

APPENDIX C.1 – ENVIRONMENTAL ASSESSMENT

ENVIRONMENTAL ASSESSMENT
FIRE MANAGEMENT PLAN
FOR
DENALI NATIONAL PARK AND PRESERVE

NATIONAL PARK SERVICE
DENALI NATIONAL PARK AND PRESERVE

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ENVIRONMENTAL ASSESSMENT

Fire Management Plan for Denali National Park and Preserve

I. INTRODUCTION

A. Purpose and Need

The National Park Service proposes implementing National Park Service Director's Order 18 (DO-18) (2002) by establishing a Fire Management Plan for Denali National Park and Preserve (DENA). This fire management plan is a comprehensive document that outlines the DENA fire management goals and describes the policies and actions by which these goals will be realized. The plan will formalize park-specific responsibilities for implementing the Alaska Interagency Wildland Fire Management Plan and will formalize park-specific fire management decision making process and procedures, redefines fire management strategies, articulates the park's fire management organization and responsibilities, and establishes the direct linkage between the resource management goals and fire management strategies. With the implementation of the proposed action, fire management within DENA will remain status quo.

The Fire Management Plan is necessary to comply with DO-18, and codifies the way fire will be managed within DENA. Although fire protection needs may arise and remain the first priority, managers need to consider that fire has long been an integral component of the area's ecosystems and is critical for the maintenance of virtually all indigenous conditions, from plant and animal populations to soil and permafrost layers. Accordingly, the scope of the preferred alternative and other considered alternative entail the planning and implementation of policies and practices flexible enough to allow the simultaneous pursuit of protection and resource management goals.

This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act of 1969 and the regulations of the Council of Environmental Quality (40 CFR 1508.9). It evaluates the potential impacts to cultural and natural resource values that could result from implementing the Denali National Park and Preserve Fire Management Plan. The environmental assessment is intended to facilitate decision-making, based on an understanding of the environmental consequences of the proposal, and to determine whether preparation of an environmental impact statement is required.

B. Background

Two federal legislative acts, the Organic Act and the General Authorities Act, prohibit impairment of park resources and values. NPS Management Policies and Director's Order 12 use the terms "resources and values" to mean the full spectrum of tangible and intangible attributes for which the park is established and is managed, including the Organic Act's fundamental purpose and any additional purposes as stated in the park's establishing

legislation. The impairment of park resources and values is not allowed unless directly and specifically provided by statute. The primary responsibility of the National Park Service is to ensure that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunity for enjoyment of them. The evaluation of whether impacts of a proposed action would lead to an impairment of park resources and values is included in this environmental assessment. Impairment may occur when there are potential impacts to 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 to opportunities for enjoyment of the park; or
- a goal in the park's general management plan or other relevant NPS planning documents.

Originally preserved as "a game refuge", Congress drafted the Act of February 26, 1917 (39 Statute 938) establishing Mount McKinley National Park. This Act stated that Mount McKinley National Park was:

“... set apart as a public park for the benefit and enjoyment of the people...for recreation purposes by the public and for the preservation of animals, birds, and fish and for the preservation of the natural curiosities and scenic beauties thereof...said park shall be, and is hereby established as a game refuge.”

In 1980, Congress created numerous new Parks, Preserves and Monuments through the passing of the Alaska National Interest Lands Conservation Act (ANILCA). This legislation provided a comprehensive statement of purpose for all recently designated Alaskan Park, Preserve and Monument areas. Section 202(3)(a) of ANILCA specifically created the additions to Denali National Park and Preserve and ascribes to them the following missions, among others:

"The park additions and preserve shall be managed for the following purposes, among others: To protect and interpret the entire mountain massif, and additional scenic mountain peaks and formations; and to protect habitat for, and populations of fish and wildlife, including but not limited to, brown/grizzly bears, moose, caribou, Dall sheep, wolves, swans and other waterfowl; and to provide continued opportunities including reasonable access, for mountain climbing, mountaineering, and other wilderness recreational activities."

The Denali National Park and Preserve General Management Plan (1986) specifies objectives directly relevant to the DENA fire management program: "In accordance with NPS policy, the objective for Denali is to allow natural forest and tundra fires to fulfill their ecological role in vegetational succession. Under the plan, natural fires occurring in Denali will be allowed to burn unless they threaten inholdings, certain identified historic sites, or neighboring lands that are zoned for protection. Such neighboring lands include abutting

native regional and village corporation lands, which are currently managed for total fire suppression." (DENA, GMP: 60)

