulative effects would be short-term negligible to minor adverse and long- term beneficial.

PARK OPERATIONS

AFFECTED ENVIRONMENT

Little Bighorn Battlefield National Monument employs approximately 25 administrative, resource and visitor protection, maintenance, interpretive, and resource management personnel. Additionally, Apsaalooke Tours and Western National Parks Association are concessions that operate within the national monument and offer daily guided tours seasonally and operate the bookstore, respectively.

Under the 2010 memorandum of understanding between the Bureau of Indian Affairs, Crow Indian Agency, and the National Park Service, Little Bighorn Battlefield National Monument, there is a shared responsibility to adequately protect the timber, range, watersheds, and other natural resources within their respective jurisdictions. The memorandum outlines the interagency cooperation in place for fire prevention, preparedness, suppression, and related fire management activities and provides that the Crow Agency Bureau of Indian Affairs assist with the initial attack of any wildland fire on the national monument.

Typically, the national monument maintains one or two staff with fire training. Additional staff and equipment are typically provided by the Crow Agency Bureau of Indian Affairs. Additional national monument staff are responsible for traffic control, visitor evacuations, and any other tasks indirectly associated with fire management activities. The chief ranger at the national monument reports directly to the national monument superintendent and is responsible for the fire management program. Prior to each fire season, the fire management officer of Crow Agency and the chief ranger of Little Bighorn Battlefield National Monument review wildland fire plans, aviation management plans, and other items.

During the fire season, the chief ranger and Crow Agency Bureau of Indian Affairs Forestry are in regular contact and provide fire danger rating values for staff and program readiness. Additionally, the fire program at Yellowstone National Park advises the national monument on how to meet future needs as a fire season progresses. Yellowstone National Park, in addition to other nearby NPS units, can furnish fire fighting personnel and equipment when necessary. Both the superintendent and chief ranger have the authority to take necessary measures such as securing additional equipment and hiring personnel during periods of elevated fire danger.

METHODS

Effects on park operations were evaluated qualitatively based on the professional judgment of NPS staff and consultants. The primary sources of information used in this analysis included existing national monument management documents, NPS policy documents, and unpublished observations and insights from knowledgeable national monument staff.

The predicted intensity of impacts was based on the following criteria:

Negligible: National monument and Bureau of Indian Affairs operations would not be affected, or effects would not be perceptible or measurable outside normal variability.

Minor: Effects would be measurable, but would not appreciably change national monument or Bureau of Indian Affairs operations. They may be perceived by national monument staff and/or Bureau of Indian Affairs staff, but probably not by visitors.

Moderate: Effects would be readily apparent and would result in a substantial change in national monument or Bureau of Indian Affairs operations, or would result in a situation that would be noticed by many national monument visitors.

Major: Effects would be readily apparent, with a substantial change in national monument or Bureau of Indian Affairs operations in a manner that would be noticed by national monument visitors as markedly different from existing operations.

Short-term: Effects would occur only during and shortly after a specified action or treatment.

Long-term: Effects would persist well beyond the duration of a specified action or treatment, or would not be associated with a particular activity.

REGULATIONS AND POLICIES

Current regulations and policies associated with park operations include:

- Management Policies 2006 (NPS 2006), and
- Little Bighorn National Monument enabling legislation.

IMPACTS OF ALTERNATIVE A, NO ACTION (FIRE SUPPRESSION)

Analysis

Hand Crew, Engine, and Aircraft Suppression Method – Implementation of these fire suppression methods would require varying numbers of staff depending on the location and magnitude of the fire. The Crow Agency Bureau of Indian Affairs would provide most of the fire fighting staff; however, national monument staff with fire operations credentials may be pulled off normal duties to participate in fire operations. Additional staff may fill a variety of needs from traffic control to visitor safety depending on the proximity of the fire to roads and other visitor use areas. This could result in staff shortages that would usually be addressed through staff rescheduling.

Some NPS staff (interpretive and maintenance) work daily schedules that are driven by posted service hours or activities scheduled with the public; therefore the ability to travel from offices to work sites is important. Implementation of fire suppression methods under alternative A could result in road closures or areas put off-limits due to smoke, thus hampering staff ability to travel to work locations. This could potentially disrupt visitor services, or staff ability to accomplish projects.

Impacts to park operations under alternative A would be primarily associated with disruption of daily work schedules. However, these disruptions would be temporary (a few minutes to several hours) and would result in short-term negligible to moderate adverse impacts on park operations.

Should fire events result in temporary road closures, concession staff members may not be able to access work or important visitor use areas. Traffic impacts may cause delays or cancellation of tours offered by concessioners. Although a closure could occur as a worst-case scenario, implementing hand crew, engine, and aircraft fire suppression methods under alternative A would have a negligible to minor adverse impact on concessions.

Impacts of Unplanned Wildland Fire – Fire has the potential to disrupt all aspects of park operations. The severity of the disruption would depend on the size, location, and intensity of the fire. Under alternative A, suppression of all wildfires would continue, requiring staff resources from the national monument and Crow Agency Bureau of Indian Affairs.

Smoke and particulate matter in office spaces and at work sites may disrupt employee ability to accomplish normal work tasks. The duration of their exposure could range from a few hours to a full workday (fires in this region rarely burn for more than a day). Smoke exposure from unplanned wildfire under alternative A would have short-term negligible to moderate adverse effects on park operations.

Cumulative Impacts

The other plans and projects identified in chapter 1 are primarily management and resource oriented plans and policies that assist the National Park Service in meeting the national monument's mandate now and in the future. As a result, these plans and policies would contribute beneficially to cumulative impacts on park operations inherently.

The national monument participates in numerous national and regional collaborative processes to improve the use of physical resources and knowledge of fire management tools. Continued coordination with national and regional organizations would provide long-term beneficial effects to fire management in the national monument and in the surrounding region/state.

Resurfacing and other improvements to the Battlefield Tour Road would provide national monument staff and visitors with better access and safety. These improvements would widen the road and improve traffic safety when firefighting equipment was present. Resurfacing the physical road structure would reduce potential impacts from heavy equipment used for fire management activities, and would reduce maintenance efforts. National monument road improvements would cause long-term beneficial effects to park operations.

When the short-term minor adverse and long-term beneficial effects of other past, on-going, and future plans, projects, and activities affecting park operations are combined with the short-term negligible to moderate adverse impacts under alternative A, the cumulative effects would be short-term minor to moderate adverse and long-term beneficial. The short-term negligible to moderate adverse effects of alternative A would contribute slightly to the beneficial and adverse cumulative impact.

Conclusion

Alternative A would have short-term negligible to moderate adverse effects on park operations. When the short-term minor adverse and long-term beneficial effects of other past, on-going, and future plans, projects, and activities affecting park operations are combined with the short-term negligible to moderate adverse impacts of alternative A, the cumulative effects would be short-term minor to moderate adverse and long-term beneficial. The short-term negligible to moderate adverse effects of alternative A would contribute slightly to the beneficial and adverse cumulative impact.

IMPACTS OF ALTERNATIVE B, FIRE MANAGEMENT WITH FUELS REDUCTION AND PRESCRIBED FIRE

Analysis

Hand Crew, Engine, and Aircraft Suppression Methods – The impacts of unplanned wildland fire and fire suppression efforts on park operations under alternative B would be the same as those described for alternative A for the same reasons. Impacts would be short-term, negligible to moderate, and adverse.

Manual Thinning Method – Manual thinning of vegetation with hand-operated tools to reduce fuel load prior to a prescribed fire would be completed by national monument staff and Yellowstone National Park staff. The number of staff required would depend on the location and the area to be thinned. Prior to any thinning activities, the need for using fuel reduction techniques would be determined in consultations between the NPS resource management specialist(s), an NPS fire ecologist(s), and a fire management officer. Manual thinning activities would occur for only a few days each season and would be similar in practice to other facility landscape maintenance activities. As a result, impacts to park operations would be short-term, negligible to minor, and adverse.

Manual thinning of vegetation to reduce fuel load during an unplanned fire could be completed by fire fighting staff from Crow Agency Bureau of Indian Affairs and/or national monument staff. The number of staff to be used would depend on the location, magnitude of the fire, and the area to be thinned. While this task would take about one day, this could result in staff shortages that could typically be addressed by rescheduling staff assignments. As a result, impacts to park operations would be short-term, negligible to minor, and adverse.

Following manual thinning activities, both short- and long-term monitoring of fuel reductions would be conducted by national monument staff. Monitoring activities would be conducted by natural resource and fire ecologist staff and would require about a day, intermittently for varying intervals of time following the fire. As a result, impacts to park operations from monitoring activities of manual thinning would be short- and long-term, negligible to minor, and adverse.

Prescribed Fire Method – Prescribed fires would be planned based on weather to minimize road closures, impacts to health and safety, and concession activities. Prescribed fires would be conducted with fire fighting staff from Yellowstone National Park and/or other nearby NPS units. During a prescribed fire, national monument staff may fill a variety of needs including traffic control, monitoring, and visitor safety, depending on the proximity of the prescribed fire to roads and other visitor use areas. This could result in staff shortages that would usually be addressed by rescheduling staff priorities. Impacts to park operations would primarily be associated with disruption of daily work schedules to manage the prescribed fire. However, these temporary disruptions would be known in advance and would be limited to a small area of the national monument. As a result, impacts to park operations would be short-term, negligible to minor, and adverse.