In the 1980's the National Park Service cooperated with Bureau of Land Management, Alaska Department of Natural Resources, Alaska Department of Fish and Game, US Fish and Wildlife Service, Bureau of Indian Affairs, and Alaska Native regional and local village corporations to produce an Interagency Fire Management Plan for the Tanana/Minchumina (1982) and Matanuska/Susitna (1986) Planning Areas. This plan provided direction for fire management activity in Denali National Park and Preserve until 1998, when a variety of documents were consolidated and approved as the Alaska Interagency Wildland Fire Management Plan (AIWFMP). Under the AIWFMP, fire protection needs are determined through annual land owner/manager reviews and lands are then placed under critical, full, modified or limited protection categories, with categorization based on presence and/or proximity of values to be protected, as well as the resource management objectives of the pertinent land management agency (see Table 1 below for description of categories). Each reported wildland fire is managed in accordance with the categorization of the sub-unit in which it occurs, with responses ranging from rapid and aggressive attack by available forces in the case of fires detected in Critical Protection areas, to periodic surveillance for certain fires detected in Limited Protection areas (See Appendix K, Maps 2 and 3 for vicinity maps of DENA units).

At present 96% of the approximate 6 million acres lands managed by DENA fall in the Limited Fire Management Option (default Wildland Fire Use on NPS lands) [5,793,469 acres]. The balance of management option acreage is delineated 1.2% Full [73,238 acres] and 2.6% Modified [157,348 acres] 0.07% is identified as Critical [4,147 acres]. Most classified Critical, Full and Modified Options areas within NPS unit boundaries are the result of inholdings, administrative facilities and other land owners' selections.

The 1977 amendments to the Clean Air Act (CAA) designated the original Mt. McKinley National Park as a Class I airshed, which requires the prevention of significant deterioration of air quality over baseline conditions. That classification was extended to cover the 1980 ANILCA additions to the park and preserve. Denali National Park and Preserve is the only national park unit in Alaska that is designated as a mandatory Class I airshed. The primary values to be protected under the Clean Air Act are human health; and the secondary values include a variety of air-quality-related values (AQRVs), such as visibility and scenic, cultural, biological, and recreational resources. Protection of visibility is also a high priority under both Alaska regulations and, most recently, new national "regional haze" regulations issued by the EPA in June 1999. Air quality degradation by fire could affect visitor use and recreation purposes.

Table 1: Alaska Interagency Wildland Fire Management Plan Options

Protection Category	Policy	Intent
Critical	Aggressive suppression of fires within or threatening designated areas. Highest priority for available resources.	Prioritization of suppression actions for wildland fires threatening human life, inhabited property, and/or other designated structures. Complete protection of designated sites.
Full	Aggressive suppression of fires within or threatening designated areas, depending upon availability of resources.	Protection of uninhabited cultural and historical sites, private property, and high-value natural resources.
Modified	Fires in designated areas receive initial attack depending on availability of resources, unless land manager chooses otherwise and documents with WFSA. After designated conversion date ⁵ , operational response to Modified protection zones is identical to that of Limited zones.	Greater flexibility in selection of suppression strategies when chance of spread is high (e.g., indirect attack). Reduced commitment of resources when risk is low. Balancing of acres burned with suppression costs and with accomplishment of resource management objectives.
Limited	Wildland fires allowed to burn within predetermined areas. Continued protection of human life and site-specific values. Surveillance.	Reduction of long-term costs and risks through reduced frequency of large fires. Reduction of immediate suppression costs. Facilitation of bio-diversity and ecological health

⁵ Conversion Date: The intent of the Modified management option is to provide a higher level of protection when fire danger is high, probability of significant fire growth is high, and probability of containment is low. A lower level of protection is provided when fire danger decreases, potential for fire growth decreases and the probability of containment increases. This option is meant to reduce commitment of suppression resources when risks are low. The Alaska Wildland Fire Coordinating Group (AWFCG) is responsible for the adjustment, either later or earlier to the evaluation/conversion date for Modified management option areas. An individual may request, through an AWFCG representative, that the AWFCG consider an earlier evaluation date during unusually wet fire seasons or postpone the evaluation date during unusually dry fire seasons.

This EA presents two alternatives for the application and use of wildland fire as a management tool for resource benefits. All of the alternatives discussed here, including the preferred alternative described throughout the proposed DENA fire management plan, would entail continued compliance with the AIWFMP, while at the same time bringing the DENA fire management program into compliance with recently developed National Park Service directives. **NPS Director's Order 18** (2002) mandates a distinction between **prescribed fire**, defined as any fire planned and implemented by management, and **wildland fire**, defined as any unplanned ignition, whether human or natural. Wildland fire incidents, in turn, fall into two categories: **Wildland Fire Use** entails the management of certain unplanned ignitions for the achievement of management goals, including the reduction of dangerous and unnatural accumulations of burnable vegetation and the preservation of fire in its natural role; **wildland fire suppression** entails a broad spectrum of actions aimed at protecting life, property, and sensitive resources while also ensuring firefighter safety, cost effectiveness, and minimal disturbance from suppression activities.

Each of the alternatives presented in this Environmental Assessment is comprised of a different combination of the various management strategies permitted under NPS Director's Order 18. These alternatives have been evaluated for their ability to contribute to the accomplishment of the resource management objectives described above.

C. Impact Topics Addressed and Analyzed

Impact topics were identified to focus the analysis of alternatives on the most relevant subject matter and resources of concern. A brief rationale for each impact topic follows, as well as the reasons for dismissing specific topics from further analysis.

Vegetation and Biodiversity

The National Environmental Policy Act (1969) requires analysis of impacts on all affected components of the ecosystem, including biotic communities of plants and animals. NPS Management Policies (2001) requires maintenance of these communities, including their natural abundance, diversity and ecological integrity. Fire plays an important role in changes to vegetative cover which in turn affects habitat and overall ecological health.

Cultural Resources

Cultural resources can be significantly affected by fire and play a critical role in determining fire management units and specific fire responses.

Aesthetics and Recreation

The mission of the NPS, as stated in the Organic Act of 1916, is to "conserve the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations." Both the former Mt. McKinley National Park and the 1980 additions were given direction for the preservation of scenic values and the management of recreation. Scenic values, recreational activities, and general visitation within and around fire prone areas may be temporarily impacted by fire-related actions.

Local Economy

The National Environmental Policy Act (NEPA) regards impacts to the human environment to include any effects of federal actions on the social and economic well being of communities and individuals. Fires may limit economic opportunities and fire management may provide increased opportunities around bases of operation and for material suppliers.

Wetlands and Floodplains

Executive Orders 11988 and 11900 require the consideration of impacts to floodplains and wetlands. Fires in the interior of Alaska often burn the vegetation of wetlands, which may be the sites of management actions.

Subsistence Use and Wildlife Habitat

Title VIII, Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA) states “in determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands...the head of the federal agency...over such lands...shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs.” Subsistence use may be temporarily impacted, by fire management decisions.

Air Quality

The 1963 federal Clean Air Act (42 U.S.C. 7401 *et seq.* as amended) stipulates that federal land managers have an affirmative responsibility to protect a park’s air quality related values (including visibility, plants, animals, soils, water quality, cultural resources, and visitor health) from adverse air pollution impacts. Specifically, Denali National Park and Preserve is classified as a Class I airshed, minimizing acceptable levels of pollutants to these areas by very specific parameters and forcing the NPS to hold air quality to a high standard. Air quality would potentially be affected in the short-term during any type of ignition event.

Water Quality and Fisheries

National Park Service policies require the protection of water resources consistent with the Clean Water Act. Increased erosion following a fire may affect water quality.

Wilderness Resource Values

National Park Service Director’s Orders 41, on Wilderness Preservation and Management, states that “Fire management activities conducted in wilderness areas will conform to the basic purposes of wilderness”. Denali National Park and Preserve contains large areas of designated and suitable wilderness which would be affected by any likely ignition event.

D. Impact Topics Considered and Dismissed

Threatened and/or Endangered Species

The Endangered Species Act (1973) requires disclosure of impacts on all federally threatened or endangered species. NPS policy also requires the analysis of effects on federal species, as well as state-listed threatened, endangered, candidate, rare, declining and sensitive species. Currently there are no listed threatened or endangered species found in Denali National Park and Preserve.

Environmental Justice. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations requires all federal agencies identify and address disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. This project would not be expected to result in significant changes in the socioeconomic environment of the project area, and, therefore, would not be expected to have any direct or indirect impacts to minority or low-income populations or communities.

II. RANGE OF ALTERNATIVES

A. Introduction.

Each alternative consists of a different combination of the fire management strategies as mandated by NPS Director's Order 18 (DO-18), with each alternative representing a different application of fire as a management tool. The alternatives differ in their respective approaches to the management of wildland ignitions and in their allowance or preclusion of prescribed fire.

B. Actions Common to all Alternatives

Under each alternative, mechanical fuel reduction may be used to mitigate hazard fuel buildup or recreate historical landscapes/conditions in areas where prescribed fire or wildland fire would pose an unreasonable threat to the property or resources.

All fire management actions at DENA will be conducted in full compliance with local, state, and interstate air pollution control regulations as required by the Clean Air Act, 42 U.S.C. 7418. Currently, no local or interstate air pollution control regulations exist in Alaska.

DENA will employ three primary strategies in order to protect archeological, cultural, and historic sites from damage by fire or fire suppression activities. First, culturally significant structures will be assigned Critical or Full Protection status, as dictated by the recommended criteria for fire protection of structural resources within DENA. Second, personnel conducting detection and/or reconnaissance flights within DENA will be directed to remain alert for the presence of any undiscovered cultural resource sites or structures and to report their presence to the Western Area FMO. Third, designated Incident Commanders will consult with appropriate resource advisors regarding the identification and sensitivity of previously unknown sites, and will cooperate with the Agency Advisor to mitigate any damage to such sites.

Certain fire suppression activities could pose a threat to fragile soil layers and to other ecosystem components. This type of risk will be mitigated through the use of minimum impact suppression tactics as specified by NPS policy.