Impacts of Unplanned Wildland Fire – The effects of unplanned wildland fire on park operations under alternative B would be similar to those described for alternative A. However, it is possible that fuel reduction actions taken in association with alternative B could reduce the potential intensity of an unplanned wildland fire. Nonetheless, the adverse effects would only be incrementally different than alternative A and the conclusions described for alternative A would apply to alternative B.

Cumulative Impacts

Past, current, and foreseeable future actions within and outside the national monument that cumulatively could impact park operations would be the same as those described for alternative A. Collectively, these other actions are having short-term minor adverse and long-term beneficial cumulative impacts on park operations.

When the short-term minor adverse and long-term beneficial effects of other past, on-going, and future plans, projects, and activities affecting park operations are combined with the short-and long-term, negligible to minor, and adverse impacts under alternative B, the cumulative effects would be short-and long-term negligible to minor adverse and long-term beneficial. The short-and long-term negligible to minor adverse effects of alternative B would contribute slightly to the beneficial and adverse cumulative impact.

Conclusion

Alternative B would have short-and long-term negligible to minor adverse effects on park operations. When the short-term minor adverse and long-term beneficial effects of other past, on-going, and future plans, projects, and activities affecting park operations are combined with the short-and long-term negligible to minor adverse impacts under alternative B, the cumulative effects would be short-and long-term negligible to minor adverse and long-term beneficial. The short-and long-term negligible to minor adverse effects of alternative B would contribute slightly to the beneficial and adverse cumulative impact.

Chapter 4: Consultation and Coordination

SCOPING PROCESS AND PUBLIC INVOLVEMENT

Scoping is an early and open process used to determine the breadth of environmental issues and alternatives to be addressed in an environmental assessment and assessment of effect. Little Bighorn Battlefield National Monument conducted both internal scoping with appropriate NPS staff and external scoping with the public and interested and affected groups and agencies. Copies of the scoping notice, press release, letters to agencies and tribes are included in appendix C.

INTERNAL SCOPING

An internal scoping meeting was held on January 5, 2012 at Little Bighorn Battlefield National Monument. Participants included the project interdisciplinary team and representatives from the NPS Denver Service Center and the consultant preparing the environmental assessment. Products included the clarification of the project scope and features, information on site visit findings, scoping and consultation, definition of the action alternative, determination of the relevant impact topics, and identification of issues.

EXTERNAL SCOPING

The following actions were taken to inform the public about the intent to prepare this National Environmental Policy Act environmental assessment for Little Bighorn Battlefield National Monument. The public scoping period was from March 9 through April 13, 2012.

A press release was issued on March 9, 2012.

Scoping letters or notices were sent to approximately 40 people and organizations on the national monument's mailing list. These included local, tribal, state, and federal agencies; organizations; and individuals.

The scoping notice was made available electronically on the National Park Service Planning, Environment, and Public Comment website at: http://parkplanning.nps.gov/LIBI.

Public scoping produced four responses, as follows.

The U.S. Fish and Wildlife Service Ecological Services Montana Field Office confirmed the federal special status species that would be evaluated in the environmental assessment (black-footed ferret, greater sage grouse, and Sprague's pipit) and recommended the National Park Service also contact Montana Natural Heritage Program and any affected Tribes.

Montana Fish, Wildlife and Parks identified state Species of Concern with potential to occur in the national monument (black-tailed prairie dog, great blue heron, black-billed cuckoo, common sagebrush lizard, snapping turtle, spiny softshell turtle, and western hog-nosed snake) and recommended that the National Park Service contact the Montana Natural Heritage Program for additional information about state species.

The Montana Department of Environmental Quality responded indicating that although the monument is not under the jurisdiction of the Montana Department of Environmental Quality because the national monument is well within the Crow Agency, air quality issues associated with prescribed burning should be addressed by

- Scheduling of burning during a timeframe with good dispersion conditions, and
- Limiting the amount of burning at any one time such that impacts to ambient air quality are acceptable.

One response from the public included a request that private property rights be protected.

The agency response letters are provided in appendix C. The contents of the environmental assessment were reviewed to ensure that all of the concerns identified in public scoping were adequately addressed.

AGENCY CONSULTATION

The agencies, organizations, and experts who were consulted in the process of preparing this environmental assessment are listed below. Where specific information from one of these people was cited, complete source information was provided in the "Bibliography" section in chapter 5.

U.S. Fish and Wildlife Service

Montana Fish, Wildlife, and Parks

Bureau of Indian Affairs

NATIVE AMERICAN CONSULTATION

A number of tribes traditionally, and currently, value the Little Bighorn area. Traditionally associated tribes include those listed below. Responses to the scoping letters sent at project inception were not received, however, all associated tribes will continue to be kept informed about the status of the environmental assessment. When the environmental assessment is released to the public, the National Park Service will again send letters to the tribes, formally asking for their input.

Crow Agency Tribal Historic Preservation Office

As part consultation process under National Historic Preservation Act section 106, the National Park Service sent a letter to the Crow Agency Tribal Historic Preservation Office, inviting it to participate in the planning process. No response was received. The National Park Service is coordinating with the Crow Agency Tribal Historic Preservation Office to fulfill the requirements of section 106 of the National Historic Preservation Act.

American Indian Tribes

The following tribes were contacted to participate in the planning process:

Apsaalooke Nation (Crow Tribe)
Cheyenne and Arapaho Tribes of Oklahoma
Cheyenne River Sioux Tribe of the Cheyenne River Reservation
Crow Creek Sioux Tribal Council
Flandreau Santee Sioux Tribe of South Dakota
Fort Peck Tribal Executive Board
Lower Brule Sioux Tribal Council
Northern Arapaho Tribe
Northern Cheyenne Tribal Council
Oglala Sioux Tribal Council
Rosebud Sioux Tribal Council
Santee Sioux Tribe of Nebraska
Sisseton-Wahpeton Oyate of the Lake, Traverse Reservation, South Dakota
Spirit Lake Sioux Tribe
Standing Rock Sioux Tribal Council
Three Affiliated Tribes Business Council
Yankton Sioux Tribe

LIST OF PREPARERS

The people identified in table 4 were primarily responsible for preparing this environmental assessment. The table includes their expertise, experience, and roles in preparing this document.

Table 4: Preparers

National Park Service, Little Bighorn Battlefield National Monument	
Kate Hammond	Superintendent
Melana Stichman	Natural Resources and Compliance Coordinator
Michael Stops	Chief Ranger
National Park Service, Yellowstone National Park	
John Cataldo	Assistant fire manager
Becky Smith	Fire ecologist
National Park Service, Intermountain Region	
Lisa Hanson	NEPA coordinator
Parsons	
Don Kellett	Environmental scientist. B.S. in wildlife biology, 22 years of experience. Task manager.
Alexa Miles	Environmental scientist. B.A. in environmental studies, M.S. in landscape architecture, and 9 years of experience. Contributing author.
Bruce Snyder	Environmental scientist. B.S. in biology, M.S. in wildlife biology, and 35 years of experience. Project manager for Parsons, document preparation oversight.
Seth Wilcher	Cultural resources specialist. Masters in Historic Preservation, 8 years experience. Contributing author.

LIST OF RECIPIENTS

This environmental assessment is being made available to the public, federal, state and local agencies and organizations through press releases distributed to a wide variety of news media, direct mailing, placement on park websites and announcements in press releases as well as in some local public libraries and other public places. Copies of the environmental assessment are available at:

- Little Bighorn Visitor Center, Crow Agency, Montana
- Big Horn County Library, Hardin, Montana
- Little Bighorn College Library, Crow Agency. Montana
- NPS website - http://parkplanning.nps.gov/libi

The following agencies, tribes, and organizations are on the mailing list for the project and were informed of the preparation of the environmental assessment.

ELECTED OFFICIALS

U.S. Senator Max Baucus
U.S. Senator Jon Tester
U.S. Congressman Denny Rehberg
Governor Brian D. Schweitzer
Lieutenant Governor John Bohlinger
State Senator Sharon Stewart-Peregoy
State Representative Sterling Small
State Representative Carolyn Pease-Lopez

FEDERAL AGENCIES

U.S. Fish and Wildlife Service
Bureau of Indian Affairs
U.S. Forest Service, Custer National Forest
Bureau of Land Management
Natural Resources Conservation Service

AMERICAN INDIAN TRIBES

Apsaalooke Nation (Crow Tribe)
Cheyenne and Arapaho Tribes of Oklahoma
Cheyenne River Sioux Tribe of the Cheyenne River Reservation
Crow Creek Sioux Tribal Council
Flandreau Santee Sioux Tribe of South Dakota
Fort Peck Tribal Executive Board
Lower Brule Sioux Tribal Council
Northern Arapaho Tribe
Northern Cheyenne Tribal Council
Oglala Sioux Tribal Council
Rosebud Sioux Tribal Council
Santee Sioux Tribe of Nebraska
Sisseton-Wahpeton Oyate of the Lake, Traverse Reservation, South Dakota
Spirit Lake Sioux Tribe
Standing Rock Sioux Tribal Council
Three Affiliated Tribes Business Council
Yankton Sioux Tribe

STATE AND LOCAL AGENCIES

Montana Department of Fish, Wildlife, and Parks
Montana Department of Agriculture
Montana Department of Environmental Quality
Montana State University
University of Montana
Montana Department of Transportation
Montana Department of Natural Resources
Montana Native Plant Society
Montana State Historic Preservation Office
Montana Public Interest Research Group - State Office
Big Horn County Board of Commissioners

OTHER AGENCIES AND ORGANIZATIONS

National Parks Conservation Association
Friends of the Little Bighorn Battlefield
Custer Battlefield Historical and Museum Association
Little Big Horn Associates
Custer Battlefield Preservation Committee

Western Heritage Center
Western National Parks Association
Custer Battlefield Trading Post
Temple College, Department of Art
Crow Tribe Natural Resources Northern Rocky Mountain Science Center
Little Bighorn College
Chief Dull Knife College
University of New Mexico Department of History

This page is intentionally left blank

Chapter 5: References

BIBLIOGRAPHY

Baker

2006 Fire and restoration of sagebrush ecosystems. Wildlife Society Bulletin 34(1):177–185.

Biggins, D.E., J.M. Lockhart, and J.L. Godbey

2006 Evaluating habitat for black-footed ferrets: revision of an existing model. In: Roelle, J.E., B.J. Miller, J.L. Godbey, and D.E. Biggins (eds.). Recovery of the black-footed ferret: progress and continuing challenges. Proceedings of the symposium on the status of the Black-footed Ferret and its habitat, Fort Collins, CO, January 28-29, 2004. Scientific Investigations Report 2005-5293: U.S. Geological Survey. 143-150 p. Accessed on the internet at http://www.fort.usgs.gov/products/publications/pub_abstract.asp?PubID=21570

Bramblett, R.G., and A.V. Zale

2002 Fish Inventories in Four Park Units of the Rocky Mountain Network, unpublished.

Brooks, M. L., C. M. D'antonio, D. M. Richardson, J. B. Grace, J. E. Keeley, J. M. Ditomaso, R. J. Hobbs, M. Pellant, And D. Pyke

2004 Effects of Invasive Alien Plants on Fire Regimes. Bioscience 54 (7): 677-688.

Buenger

2003 The Impact of Wildland and Prescribed Fire on Archaeological Resources. Submitted to the Department of Anthropology and the Faculty of the Graduate School of the University of Kansas in partial fulfillment of the requirements for the degree of Doctor of Philosophy. December. 352 pp.

Cooper, S. V., P. Lesica and G. M. Kudray

2007 Post-fire Recovery of Wyoming Big Sagebrush Shrub-steppe in Central and Southeast Montana. Report to the United States Department of the Interior, Bureau of Land Management, State Office. Montana Natural Heritage Program, Helena, Montana. 16 pp. plus appendices. Accessed on the internet at http://mtnhp.org/reports/Sage_Succ_Veg.pdf.

Higgins, K. F., A. D. Kruse, and J. L. Piehl

1989 Effects of Fire in the Northern Great Plains. U.S. Fish and Wildlife Service and Cooperative Extension Service, South Dakota State University, Brookings, South Dakota. Extension Circular 761. Jamestown, ND. Accessed online at http://www.npwrc.usgs.gov/resource/habitat/fire/index.htm

Intergovernmental Panel on Climate Change

2007a *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, UK and New York, NY: Edited by S. Solomon, D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor, and H. L. Miller. Cambridge University Press. Available on the internet at http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_wg1_report_the_physical_science_basis.htm.

2007b *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Geneva, Switzerland: Core Writing Team, edited by R.K. Pachauri and A. Reisinger. Available on the internet at

http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm.

Knapp, E. E., Estes, B. L., and Skinner, C. N.

2009 Ecological effects of prescribed fire season: a literature review and synthesis for managers. Gen. Tech. Rep. PSW-GTR-224. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 80 p. Accessed on the internet at http://www.fs.fed.us/psw/publications/documents/psw_gtr224/psw_gtr224.pdf

McNearney, P., J. Riley, and A. Wennersten

2002 Trampling increases soil compaction; soil compaction depresses vigor of *Andropogon gerardii*. Tillers (3) 25-28. Grinnel College, Grinnel, Iowa.

Montana Field Guide

2012 Great Plains Mixedgrass Prairie. Accessed on the internet at http://FieldGuide.mt.gov/displayES_Detail.aspx?ES=7114. May 24

National Park Service (NPS)

1995 *Final General Management Plan and Development Concept Plans, Custer Battlefield National Monument*. 1986, Updated 1995. On file, Little Bighorn Battlefield National Monument, Crow Agency, MT.

1997 *How to Apply the National Register Criteria for Evaluation*. Washington, D.C.: National Register Bulletin 15. Available on the internet at http://www.nps.gov/nr/publications/bulletins/nrb15/.

1998a *Director's Order #28: Cultural Resource Management*. Washington, D.C. Available on the internet at http://www.nps.gov/policy/DOrders/DOrder28.html.

1998b National Register Bulletin: Guidelines for Evaluating and Documenting Traditional Cultural Properties. Available on the internet at: http://www.nps.gov/nr/publications/bulletins/nrb38/.

2001 *Director's Order #12 Handbook*. Washington, D.C. Available on the internet at http://home.nps.gov/applications/npspolicy/DOrders.cfm.

2002 *Director's Order #77-1: Wetland Protection*. Available on the internet at http://www.nps.gov/applications/npspolicy/DOrders.cfm.

2003 *Director's Order #77-2: Floodplain Management*. Washington, D.C. Available on the internet at http://home.nps.gov/applications/npspolicy/DOrders.cfm.

2005a *Environmental Assessment / Assessment of Effect, Rehabilitate Tour Road*. On file, Little Bighorn Battlefield National Monument, Crow Agency, MT.

2005b *Wildland Fire Management Plan*. On file, Little Bighorn Battlefield National Monument, Crow Agency, MT.

2006 *Management Policies 2006*. Washington, D.C.: NPS Office of Policy. Available on the internet at http://www.nps.gov/policy/MP2006.pdf.

2007 *Little Bighorn Battlefield National Monument, Resource Management Plan*. On file, Little Bighorn Battlefield National Monument, Crow Agency, MT.

2008a *Reference Manual 18: Wildland Fire Management*. Release date, January 1, 2008. Available on the internet at http://www.nps.gov/fire/download/fir_wil_rm18.pdf.

2008b *Director's Order #18: Wildland Fire Management*. Effective date, January 16, 2008. Available on the internet at http://www.nps.gov/fire/download/fir_wil_do18.pdf.

2010 *Cultural Landscapes Inventory, Little Bighorn Battlefield National Monument*. On file, Little Bighorn Battlefield National Monument, Crow Agency, MT.

2011a *Long Range Interpretive Plan, Little Bighorn Battlefield National Monument*. Prepared for the National Park Service by Ron Thomson, Compass. On file, Little Bighorn Battlefield National Monument, Crow Agency, MT.

2011b *Northern Rocky Mountains Invasive Plant Management Plan*. Prepared by the Pacific West and Intermountain Regions for 10 NPS Units. January.

2011c *Scope of Collection Statement, Little Bighorn Battlefield National Monument*. Prepared by Little Bighorn Battlefield National Monument. On file, Little Bighorn Battlefield National Monument, Crow Agency, MT.

2012a Internal Scoping Meeting Notes, Environmental Assessment for Fire Management Plan. On file, Little Bighorn Battlefield Monument National Monument, Crow Agency MT.

2012b Little Bighorn Battlefield National Monument: Park Statistics. Accessed online at http://www.nps.gov/libi/parkmgmt/statistics.htm.

National Wildfire Coordinating Group (NWCG)

2004 Fireline Handbook. National Interagency Fire Center, Boise, Idaho. Available on the internet at http://www.nwcg.gov/pms/pubs/410-1/410-1.pdf

Norland, J. E., Singer, F. J., Mack, L.

1996 Effects of the Yellowstone fires of 1988 on elk habitats. In: Greenlee, Jason, ed. The ecological implications of fire in Greater Yellowstone: Proceedings, 2nd biennial conference on the Greater Yellowstone Ecosystem; 1993 September 19-21; Yellowstone National Park, WY. Fairfield, WA: International Association of Wildland Fire: 223-232.

Patton, B. D., Hironaka, M., Bunting, S. C.

1988 Effect of burning on seed production of bluebunch wheatgrass, Idaho fescue, and Columbia needlegrass. Journal of Range Management. 41(3): 232-234.

Sandberg, D. V., R.D. Ottmar, J.L. Peterson, and J. Core

2002 *Wildland Fire on Ecosystems: Effects of Fire on Air*. Gen. Tech. Rep. RMRS-GTR-42-vol. 5. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Sapsis, D. B.

1990 Ecological effects of spring and fall prescribed burning on basin big sagebrush/Idaho fescue--bluebunch wheatgrass communities. Corvallis, OR: Oregon State University. 105 p. Thesis.