C. Alternatives

Alternative 1: Wildland Fire Suppression

Natural ignitions occurring in certain areas and under predetermined conditions would be managed for the accomplishment of resource management goals, including the preservation of fire in its natural role and the reduction of hazardous accumulations of burnable vegetation. Any fire posing a threat to life or property would be immediately suppressed. The suppression response is described in the Alaska Interagency Wildland Fire Management Plan. Prescribed fires would not be implemented.

Alternative 2: Combination of Prescribed Fire Use, Wildland Fire Use, and Wildland Fire Suppression (NPS Preferred Alternative and No Action Alternative)

All three of the major management actions (Wildland Fire Suppression, Wildland Fire Use and Prescribed Fire) described under DO-18 would be allowed, as determined by a combination of pre-established and incident-specific decision making criteria. This alternative represents no change in the on-the-ground implementation of fire management activities; however, it does define the strategy for Wildland Fire Use. Wildland fires that do not pose a threat to life, property, or significant resources would be managed for the accomplishment of resource management goals, including the preservation of fire in its natural role and the reduction of hazardous accumulations of burnable vegetation. Prescribed fire would be implemented, in certain cases, under the direction of National Park Service personnel for the purpose of reducing hazardous fuel loads. Suppression would continue in or near developed areas and near DENA boundaries when neighboring administrative units with different fire management objectives adjoin NPS land. In areas known to contain fire sensitive cultural and/or archeological resources that warrant protection, or whenever insufficient resources are available to ensure the effective, long-term management of wildland fire to meet resource management objectives, suppression action would continue.

D. Alternatives Considered but Rejected.

Full Wildland Fire Suppression

All ignitions, including those of natural origin, would be suppressed and no prescribed fire would be implemented. Reduction of flammable vegetation would be accomplished strictly by mechanical means (e.g. through the use of chain saws, cross cut saws or other tools). Mechanical reduction would be limited primarily to the protection of historic and/or archeological sites and DENA unit boundary areas. In some cases, however, mechanical reduction could be used to restore selected landscapes to historic conditions.

This alternative is rejected for the following reasons: 1) the increased risk of catastrophic wildland fire which would result from the exclusion of the area's natural burn cycle; 2) the prohibitively high cost of large-scale mechanical fuel reduction; 3) non-conformance with the existing interagency management scheme and a potential to cause an impairment of park resources and values.

Full Wildland Fire Suppression and Prescribed Fire

All ignitions, including those of natural origin, would be suppressed. The effects of natural wildland fire would be simulated through the use of planned ignitions conducted by park

personnel in defined zones. Such fires would be ignited under predetermined fuel and weather conditions; control problems would thereby be minimal.

This alternative was rejected for the following reasons: 1) the inability to maintain a natural burn cycle through only prescribed burns; 2) the increased risk of catastrophic wildland fire which would result from the exclusion of the area's natural burn cycle; 3) the prohibitively high cost of large-scale mechanical fuel reduction and prescribed burns; 4) non-conformance with the existing interagency management scheme and 5) a potential to cause impairment of park resources and values such as the continuation of a naturally functioning ecosystem, of which fire is an important part..

E. Environmentally Preferred Alternative

Alternative 2 is the environmentally preferred alternative because it provides the full spectrum of fire management strategies and practices to accomplish DENA fire and resource management objectives while protecting human life and identified resources/values. The potential use of prescribed fire would permit managers to reduce the risk of catastrophic fires around important cultural resource sites as well as limiting the severity of fire in natural resource areas such as floodplain forests

III. AFFECTED ENVIRONMENT

A. Introduction.

Denali National Park and Preserve encompasses 6 million acres, about the size of the state of New Hampshire. This large size enables a spectacular array of flora and fauna to live together in a healthy natural ecosystem and provides excellent opportunities to study large subarctic ecosystems in settings primarily undisturbed by humans. Because of these values, the United Nations Man and the Biosphere Program designated the park and preserve an International Biosphere Reserve. However, within its boundary, the land exhibits complex ownership patterns with native corporation lands, native allotments, lodge properties and other inholdings, and unpatented mining claims. Located in central Alaska, this management area can be remote. Access ranges from private and chartered aircraft year round to motorized and non-motorized boats and 4-wheel drive vehicles in the summer to snow machine and sled dogs during ice and snow covered months. Some native villages are found just beyond the park/preserve boundaries along major river corridors and lakes where transportation options are not limited to aircraft travel. DENA Park Headquarters is located two miles west of the park entrance along the George Parks Highway which is about 14 miles south of Healy, Alaska. The Alaska Railroad also serves a depot in the Headquarters District. With regular road, rail and air service from either Anchorage or Fairbanks, the park entrance area serves as the most suitable focal point and transportation hub for travel to and from the park/preserve.