Secretary of the Interior, The

1983 The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. Washington, D.C.: Available on the internet at http://www.cr.nps.gov/local-law/arch_stnds_0.htm.

1995a The Secretary of the Interior's Standards for the Treatment of Historic Properties: with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings. By Kay D. Weeks and Anne E. Grimmer. Washington, D.C.: National Park Service, Preservation Assistance Division, Cultural Resource Stewardship and Partnerships. Available on the internet at http://www.nps.gov/hps/tps/standguide/.

1995b The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes. Washington, D.C.: National Park

Service, Historic Landscape Initiative. Available on the internet at http://www.nps.gov/tps/standards/four-treatments/landscape22guidelines/index.htm.

Stops, Michael

2012 Personal communication between Michael Stops, Chief Ranger, and Seth Wilcher, Parsons regarding visitation habits. Little Bighorn Battlefield National Monument, Crow Agency, Montana. January 5, 2012.

Tirmenstein, D.

1999 *Artemisia tridentata*. In: Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Accessed on the internet at http://www.fs.fed.us/database/feis/.

United States Department of Agriculture and United States Department of the Interior

2006 Interagency Prescribed Fire Planning and Implementation Procedures Guide. Interagency reference guide for National Park Service, U.S. Forest Service, U.S. Fish and Wildlife Service, Bureau of Indian Affairs, and Bureau of Land Management. September. Available on the internet at http://www.fws.gov/mountain-prairie/fire/PDF's/rxfireguide.pdf

United States Environmental Protection Agency (USEPA)

2009a *Air Quality Index. A guide to Air Quality and Your Health*. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. EPA456/F-09-002. August.

2009b *Technical Assistance Document for the Reporting of Daily Air Quality – the Air Quality Index (AQI)*. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. EPA-454/B-09-001.

2010 *Air Quality Criteria*. Available on the internet at http://www.epa.gov/air/criteria.html.

United States Fish and Wildlife Service (USFWS)

1988 Black-footed Ferret (*Mustela nigripes*) Recovery Plan. Denver, CO. 154 pp.

Zlatnik, E.

1999 *Pseudoroegneria spicata*. In: Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Accessed on the internet at http://www.fs.fed.us/database/feis/.

Zouhar, K.

2003 *Bromus tectorum*. In: Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Accessed on the internet at http://www.fs.fed.us/database/feis/.

APPENDIX A
NATIONAL PARK SERVICE MEMORANDUM:
USE OF HEALTHY FOREST INITIATIVE
HAZARDOUS FUELS REDUCTION CATEGORICAL EXCLUSION

United States Department of the Interior

NATIONAL PARK SERVICE
1849 C Street, N.W.
Washington, D.C. 20240

IN REPLY REFER TO:

APR 24 2012

Memorandum

To: Regional Directors

From: Associate Director, Natural Resource Stewardship and Science
for
Associate Director, Visitor and Resource Protection

Subject: Use of Healthy Forest Initiative Hazardous Fuels Reduction Categorical Exclusion

On May 28, 2008, the acting Associate Director for Natural Resource Stewardship and Science issued a memorandum prohibiting use of the Healthy Forest Initiative Hazardous Fuels Reduction Categorical Exclusion (HFICE) (found at 43 CFR 46.210(k) and Director's Order 12 (DO-12) Handbook Section 3.4 (G)(1)) for any new treatments within the 9th Circuit's jurisdiction in response to a lawsuit (Sierra Club v. Bosworth, 510 F.3d 1016). The jurisdiction of the 9th Circuit includes the states of Alaska, Arizona, California, Hawaii, Idaho, Montana, Nevada, Oregon, Washington, and U.S. territories in the Pacific, including Guam.

Due to issues that could arise should the HFICE continue to be used by park units outside of the 9th Circuit, this memorandum expands the prohibition on use of the HFICE to all park units service-wide. Due to the fiscal and programmatic impacts of the expanded prohibition, the phased approach described below should be implemented, with the intent of obtaining full compliance with the service-wide prohibition within three years of the date of this memorandum.

For park units outside of the 9th Circuit, existing Fire Management Plans (FMP) or amendments to plans that used the HFICE may remain in effect for up to three years from the date of this memorandum. Unless prior written authorization is obtained from the Associate Director for Natural Resource Stewardship and Science, through the Associate Director for Visitor and Resource Protection, FMPs not in compliance at the end of three years will be suspended, and fuels work and wildfires managed for benefit may not be permitted until such a time as an approved FMP and related compliance is in place.

Use of the HFICE for individual fuels treatments will also be allowed outside of the 9th Circuit for up to three years from the date of this memorandum. However, you should begin to reduce reliance on the use of the HFICE immediately.

It is strongly recommended that fuels work be incorporated into a programmatic FMP and covered by an associated NEPA compliance document (environmental assessment or

environmental impact statement). The FMP should describe the routine scope of the anticipated fuels program, and the related environmental analysis should evaluate the effects of such a program.

The FMP should include a description of a typical program of fuels work representative of the long-term fuels program. A list of anticipated fuels treatments for five out-years should be included in an FMP appendix and updated annually or as needed. The list of treatments may be amended and updated to include specific new treatments and remove completed or outdated ones.

New treatments added to the revised program of work should be evaluated through use of an environmental screening form (ESF) and reviewed to determine whether the revised program of work remains within the scope and effects outlined in the FMP and related NEPA compliance document. If the review finds no new impacts other than those already analyzed in the FMP and related compliance document, and use of a categorical exclusion (CE) is appropriate pursuant to DO-12 and the DO-12 Handbook, then the ESF should document the application of the CE found in the DO-12 Handbook at Section 3.4 (A)(1) ("*Changes or amendments to an approved action when such changes would cause no or only minimal environmental impact*") and work should proceed according to procedures outlined in the FMP. If new fuels treatments evaluated using the ESF are found to be beyond the scope and effects contained in the approved FMP and related NEPA compliance document, then additional NEPA reviews, pursuant to DO-12 and the DO-12 Handbook, would be necessary.

The Environmental Quality Division and Fire Management Program Center will evaluate the feasibility of creating a new NPS-specific CE for certain hazardous fuels treatments. However, promulgation of a new CE would be a lengthy process, and therefore it is strongly recommended that you proceed as quickly as possible to reduce reliance on the HFICE.

As a reminder, there are various compliance processes other than the HFICE available for program managers to deal with common situations. Please consult with your Fire Program planning contacts and park or regional compliance specialists as needed.

This memorandum and any subsequent documents that implement its directives are intended only to improve the internal management of the National Park Service; they are not intended to, and do not, create any right or benefit, substantive or procedural, enforceable at law or equity by a party against the United States, its departments, agencies, instrumentalities or entities, its officers or employees, or any other person.

If you have any questions concerning this issue, please contact Patrick Walsh, Chief, Environmental Planning & Compliance Branch, Environmental Quality Division, at (303) 987-6620; or Jeff Manley, Deputy, Fire Program Planning, National Interagency Fire Center, at (208) 387-5221.

cc:
Regional Environmental Coordinators
Regional Fire Management Officers
Director, Fire & Aviation Management

APPENDIX B
MEMORANDUM OF UNDERSTANDING BETWEEN THE BUREAU OF INDIAN AFFAIRS, CROW INDIAN AGENCY AND THE NATIONAL PARK SERVICE, LITTLE BIGHORN BATTLEFIELD NATIONAL MONUMENT BOTH OF THE UNITED STATES DEPARTMENT OF THE INTERIOR

MEMORANDUM OF UNDERSTANDING
between the

BUREAU OF INDIAN AFFAIRS, CROW INDIAN AGENCY

and the

NATIONAL PARK SERVICE, LITTLE BIGHORN BATTLEFIELD NATIONAL MONUMENT

both of the

UNITED STATES DEPARTMENT OF THE INTERIOR

For Wildland Fire Suppression

This Memorandum of understanding (MOU) is entered into and between the Superintendent, Crow Indian Agency at Crow Agency, Montana, hereinafter called the Bureau of Indian Affairs (BIA), and the Superintendent, Little Bighorn Battlefield National Monument, Crow Agency, Montana, hereinafter called the National Park Service (NPS).

1. Authority.

The Bureau of Indian Affairs and the National Park Service are both authorized under the Protection Act of September 20, 1922, (42 Stat. *857;* 16 USC ***594),*** which allows agencies in the Department of Interior to enter into cooperative fire agreements.

2. Purpose.

The Bureau of Indian Affairs and the National Park Service are agencies charged with the responsibility of adequately protecting the timber, range, watersheds, and other natural resources within their respective jurisdictions. Cooperation in fire prevention, preparedness, suppression and related matters is of mutual benefit to both agencies.

3. Objective.

The agencies, through cooperation as hereinafter provided, should be better able to economically and efficiently collaborate on fire and aviation programmatic issues and discharge their said responsibilities.

/

4. **Duration, Modification and Annual Review of the MOU**

A. This MOU shall take effect as of June 1, 2010, and shall remain in effect for a term of five *(5)* years, but any part or parts thereof may be amended or modified by mutual written consent at any time. This agreement may be reaffirmed upon its expiration for additional periods of five years.