B. Natural Environment

Denali National Park and Preserve encompasses a vast expanse of ecotypes and terrain features within its boundaries of six million acres. DENA is dominated by three physiographic provinces in central Alaska, the Alaska Range, Northern Foothills of the Alaska Range, and the Tanana-Kuskokwim Lowlands, while portions of the park extend into the Cook Inlet-Susitna Lowlands, the Broad Pass Depression, and the Kuskokwim Mountains. Of these areas, the Nenana, Kantishna and Kuskokwim (North Fork) Rivers drain three major watersheds on the north side of the range. The Chulitna and Yentna Rivers drain two major watersheds on the south side of the park. . Seventeen per cent of the park and preserve is covered by glaciers and permanent snowfields. Rugged mountains and subsequent rolling hills give way to broad valleys of glacial origin that range from 2 to 10 miles in breadth. The Tanana-Kuskokwim Lowlands to the north of the foothills form a broad region of flat to gently rolling lowlands drained by the Tanana and Kuskokwim Rivers. Mosaic displays of tundra and taiga communities, healthy riparian areas and Alaskan Interior boreal spruce forest typify vegetation. Controlled by the interaction of climate, topography, substrate and site history, these communities vary considerably across the landscape of the park.

Permafrost, where ground temperatures remain below 32°F for at least two years, occurs in most areas of Denali National Park and Preserve. However, permafrost is discontinuous (50–90% of area), relatively warm (30–32°F), and of low ice content (0–10% excess ice) in the Tanana-Kuskokwim Lowlands, northern foothills, and the Alaska Range (Ferrians 1965, Ferrians et al. 1969, Brown et al. 1997). There are, however, some isolated areas of permafrost with moderate ice contents in the Tanana-Kuskokwim Lowlands, which makes that terrain more susceptible to thermokarst⁶. In these areas, permafrost typically is found in wet, low-lying areas with fine-grained soils, on steep north facing slopes and at high elevations. Permafrost occurs sporadically (10–50% of area) in the Cook Inlet-Susitna Lowlands. Exact permafrost thickness has not been documented, but thickness layers of up to 100 feet have been recorded near the eastern entrance to the park. Permafrost hinders subsurface drainage, causing unstable soil conditions on sloping surfaces. Consequently, when surfaces are disturbed and permafrost is allowed to melt, soils often collapse. Notably, fires are common disturbances that initiate thermokarst.

The climate in DENA consists of four distinct seasons with relatively short cool summers and long severe winters. Spring and autumn come and go rapidly with the quick increase and decrease in sunlight and temperature. DENA receives nearly continuous sunlight (20 hours) during the summer for approximately 30 days.

Numerous species of large and small mammals occur within DENA. Large mammals include Dall sheep, moose, lynx, coyote, caribou, wolves and black and brown bear. Smaller mammals, such as snowshoe hare, wolverine, red fox, porcupine, weasel, river otter, ground squirrel, mink, marten, marmot, muskrat, vole, lemming, shrew and many others are

⁶ Thermokarst is the degradation of permafrost layer due to warming and melting of the permafrost and subsequent subsidence of the ground surface.

abundant throughout the park area. In addition, over 10 species of fish and 155 species of bird, and 1 amphibian are also present.

C. Cultural Environment

Denali National Park and Preserve is home to a host of cultural resources that date back to the earliest period of human settlement of North America. Many of these resources are from prehistoric periods – archeological investigations conducted in and immediately adjacent to the park strongly suggest that sites dating from the Paleoarctic tradition (11,000 years before present) through the Protohistoric period (200 years before present) exist in the park.

There are approximately 265 known cultural sites and structural units or complexes in the park. Though this may constitute only a fraction of what actually exists within the park, these resources illustrate most major elements of the region's prehistory and history.

Many cultural sites relate to prehistoric occupation of hunters/gatherers that used the area on an intermittent basis. There are at least 80 prehistoric sites throughout the park. These sites contain lithic remains such as scrapers, microblades, and flakes, and other lithic remains of early hunters. Some sites have been determined potentially eligible for nomination to the National Register.

D. Historical Role of Fire

Fires are relatively frequent occurrences within the management boundaries of DENA. The park's northwest corner lies within the southernmost belt of Interior Alaska, where fire has played a critical role in ecosystem sustainability. (See Appendix J: Fire Statistics & Graphs)

Fire has been a driving force of change in the Alaskan interior and sub-arctic for thousands of years. It is a key environmental factor in these cold-dominated ecosystems. Periodic fires have served to select plants and animals that are adapted to fire-caused change. Without fire, organic matter accumulates, the permafrost table rises, and ecosystem productivity declines. Vegetation communities become much less diverse, and their value as wildlife habitat decreases.

Fire rejuvenates these systems. It removes some of the insulating organic matter and elicits a warming of the soil. Nutrients are added both as a result of combustion and by increased decomposition rates. Vegetative re-growth quickly occurs, and the cycle begins again.

The impact of aggressive suppression on the Alaskan interior at large and DENA in particular is, difficult to assess. Organized suppression has occurred on a large scale in Alaska since 1939; however, effects of suppression efforts are not clear. Alaska fire management personnel postulate that the fire ecology of the area may be relatively unchanged from its condition prior to the development of organized suppression efforts.

E. Wildland Fire Management Situation

The seasonal fire cycle in the Alaskan interior consists of four “micro” seasons or phases, each varying with the changing weather patterns and the stages of vegetation development for the growing season. The first begins in mid-May with the loss of snow cover, and ends in mid June when green-up begins. During the transition from 100% winter-cured fuels to green-up, human-caused fires occur frequently. These fires are usually relatively easy to suppress. Spring fires that are not suppressed, however, often grow later in the season as fuels become dryer. The second and third fire-cycle phases are primarily lightning driven. Suppression of such fires is more difficult. Fires occurring after mid June, the second period, usually do not develop the intensity of later summer fires; during hot, dry, and windy conditions, however, June wildland ignitions can result in extreme fire behavior. The third period of fire activity begins in early July and runs through the first part of August. This is the period of maximum fire activity. The final micro-season runs from early to late August with few occasional starts into September on dry warm years. These fires are generally easy to control except during particularly dry autumn weather.

IV. ENVIRONMENTAL CONSEQUENCES

A. Impacts of Alternatives

Alternative 1. Wildland Fire Use and Wildland Fire Suppression

Vegetation and Biodiversity

Certain wildland fires would be managed for the accomplishment of resource management goals, including the preservation of fire as a natural process and the reduction of burnable vegetation therefore maintaining a naturally functioning ecosystem. However, in the Full Protection Units the exclusion of prescribed fire may result in an unacceptable increase in vegetation thereby increasing the threat to the resources found within these units.

A purpose of DENA is to "assure the optimum functioning of entire ecological systems in undisturbed natural habitats...and shall not be jeopardized by human use." (Congressional Record- House, H10549, November 12, 1980) Fire is an inextricable component of the fire dependant ecosystem of this area and is known to maintain a balanced, naturally functioning ecosystem. This alternative would manage ignitions within established resource objectives to maintain the natural function of the ecosystem in DENA.

Conclusion: Minor impacts are expected with the use of this alternative due to an increase in vegetation resulting from no prescribed fire. The level of impacts to vegetation and biodiversity anticipated from this alternative would not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or are key to the natural or cultural integrity of the park.

Cultural Resources

The prohibition of prescribed fire could hamper the protection of historic and/or archeological resources and the restoration and/or protection of historic landscapes and conditions. Mechanical techniques employed in place of prescribed fire would tend to be

more expensive, possibly more destructive, and may not sufficiently mimic the effects of fire. However, certain wildland fires would be managed for the accomplishment of resource management goals including the role of natural processes thereby better protecting the cultural resources from catastrophic fire.

A purpose of DENA is to protect and interpret historic archeological sites for the use benefit, education, and inspiration of present and future generations.

Conclusion: Minor impacts would occur due to an increase in vegetation resulting from no prescribed fire. The level of impacts to cultural resources anticipated from this alternative would not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or are key to the natural or cultural integrity of the park.

Aesthetics and Recreation

Under this alternative, impacts would include the occasional closure of specific areas due to fire activity or smoke concentrations for the safety of visitors resulting in an inconvenience for the visitors or cause them to alter their plans. Smoke will for short time periods degrade visibility which also may inconvenience visitors or cause them to alter their plans. Fire naturally occurs within DENA ecosystems and degradation in air quality as the result of smoke is part of the function of a fire dependent ecosystem.

Through careful application of mechanical clearing to reduce hazardous fuels minor aesthetic impact may occur in the form of thinning vegetation.

Conclusion: This alternative may result in a minimal impact by closing certain areas temporarily and more vegetation may be burned decreasing aesthetics in limited areas. The level of impacts to aesthetics and recreation anticipated from this alternative would not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or are key to the natural or cultural integrity of the park.

Local Economy

There would be a slight influx of revenue for businesses in communities near an incident resulting from occasional suppression operations. Conversely, closures of areas due to wildfire activity may affect recreational oriented businesses.

Conclusion: Fire management in DENA under this alternative is expected to have a minor beneficial impact to the local economy.

Wetlands and Floodplains

There would be a minor impact to these area due if fire suppression operations occur (handline construction). There may be impacts due to erosion after fire has burned through a wetlands or floodplain. Once vegetation in these areas re-establishes erosion is expected to return to normal levels.

Fire is an inextricable component of the fire dependent ecosystem of this area and is known to maintain a balanced, naturally functioning ecosystem. Managing wildland fire within

established resource objectives would encourage the natural function of the ecosystem in DENA.

Conclusion: There would be temporary minor impacts due to a loss of vegetation and temporarily increased erosion. The level of impacts to wetlands and floodplains anticipated from this alternative would not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or is critical to the natural or cultural integrity of the park.