B. This Agreement may be terminated by written notice by either party to the other PROVIDED that a written notice of termination of agreement shall be given sixty (60) days in advance and further, that said notice shall be given between the dates of November 1 of any year and March 1 of the following year;

C. Prior to each fire season, the Fire Management Officer of Crow Agency and the Chief Ranger of Little Bighorn Battlefield will review Wildland Fire Plans and Aviation Management Plans, and discuss those items of mutual concern.

5. **Definitions.**

A. *Bureau of Indian Affairs Lands:* Lands administered and/or protected by the Bureau of Indian Affairs; these lands constitute the Bureau of Indian Affair's jurisdictional area.

B. *National Park Service Lands:* Lands administered and/or protected by the National Park Service; these lands constitute the National Park Service's jurisdictional area.

C. *Protecting Agency:* The party with responsibility for suppression of wildland fires on a particular piece of land.

D. *Supporting Agency:* The party without responsibility for suppression of wildland fires on a particular piece of land; i.e., the party furnishing assistance or support to the protecting agency.

E. *Unplanned Fire:* A fire that burns uncontrolled in vegetative or associated flammable materials; fire principally involving structures, facilities or vehicles are not included.

F. *Boundary Fires:* A fire burning astride a boundary between lands protected by both protecting agencies, or, due to the conditions in the fire area, believed to be burning astride or close to a boundary.

6. **Fire Prevention and Preparedness.**

A. Each protecting agency, in accordance with its objectives and within its capabilities, will cooperate and assist the other in programs of fire prevention and preparedness, the cost thereof to be borne by each agency in accordance with their annual operating plans. When practical to do so, each agency will invite the other to participate in local fire training sessions, and if needed, will schedule joint training sessions.

B. The Bureau of Indian Affairs is permitted to establish, maintain and operate a remote automated weather station (RAWS) at the Little Bighorn Battlefield National Monument. Equipment, supplies and personnel for this station are to be

provided by the Bureau of Indian Affairs. Data obtained from this station is available to both the National Park Service and the Bureau of Indian Affairs.

7. **Fire Detection and Suppression.**

A. Fire detection procedures for each agency shall be outlined in their respective Fire Plans. Furthermore, it shall be the responsibility of all employees of both cooperating agencies, to report immediately to the proper authority, any fires they may discover and the location of such fires. The employees shall also be charged with taking whatever suppression efforts they can safely execute until the arrival of the fire crews and then to lend whatever assistance requested by the fire crew.

B. Except as designated below in Part 7.C, the National Park Service will be responsible for suppression of all fires burning on National Monument lands. The Bureau of Indian Affairs will be responsible for all fires burning on reservation lands. The National Park Service may request the Bureau of Indian Affairs the responsibility for any fire in the National Park Service's protection area which is threatening to burn onto the reservation.

C. All fire and aviation activities shall be undertaken only by DOI Aviation Management Directorate and National Wildfire Coordinating Group qualified individuals. The National Park Service shall inform the Bureau of Indian Affairs immediately if for any reason they will be unable to initial attack any fires within the National Monument boundary and/or any time a fire within the National Monument escapes initial attack. Initial attack on all fires outside the National Monument boundary shall be the responsibility of the Bureau of Indian Affairs. The Bureau shall be responsible for informing the National Park Service any time a fire near the National Monument within the Bureau's initial attack zone escapes initial attack and is threatening the National Monument.

D. In the event that a cooperating agency should arrive first at a fire outside their initial attack zone, the officer in charge will serve as the incident commander until the arrival of the forces from the responsible initial attack agency. At such time, the cooperating agency forces will place themselves at the disposal of the officer of the responsible agency who will normally then take charge as incident commander. The crew making the initial attack, as well as any other crew engaged on the fire, will not leave the fire unless and until released by the incident commander. Normally, the forces of the supporting agency shall be released first.

E. In the case of boundary fires, or as decided by the National Park Service and Bureau of Indian Affairs employees on any fire, a unified command as defined in the NIIMS System may be utilized.

F. Ordinarily, each agency will provide its own crews, transportation, equipment, and tools as the fire emergency requires unless other arrangements have been

made. Neither agency will jeopardize the security of its own area by dispatching all of its available fire protection resources to a fire in the protection area of the other cooperating agency, but each agency may assist the other through the loan of available men and equipment when called upon to do so. The resources available for fire assignment shall be listed as part of the individual fire plans for each agency.

8. Fiscal Provisions.

A. Any financial obligation set forth in this agreement shall be contingent upon the availability of appropriations of the Bureau of Indian Affairs and the National Park Service.

B. All fire related services shall be termed as *nonreimbursable* or *reimbursable*.

1. Nonreimbursable fire services .All fire suppression costs are nonreimbursable. Fire suppression includes all direct firefighting and support costs of either a direct or indirect nature.

2. Reimbursable services .This may include all work that is not defined in the nonreimbursable work section, and may include, but is not limited to, construction of firebreaks, fuel treatment, prescribed burning, rehabilitation of burned areas, and other non-fire suppression related projects.

3. Reimbursable services will usually be planned in advance, the billing methods approved, and normally operations will be performed during periods of low fire danger.

9. Management Constraints.

A. BIA: aggressive fire suppression is mandated; therefore, few constraints exist regarding equipment use.

B. NPS:

1. No off -road use of engines or motorized vehicles, without the expressed written consent of the Battlefield Superintendent or acting.
2. No use of motor graders or dozers or ATV's.
3. No use of retardant.
4. These and any other constraints and their related limitations should be spelled each year in the National Park Service Range Fire Plan and the Aviation Management Plan.

C. On all fires within or next to the National Park Service protection area on which the Bureau of Indian Affairs has assumed control by mutual consent of the two parties, the National Park Service shall provide a resource advisor to the fire

whose expressed responsibility shall be to make sure that any and all cultural or natural resources the National Park Service deems as critical be given priority, second only to the protection of life and personal property.

10. **Loaned Equipment.**

Equipment loaned by one party to the other becomes the responsibility of the borrower and shall be returned in the same condition as when received, fair wear and tear expected. Damage in excess of fair wear and tear will be repaired by the borrower. Lost or destroyed items will be replaced or reimbursed by the borrower, at the discretion of the loaning agency.

11. **Special Provisions.**

A. This agreement shall not affect the rights of any party to recover suppression costs and/or damages sustained as a result of the negligent or willful act of any person causing a fire.

B. No party shall be liable to any other for any loss, damage, personal injury, or death occurring in consequence of the performance of this operating plan, except as provided herein.

C. The parties hereto may work jointly on fire trespass investigations and fire law enforcement. Reports thereof may be prepared independently and separately.

D. The supporting agency will, if the protecting agency has not been involved in the suppression effort, furnish a fire report containing required information to the protecting agency within ten (10) days after the fire is declared out, if so requested.

E. Any problems which cannot be reconciled between the parties locally, shall be promptly referred through channels to higher authorities for resolution. In the case of the National Park Service, the higher authority would be the Regional Director, Intermountain Region. For the Bureau of Indian Affairs, the higher authority would be the Regional Director, Rocky Mountain Regional Office.

F. Nothing herein shall require any protecting agency or supporting agency to take action on structural fires; nothing herein shall preclude any protecting agency from taking action on structural fires or for requesting assistance from the supporting agency for a structural fire.

G. Nothing herein shall prevent any protecting agency or supporting agency as authorized from taking suppression action on wildland fires on private lands when those fires may threaten either agency's lands.

H. No member of or delegate to Congress shall be admitted to any share or part of

this agreement or to any benefit to arise there from (U.S. Revised Statutes, 3739-3742).

KEY CONTACTS

BIA	**NPS**
Judith Gray **Superintendent, Crow Agency** **406-638-2827**	**Kate Hammond** **Superintendent, LIBI** **406-638-3201**
Dale Glenmore **FMO, Crow Agency** **406-638-2247**	**Michael Stops** **Chief Ranger, LIBI** **406-638-3215**
Bryce Rodgers **AFMO, Crow Agency** **406-638-2247**	**Joe Krish** **FMO, Yellowstone NP** **307-344-2180**

2010

MEMORANDUM OF UNDERSTANDING

between the

BUREAU OF INDIAN AFFAIRS, CROW INDIAN AGENCY

and the

NATIONAL PARK SERVICE, LITTLE BIGHORN BATTLEFIELD NATIONAL MONUMENT

both of the

UNITED STATES DEPARTMENT OF THE INTERIOR

Memorandum of understanding Approval:

BUREAU of INDIAN AFFAIRS Crow Indian Agency

6-10-10 Date: _____ Title: Superintendent

NATIONAL PARK SERVICE Little Bighorn Battlefield National Monument

_____ Date: June 7, 2010 Title: Superintendent

APPENDIX C
PRESS RELEASE, SCOPING LETTERS, AND RESPONSES

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H7617 (LIBI)

March 9, 2012

Dear Friends and Neighbors,

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

An environmental assessment will be prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that 1) analyzes a reasonable range of alternatives to meet project objectives, 2) evaluates issues and impacts to monument resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these impacts.