Subsistence Use and Wildlife Habitat

A short-term impact on game species and plants in specific areas could occur due to the decrease of vegetation within burned areas. However, this alternative would more adequately facilitate the long-term preservation of the area's natural processes by allowing fire to play its natural role in the ecosystem. Suppression actions may adversely affect subsistence activities during the life of the incident by the increase of human activity and air traffic in the immediate area. Fire is an inextricable component of the fire dependent ecosystem of this area and is known to contribute toward the maintenance of a balanced, naturally functioning ecosystem.

Conclusion: There is less than one percent of lands in the critical a management option and 1.5 percent of full protection lands within DENA, thus limiting negative impacts as a result of suppression actions. This would not disrupt the natural function of the ecosystem in DENA, therefore maintaining wildlife habitat and subsistence use within the management area. There would be a negligible short-term impact resulting from a displacement of wildlife in the burned area. This, however, would replicate a naturally functioning ecosystem and subsistence regime. The level of impacts to subsistence and wildlife habitat anticipated from this alternative would not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or are key to the natural or cultural integrity of the park.

Air Quality

Under this alternative, smoke would be monitored for trajectory, mixing height, and impact to overall air quality. Certain wildland fires would be managed for the accomplishment of resource management goals, including the preservation of fire in its natural role. This would reduce the possibility of catastrophic fire thereby reducing the chance for long-term, intense decrease of air quality.

Conclusion: No long term impacts to air quality are expected. The level of impacts to air quality anticipated from this alternative would not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or are critical to the natural or cultural integrity of the park.

Water Quality and Fisheries

Under this alternative certain wildland fires would be managed for the accomplishment of resource management goals including the preservation of fire in its natural role and the reduction of burnable vegetation. This would result in a greater number of low-intensity wildland fires thereby reducing the potential for erosion along streams.

Selection of this alternative would not disrupt the natural function of the ecosystems within DENA. Fire is a common occurrence in this ecosystem and does result in some erosion, affecting water quality and fisheries habitat. Short-term negligible impacts of increased sedimentation may occur initially after the fire and prior to reestablishment of vegetation. Under this alternative, the amount of erosion is expected to continue at the same natural level and will not result in an impairment of the stated park purpose.

Conclusion: Long term impacts to water quality and fisheries are not expected. The level of impacts to water quality and fisheries anticipated from this alternative would not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or are key to the natural or cultural integrity of the park.

Wilderness Resource Values

Under this alternative certain wildland fires would be managed for the accomplishment of resource management goals including the preservation of fire as a natural process.

Vast amounts of Denali are designated wilderness or are suitable for such designation. The wilderness character of the area reflects natural conditions and a vast undeveloped sub-arctic landscape without permanent human residence. A sense of solitude and distance from modern civilization and its modifications of the natural world dominate the recreational experience. Under this alternative natural fire would be allowed to continue and would continue as an integral part of the wilderness experience.

Conclusion: Long-term impacts to wilderness resource values are not expected. Short-term impacts during fire suppression activities may occur but will be mitigated by adhering to special concerns outlined in the DENA FMP and by the use of minimum tool/minimum requirement analysis. The level of impacts to wilderness character anticipated from this alternative would not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or are critical to the natural integrity of the park.

Alternative 1, Cumulative Impacts: The on-going and future activity that would have a cumulative effect on resources of concern within and outside of DENA unit boundaries analyzed in this Environmental Assessment is the adjacent landowners' fire management option selection. All public land management agencies in Alaska are signatories of the Alaska Interagency Fire Management Plan, which allows for fire to burn on the landscape in limited management units. Much of the public lands surrounding DENA are in a limited management unit and may result in multiple large fires in the area, especially with an increase in vegetation due to no prescribed burns. The results of these multiple fires may be greater than fires managed just within DENA boundaries.

Alternative 2. Prescribed Fire Use, Wildland Fire Use, and Wildland Fire Suppression (NPS Preferred Alternative)

Vegetation and Biodiversity

This alternative would have the least impact on vegetation with the maximum potential for maintaining diversity, by way of careful implementation of prescribed fire in areas ill suited

to Wildland Fire Use. Wildland fire that poses a potential threat to life, property, or sensitive resources would be suppressed, while continued implementation of Wildland Fire Use in remote portions of DENA would ensure the cost-effective preservation of the area's natural fire ecology as well as the reduction of potentially dangerous fuel loads.

A purpose of DENA is to "assure the optimum functioning of entire ecological systems in undisturbed natural habitats...and shall not be jeopardized by human use." (Congressional Record- House, H10549, November 12, 1980) Fire is an inextricable component of the environment of this area and is necessary to maintain a balanced, naturally functioning ecosystem. Selection of this alternative to use prescribed fire; Wildland Fire Use within established resource objectives, and wildland fire suppression would result in a natural functioning ecosystem within DENA.