The NPS encourages public participation throughout the planning process. There will be two opportunities to comment formally on the project—once during initial project scoping and again following release of the environmental assessment. The NPS is currently in the scoping phase of the proposed project. Please submit written suggestions, comments, and concerns regarding the project by April 13, 2012 online at the NPS Planning, Environment, and Public Comment (PEPC) website at: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H7617 (LIBI)

March 9, 2012

Mr. Ken McDonald
Montana Department of Fish, Wildlife, and Parks
P.O. Box 200701
Helena, MT 59620

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Mr. McDonald,

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

The proposed action would take place within Little Bighorn Battlefield National Monument, specifically in Township 3 South, Range 35 East, portions of Sections 17-20, 34 and Township 4 South, Range 35 East, portions of Section 3. The National Monument is shown on the USGS Crow Agency 7.5' topographic map (enclosed). We are requesting any information your office may have regarding the presence of state-listed threatened, endangered, or candidate species, species proposed for listing, and designated or proposed critical habitats, which may be affected by this project within Little Bighorn Battlefield National Monument.

We look forward to your participation in this process and believe that it will help ensure that state-listed species are adequately considered and evaluated in the EA. We are consulting with the U.S. Fish and Wildlife Service to evaluate federally listed species. When the EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning, Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond

Kate H. Hammond
Superintendent

Enclosure

Montana Fish, Wildlife & Parks

April 2, 2012

National Park Service
Little Bighorn Battlefield National Monument
PO Box 39
Crow Agency, MT 59022-0039

RE: Fire Management Plan and Environmental Assessment (H7617)

To Whom It May Concern:

Regarding the MEPA/NEPA requirements for federally listed species or Species of Concern, I would request that the NPS submit a request to the Montana Natural Heritage Program (NHP) for a list of known species of concern in the area. The NHP website is http://nhp.nris.state.mt.us/ then follow the link at the top, "Get Data", to the NRIS Request Tracker to submit the request.

My own search of the data has the following Species of Concern listed in the area: Black-tailed prairie dog, Great blue heron, Black-billed cuckoo, Common sagebrush lizard, Snapping turtle, Spiny softshell turtle, and Western hog-nosed snake. None of these species is state or federally listed as Threatened or Endangered. Bald eagles are possible along the Little Big Horn River (USFWS delisted, currently in post-delisting monitoring), but we currently do not have any records of active territories.

The majority of the above listed species are associated with the River and/or riparian habitat (specifically birds and turtles). By ensuring that the riparian area is protected during fire management, impacts to these species and/or nests should be minimized.

The removal of dead trees and active fire may limit the local distribution and abundance of sagebrush lizards and hog-nosed snakes.

A quick literature search on the impacts of prescribed fire adjacent to prairie dog colonies revealed that fire may result in colony expansion, while other papers suggest that prairie dog colonies may serve as a fire break.

Sincerely,

Allison J.R. Begley
Native Species Biologist, Montana Fish, Wildlife & Parks
2300 Lake Elmo Dr., Billings, MT 59105
(406) 247-2966

Cc: Ray Mulé, Wildlife Manager, Region 5, MFWP
Gary Hammond, Regional Supervisor, Region 5, MFWP

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H7617 (LIBI)

March 9, 2012

Dear Friends and Neighbors,

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

An environmental assessment will be prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that 1) analyzes a reasonable range of alternatives to meet project objectives, 2) evaluates issues and impacts to monument resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these impacts.

The NPS encourages public participation throughout the planning process. There will be two opportunities to comment formally on the project—once during initial project scoping and again following release of the environmental assessment. The NPS is currently in the scoping phase of the proposed project. Please submit written suggestions, comments, and concerns regarding the project by April 13, 2012 online at the NPS Planning, Environment, and Public Comment (PEPC) website at: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Mr. Hubert "Burdick" Two Leggins
Crow Tribe Historic Preservation Office
P.O. Box 159
Crow Agency, MT 59022

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Burdick:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act, the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Tim McCleary

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Mr. Cedric Black Eagle, Chairman
Apsaalooke Nation (Crow Tribe)
P.O. Box 159
Crow Agency, MT 59022

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Mr. Cedric Black Eagle:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Mr. Hubert "Burdick" Two Leggins, THPO
Cultural Committee

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Ms. Kim Harjo, Chairperson
Northern Arapahoe Tribe
PO Box 396
Fort Washakie, WY 82514

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Ms. Kim Harjo:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Ms. Darlene Conrad, THPO

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Mr. Leroy Spang, President
Northern Cheyenne Tribal Council
PO Box 128
Lame Deer, MT 59043

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Mr. Leroy Spang:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Mr. Conrad Fisher, THPO
Mr. Steve Brady, Cultural Committee

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Mr Floyd G. Azure, Chairman
Fort Peck Tribal Executive Board
PO Box 1027
Poplar, MT 59255

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Mr Floyd G. Azure:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Mr. Darrell "Curley" Youpee, THPO

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Mr. Tex Hall, Chairman
Three Affiliated Tribes Business Council
404 Frontage Rd.
New Town, ND 58763

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Mr. Tex Hall:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Mr. Elgin Crows Breast, THPO
Mr. Pete Coffey

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Mr. Kevin Keckler, Chairman
Cheyenne River Sioux Tribe of the Cheyenne River Reservation
PO Box 590
Eagle Butte, SD 57625

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Mr. Kevin Keckler:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Ms. Donna Rae Peterson, Cultural Programs Administrator

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Mr. Wilfred Keeble, Chairman
Crow Creek Sioux Tribal Council
PO Box 50
Fort Thompson, SD 57339

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Mr. Wilfred Keeble:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Ms. Wanda Wells

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Mr. Michael Jandreau, Chairman
Lower Brule Sioux Tribal Council
187 Oyate Circle
Lower Brule, SD 57548

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Mr. Michael Jandreau:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Ms. Clair Green, Cultural Resources Director

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Mr. John Yellow Bird Steele, President
Oglala Sioux Tribal Council
PO Box 2070
Pine Ridge, SD 57770

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Mr. John Yellow Bird Steele:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Mr. Wilmer Mesteth, THPO

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Mr. Rodney Bordeaux, President
Rosebud Sioux Tribal Council
PO Box 430
Rosebud, SD 57570

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Mr. Rodney Bordeaux:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Mr. Russell Eagle Bear, THPO

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Mr. Charles W. Murphy, Chairman
Standing Rock Sioux Tribal Council
PO Box D
Fort Yates, ND 58538

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Mr. Charles W. Murphy:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Ms. Waste' Win Young, THPO

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Ms. Janice Boswell, Governor
Cheyenne and Arapaho Tribes of Oklahoma
PO Box 38
Concho, OK 73022

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Ms. Janice Boswell:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Ms. Karen Little Coyote

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Mr. Roger Trudell, Tribal Chairman
Santee Sioux Tribe of Nebraska
425 Frazier Ave N. Suite 2
Niobrara, NE 68760

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Mr. Roger Trudell:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Mr. Rick Thomas, THPO

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Mr. Robert Cournoyer, Chairman
Yankton Sioux Tribe
PO Box 248
Marty, SD 57361-0248

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Mr. Robert Cournoyer:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Ms. Lana Gravatt, THPO

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Mr. Roger Yankton, Sr., Chairman
Spirit Lake Sioux Tribe
P.O. Box 359
Fort Totten, ND 58335

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Mr. Roger Yankton:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Mr. Tony Reider, President
Flandreau Santee Sioux Tribe of South Dakota
P.O. Box 283
Flandreau, SD 57028

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Mr. Tony Reider:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Mr. James B. "JB" Weston, THPO

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H4217 (LIBI)

March 9, 2012

Mr. Robert Shepard, Chairman
Sisseton-Wahpeton Oyate of the Lake, Traverse Reservation
P.O. Box 509
Agency Village, SD 57262

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Dear Mr. Robert Shepard:

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives. In accordance with §106 of the National Historic Preservation Act and the National Environmental Policy Act (NEPA), the NPS seeks to formally initiate consultation on the proposed fire management plan for Little Bighorn Battlefield National Monument.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

We look forward to your participation in the consultation process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning,

Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond
Superintendent

cc:

Mrs. Dianne Desrosiers, THPO

United States Department of the Interior

NATIONAL PARK SERVICE
Little Bighorn Battlefield National Monument
Post Office Box 39
Crow Agency, Montana 59022-0039

IN REPLY REFER TO:
H7617 (LIBI)

March 9, 2012

Mr. Mark Wilson, Project Leader
U.S. Fish and Wildlife Service Field Office
585 Shepard Way
Helena, MT 59601

RE: Fire Management Plan and Environmental Assessment, Little Bighorn Battlefield National Monument

Mr. Wilson,

The National Park Service (NPS) will be preparing a new fire management plan and environmental assessment (EA) for Little Bighorn Battlefield National Monument. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of wildland fire program activities that support land and resource management objectives.

In preparing a new fire management plan for Little Bighorn Battlefield National Monument, the NPS seeks to adjust management direction from the previous plan by accommodating new national and NPS policies and new scientific information. More specifically, the purpose of the proposed fire management plan at Little Bighorn Battlefield National Monument is to ensure the health and safety of the public, NPS staff, and firefighters; protect cultural and natural resources; use fire in a manner that maintains a healthy and sustainable ecosystem; and strengthen cooperative fire management partnerships.

The proposed action would take place within Little Bighorn Battlefield National Monument, specifically in Township 3 South, Range 35 East, portions of Sections 17-20, 34 and Township 4 South, Range 35 East, portions of Section 3. The National Monument is shown on the USGS Crow Agency 7.5' topographic map (enclosed). We are requesting any information your office may have regarding the presence of Federally-listed threatened, endangered, or candidate species, species proposed for listing, and designated or proposed critical habitats, which may be affected by this project within Little Bighorn Battlefield

National Monument. This request is being made pursuant to Section 7 of the Endangered Species Act.

We look forward to your participation in this process and believe that it will help ensure that federally-listed species are adequately considered and evaluated in the EA. In keeping with the requirements of Section 7 consultation and National Park Service policy, when the draft EA is complete, we will make a copy available for your review and comment.

We appreciate any preliminary input you may have regarding the project. Please submit written suggestions, comments, and concerns by April 13, 2012 online at the NPS Planning, Environment, and Public Comment (PEPC) website: http://parkplanning.nps.gov/libi. Written comments also may be sent to:

Little Bighorn Battlefield National Monument
ATTN: Melana Stichman
P.O. Box 39
Crow Agency, MT 59022-0039

If you have questions about the project or would like more information, please contact Melana Stichman, NEPA Specialist / Resource Management, at (406) 638-3225 or melana_stichman@nps.gov.

Sincerely,

Kate H. Hammond

Kate H. Hammond
Superintendent

Enclosure

Record of Communication – telephone conversation

Subject: LIBI FMP EA special status species – USFWS consultation

Participants: Jeff Berglund, USFWS and Don Kellett, Parsons

Date: April 12, 2012

I called Mr. Jeff Berglund, Fish and Wildlife Biologist, U.S. Fish and Wildlife Service (FWS), Ecological Field Service Office, Helena, Montana (406 449-5225 x206) to discuss an April 9, 2012 FWS letter to the National Park Service regarding the Little Bighorn Battlefield National Monument (LIBI) Fire Management Plan Environmental Assessment (EA).

Specifically, we talked about the potential presence and likelihood of effects to the black-footed ferret, greater sage grouse, and Sprague's pipit from activities associated with the fire management plan.

Regarding the ferret, Mr. Berglund indicated that based on the lack of any recorded ferret observations on or near LIBI, combined with the small size of the black-tailed prairie dog colonies near LIBI and a past plague outbreak in those colonies, it would be acceptable to dismiss the black-footed ferret from full evaluation in the EA's special status species analysis.

Regarding the greater sage grouse, a federal candidate species, Mr. Berglund noted that there are no known grouse leks, nor breeding occurrences at LIBI, and any observations of the greater sage grouse were likely of transient individuals. He recommended consulting with Montana Fish, Wildlife, and Parks (MFWP), responsible for managing the species, for additional information.

Mr. Berglund recommended consulting with Mr. Bryce Maxell, MFWP (406 444-3655), about Sprague's pipit. MFWP is responsible for managing this candidate species and Mr. Maxell has been recently studying the pipit in the region.

In addition to the mitigation measures and best management practices identified in the April 9 FWS letter, Mr. Berglund stated that performing surveys for the greater sage grouse and Sprague's pipit in the areas to be affected prior to initiating prescriptive fire management treatments such as prescribed burns or extensive vegetation thinning would be recommended. We agreed that this recommendation would be included in the EA.

No other federal special status species needing detailed evaluation in the EA were identified by Mr. Berglund.

I informed Mr. Berglund that the EA would include determinations of effect using Section 7, Endangered Species Act language in the special status species section and suggested that a separate Biological Assessment would not be warranted. He concurred.

United States Department of the Interior
Fish and Wildlife Service

Ecological Services
Montana Field Office
585 Shepard Way
Helena, Montana 59601-6287

Phone: (406) 449-5225 Fax: (406) 449-5339

April 9, 2012

Memorandum

To: Superintendent, National Park Service, Little Bighorn Battlefield National Monument, Crow Agency, MT (Attn: Kate Hammond)

From: Field Supervisor, U.S. Fish and Wildlife Service, Montana Field Office, Helena, MT

R. Mark Wilson

Subject: Little Bighorn Battlefield National Monument Fire Management Plan

This is in response to your request for information from the U.S. Fish and Wildlife Service (Service) regarding federally listed and proposed threatened and endangered species, candidate species, and critical habitat that may occur in the vicinity of the Little Bighorn Battlefield National Monument (Monument) in Big Horn County. The information request was made in conjunction with proposed development of the subject document, along with an associated environmental assessment (EA). Our response comments are authorized under the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et. seq.), Migratory Bird Treaty Act (MBTA)(16 U.S.C. 703 et seq.), as amended, Executive Order 13186 *Responsibilities of Federal Agencies to Protect Migratory Birds*, Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668d, 54 Stat. 250), as amended, and the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq*.).

Threatened and Endangered Species

In accordance with section 7(c) of the Endangered Species Act, the Service has determined that the following listed and candidate species may be present in Big Horn County:

Scientific Name	Common Name	Status	Montana Range/Habitat
Mustela nigripes	Black-footed Ferret	LE	Prairie dog complexes; eastern Montana
Centrocercus urophasianus	Greater Sage-Grouse	C	Eastern, central, and southwestern Montana in sagebrush, sagebrush-grasslands, and associated agricultural lands
Anthus spragueii	Sprague's Pipit	C	Grassland habitats with little or no shrub cover east of the Continental Divide

*LE = Listed Endangered; C = Candidate Species

If a Federal agency authorizes, funds, or carries out a proposed action, the responsible Federal agency, or its delegated agent, is required to evaluate whether the action "may affect" listed species or critical habitat. If the Federal agency or its designated agent determines the action "may affect, is likely to adversely affect" listed species or critical habitat, the responsible Federal agency shall request formal section 7 consultation with this office. If the evaluation shows a "may affect, not likely to adversely affect" determination, concurrence from this office is required. If the evaluation shows a "no effect" determination for listed species or critical habitat, further consultation is not necessary. If a private entity receives Federal funding for a construction project, or if any Federal permit or license is required, the Federal agency may designate the fund recipient or permittee as its agent for purposes of informal section 7 consultation. The funding, permitting, or licensing federal agency is responsible to ensure that its actions comply with the ESA, including obtaining concurrence from the Service for any action that may affect a threatened or endangered species or designated critical habitat.

No proposed or designated critical habitat occurs in the project boundaries or vicinity. We are not aware of current or historic occurrence records for black-footed ferrets or black-tailed prairie dog towns (the primary habitat for black-footed ferrets) in the immediate project area.

Transient greater sage-grouse occurrences have been recorded within and adjacent to the project boundaries, and the Monument occurs within the breeding range of the Sprague's pipit. Management of the greater sage-grouse and Sprague's pipit is the responsibility of Montana Fish, Wildlife and Parks (FWP), and we encourage your coordination with FWP to assist in identifying specific lek locations, if any, and other seasonal habitats that may be affected by your proposed project. In addition, the *Management Plan and Conservation Strategies for Sage-Grouse in Montana* includes information on the identification of important seasonal habitats and recommended management practices to avoid impacts. The document can be accessed at http://fwpiis.mt.gov/content/getItem.aspx?id=31187. The *Sprague's Pipit (Anthus spragueii) Conservation Plan* prepared in 2010 provides similar information with respect to this species and can be accessed at http://www.fws.gov/mountainprairie/species/birds/spraguespipit/SpraguesJS2010r4.pdf.

Candidate species are those placed on the candidate list for future action, meaning those species do not receive statutory protection under the ESA. Candidates are reviewed annually by the Service to determine if they continue to warrant listing or to reassess their listing priority. Ideally, sufficient threats can be removed to eliminate the need for listing. If threats are not addressed or the status of the species declines, a candidate species can move up in priority for a listing proposal. Federal agencies and non-federal applicants can conference with the Service pursuant to section 7(a)(4) of ESA to ensure

that their actions do not negatively impact candidate species. Some federal agencies provide the same level of protection to candidate species as proposed or listed species and take appropriate measures to avoid impacts. While not required, we encourage this approach.

Migratory Birds

The MBTA prohibits the taking, killing, possession, and transportation, (among other actions) of migratory birds, their eggs, parts, and nests, except when specifically permitted by regulations. While the MBTA has no provision for allowing unauthorized take, the Service realizes that some birds may be killed during implementation of fire management activities, even if all known reasonable and effective measures to protect birds are used. The Service's Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and industries that have taken effective steps to avoid take of migratory birds and by encouraging others to implement measures to avoid take of migratory birds. It is not possible to absolve individuals, companies, or agencies from liability even if they implement bird mortality avoidance or other similar protective measures. However, the Office of Law Enforcement focuses its resources on investigating and prosecuting individuals and companies that take migratory birds without identifying and implementing all reasonable, prudent and effective measures to avoid that take. Agencies are encouraged to work closely with Service biologists to identify available protective measures when developing project plans, and to implement those measures prior to/during construction or similar activities.

Executive Order 13186 expressly requires that Federal agencies evaluate the effects of proposed actions on migratory birds (including eagles) pursuant to NEPA "or other established environmental review process;" restore and enhance the habitat of migratory birds, as practicable; identify where unintentional take reasonably attributable to agency actions has, or is likely to have, a measurable negative effect on migratory bird populations; and, with respect to those actions so identified, the agency shall develop and use principles, standards, and practices that will lessen the amount of unintentional take, developing any such conservation efforts in cooperation with the Service.

To the maximum extent practicable, project construction should be scheduled so as not to disrupt nesting raptors or other migratory birds during the breeding season. We recommend a 0.5-mile buffer between occupied nests and construction activities during the breeding season for most raptor species. If work is proposed to take place during the breeding season or at any other time which may result in take of migratory birds, their eggs, or active nests, the Service recommends that the project proponent take all practicable measures to avoid and minimize take, such as maintaining adequate buffers, to protect the birds until the young have fledged. Active nests may not be removed. The Service further recommends that if field surveys for nesting birds are conducted with the intent of avoiding take during construction, any documentation of the presence of migratory birds, eggs, and active nests, along with information regarding the qualifications of the biologist(s) performing the surveys, and any avoidance measures implemented at the project site be maintained.

Certain activities may require a permit from the Service's Migratory Bird Management Division. Please contact the Region 6 Migratory Bird Permits Office if you are uncertain if activities may result in take of migratory birds, eggs, or nests. Additional information about permits can be found at http://www.fws.gov/migratorybirds/mbpermits.html. Service guidance regarding bird nest destruction can be found at http://www.fws.gov/policy/m0208.pdf.

Bald and Golden Eagles

The BGEPA prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald or golden eagles, including their parts, nests, or eggs. The BGEPA provides criminal and civil penalties for persons who take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof. The BGEPA defines take as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. "Disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior. In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagles return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.

A permit is required for any legal take of bald or golden eagles or their nests (whether occupied or unoccupied). Limited issuance of permits to take bald and golden eagles can be authorized ''for the protection of . . .other interests in any particular locality'' where the take is compatible with the preservation of the bald eagle and the golden eagle, is associated with and not the purpose of an otherwise lawful activity, and cannot practicably be avoided. No one is required to seek a permit for any activity. However, where an activity results in take, it is a violation of BGEPA unless a permit authorizing that take has been obtained prior to the action.

We are not aware of bald or golden eagle nest records from within a mile of the proposed project. However, should work be proposed within 0.5 mile of an active eagle nest, we recommend that you comply with seasonal restrictions and distance buffers specified in the *2010 Montana Bald Eagle Management Guidelines: An Addendum to Montana Bald Eagle Management Plan (1994)* during construction. During the nesting season, especially early in the season, eagles can be very sensitive to disturbance near the nest site and may abandon the nest as a result of low-level disturbance, even from foot traffic.

Other Comments

We strongly recommend coordination with the Crow Tribal Council at P.O. Box 159, Crow Agency, MT 59022, 406-638-2601; FWP at 1420 East Sixth Ave., P.O. Box 200701, Helena, MT 59620-0701, 406-444-2535; and the Montana Natural Heritage Program, 1515 East 6th Avenue, Box 201800, Helena, MT 59620-1800, 406-444-5354. These agencies may be able to provide updated, site-specific information regarding threatened, endangered, and sensitive species (including greater sage-grouse leks); eagle and other raptor nest locations; and other fish and wildlife resources occurring in the proposed project area.

Sensitive resources that should be considered in developing a fire management plan include threatened, endangered, and candidate species and their habitat, eagle and other migratory bird species nesting and habitat; wetlands; ephemeral, intermittent and permanent streams; naturally wooded draws; sagebrush habitat; and native prairie. Additional recommendations include:

- Where applicable, install and maintain appropriate erosion control measures to reduce

sediment transport to adjacent wetlands and stream channels;

- Enact best management practices to avoid and minimize the spread of noxious weeds and other undesirable exotic plant species within the proposed project area, as well as to minimize spills of fuels and other hazardous materials;

- Confine disturbed areas as narrow as possible in or near sensitive resources such as native prairie, sagebrush habitat, wooded draws, wetlands, streams, prairie dog towns, and grouse leks; and

- Revegetate disturbed areas with appropriate native species obtained from local sources, as possible.

Thank you for the opportunity to review and comment on this proposed project. Please telephone Jeff Berglund at 406/449-5225, ext. 206, if you have any questions regarding this matter.

Scoping Comment

Organization: Montana Department of Environmental Quality

Individual: Bonnie Lovelace

Address: P.O. Box 200901
Helena, MT 59620-0901

Email: blovelace2@mt.gov

This is located well within the boundaries of the Crow Reservation in eastern Montana. Activities located within the boundaries of a reservation are under the jurisdiction of EPA and/or the tribal authorities, not DEQ.

If the project were located in DEQ jurisdiction, project planning for a NEPA/MEPA document would include air quality considerations such as:

1.) scheduling of burning during a timeframe with good dispersion conditions. and
2.) limiting the amount of burning at any one time such that impacts to ambient air quality are acceptable.

Predictive modeling may be a useful tool for the planning process to define the maximum amount of burning and the desired rate of burning to be accomplished at any one time. Implementation of the plan should include observations of air quality (such as use of visibility guidelines) to guide the pace and overall burning accomplishment for any one day. Development of a burn plan which allows the burn to be accomplished in several small pieces would provide for some control over total burn accomplishment and overall rate of the burn.

APPENDIX D
NONNATIVE PLANT SPECIES THAT OCCUR WITHIN LITTLE BIGHORN BATTLEFIELD NATIONAL MONUMENT

Non-native Vascular Plant Species List
Little Bighorn Battlefield National Monument
4/16/12

* Montana State Noxious Weed List

Knotweeds/Buckwheats/Smartweeds (POLYGONACEAE)

garden rhubarb	*Rheum rhabarbarum*
curly dock	*Rumex crispus*

Goosefoots (CHENOPODIACEAE)

five-hook bassia	*Bassia hyssopifolia*
common lambsquarters	*Chenopodium album*
halogeton	*Halogeton glomeratus*
kochia	*Kochia scoparia*
prickly Russian thistle	*Salsola tragus*

Pinks (CARYOPHYLLACEAE)

cone catchfly	*Silene conoidea*

Mustards (BRASSICACEAE)

yellow alyssum	*Alyssum alyssoides*
desert alyssum	*Alyssum desertorum*
*hoary alyssum	*Berteroa incana*
false flax	*Camelina microcarpa*
*whitetop	*Cardaria draba*
flixweed	*Descurainia sophia*
dame's rocket	*Hesperis matronalis*
clasping pepperweed	*Lepidium perfoliatum*
tumble mustard	*Sisymbrium altissimum*
field pennycress	*Thlaspi arvense*

Roses (ROSACEAE)

*sulphur cinquefoil	*Potentilla recta*

Peas (FABACEAE)

black medic	*Medicago lupulina*
alfalfa	*Medicago sativa*
white sweet clover	*Melilotus alba*
yellow sweet clover	*Melilotus officinalis*

St. Johnswort (HYPERICACEAE)

*St. Johnswort	*Hypericum perforatum*

Tamarisk (TAMARICACEAE)

*salt cedar, tamarisk	*Tamarix ramosissima*

Oleasters (ELAEAGNACEAE)

Russian olive	*Elaeagnus angustifolia*

Morningglories (CONVOLVULACEAE)

*field bindweed	*Convolvulus arvensis*

Borages (BORAGINACEAE)

*houndstongue	*Cynoglossum officinale*

Nightshades (SOLANACEAE)

black nightshade	*Solanum nigrum*

Figworts (SCROPHULARIACEAE)

*Dalmatian Toadflax	*Linaria dalmatica*
common mullein	*Verbascum thapsus*

Honeysuckles (CAPRIFOLIACEAE)

Tatarian honeysuckle	*Lonicera tatarica*

Asters/Sunflowers (ASTERACEAE)

*Russian knapweed	*Acroptilon repens*
*spotted knapweed	*Centaurea biebersteinii*
chicory	*Cichorium intybus*
*Canada thistle	*Cirsium arvense*
bull thistle	*Cirsium vulgare*
prickly lettuce	*Lactuca serriola*
field sow thistle	*Sonchus arvensis*
common dandelion	*Taraxacum officinale*
goatsbeard	*Tragopogon dubius*
cocklebur	*Xanthium strumarium*

Grasses (POACEAE)

crested wheatgrass	*Agropyron cristatum*
redtop	*Agrostis gigantea*
soft brome	*Bromus hordeaceus*
smooth brome	*Bromus inermis*
Japanese brome	*Bromus japonicus*
*cheatgrass	*Bromus tectorum*
quackgrass	*Elymus repens*
stinkgrass	*Eragrostis cilianensis*
annual false wheatgrass	*Eremopyrum triticeum*
meadow fescue	*Lolium pratense*
bulbous blue grass	*Poa bulbosa*
Canada bluegrass	*Poa compressa*
timothy	*Phleum pratense*
Kentucky bluegrass	*Poa pratensis*
common wheat	*Triticum aestivum*

Yuccas/Agaves (AGAVACEAE)

asparagus	*Asparagus officinalis*

This page is intentionally left blank

As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

NPS July 2012