Conclusion: A balanced and naturally functioning ecosystem would be maintained with the use of this alternative. The level of impacts to vegetation and biodiversity anticipated from this alternative would not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or are key to the natural or cultural integrity of the park.

Cultural Resources

There would be improved long-term protection of cultural resources with the use of prescribed fire near and surrounding cultural resources. The occasional use of prescribed fire would allow a relatively cost-effective means of reducing fuel loads and preserving historic landscapes and conditions where the presence of values to be protected prohibits the implementation of Wildland Fire Use.

Conclusion: Long-term protection of cultural resources would result from this alternative. This is anticipated to not result in an impairment of park resources, fulfilling specific purposes identified in the establishing legislation, or is key to the natural or cultural integrity of the park.

Aesthetics and Recreation

The impacts would be similar to Alternative 1 with the addition of the occasional use of prescribed fire that would allow a relatively cost-effective means of reducing fuel loads where the presence of values to be protected prohibits the implementation of Wildland Fire Use.

Conclusion: This alternative may result in minor impacts by closing certain areas and some vegetation may be burned decreasing aesthetics in limited areas. The level of impacts to aesthetics and recreation anticipated from this alternative would not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or are key to the natural or cultural integrity of the park.

Local Economy

The impacts would be similar to Alternative 1 with the addition that the occasional use of prescribed fire would allow a relatively cost-effective means of reducing fuel loads where the presence of values to be protected prohibits the implementation of Wildland Fire Use.

Conclusion: The increase in revenue to communities supporting fire management operations would result in a minor beneficial impact.

Wetlands and Floodplains

The impacts would be similar to Alternative 1 with the addition that the occasional use of prescribed fire would allow a relatively cost-effective means of reducing fuel loads where the presence of values to be protected prohibits the implementation of Wildland Fire Use.

Conclusion: There would be temporary minor impacts due to a loss of vegetation. The level of impacts to wetlands and floodplains anticipated from this alternative would not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or are key to the natural or cultural integrity of the park.

Subsistence Use and Wildlife Habitat

The impacts would be similar to Alternative 1 with the addition of the occasional use of prescribed fire would also allow a relatively cost-effective means of reducing fuel loads where the presence of values to be protected prohibits the implementation of Wildland Fire Use.

Conclusion: The natural function of the ecosystems within DENA would not be disturbed, therefore maintaining wildlife habitat and subsistence use within the Park/Preserve. There would be a minor short-term impacts resulting from a displacement of wildlife in the burned area. This, however, would replicate a naturally functioning ecosystem and subsistence regime. Additional impacts may result from suppression actions; however, limited acreage of critical and full protection designation minimizes suppression needs. The level of impacts to subsistence and wildlife habitat anticipated from this alternative would not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or are key to the natural or cultural integrity of the park.

Air Quality

The impacts would be similar to Alternative 1 with the addition of the occasional use of prescribed fire would allow a relatively cost-effective means of reducing fuel loads where the presence of values to be protected prohibits the implementation of Wildland Fire Use. Fire is a naturally occurring event in the DENA ecosystem. Degradation in air quality at the levels expected would be similar to a natural occurrence.

Conclusion: No long-term impacts to air quality are expected. The level of impacts to air quality anticipated from this alternative would not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or are key to the natural or cultural integrity of the park.

Water Quality and Fisheries

The impacts would be similar to Alternative 1 with the addition of the occasional use of prescribed fire that would allow a relatively cost-effective means of reducing fuel loads where the presence of values to be protected prohibits the implementation of Wildland Fire Use.

Selection of this alternative would not disrupt the natural function of the ecosystem within DENA. Fire is a common occurrence in this ecosystem and does result in some erosion, affecting water quality and fisheries habitat. The erosion is expected to continue at the same natural levels.

Conclusion: Long term impacts to water quality and fisheries are not expected. Short-term negligible impacts of increased sedimentation may occur initially after the fire and prior to reestablishment of vegetation. The level of impacts to water quality and fisheries anticipated from this alternative would not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or are key to the natural or cultural integrity of the management area.

Wilderness Resource Values

The impacts would be similar to Alternative 1 with the addition of the occasional use of prescribed fire that would allow a relatively cost-effective means of reducing fuel loads where the presence of values to be protected prohibits the implementation of Wildland Fire Use.

The wilderness character of the area reflects natural conditions and a vast undeveloped sub-arctic landscape without permanent human residence. A sense of solitude and distance from modern civilization and its modifications of the natural world dominate the recreational experience. Under this alternative natural fire would be allowed to continue and will not result in an impairment of the stated park purpose.

Conclusion: Long-term impacts to wilderness character are not expected. Short-term impacts during fire suppression activities (e.g. surface disturbance by handlines) may occur but will be mitigated by adhering to special concerns outlined in the DENA FMP and by the use of minimum tool/minimum requirement analysis. The level of impacts to wilderness character anticipated from this alternative would not result in an impairment of park resources that fulfill specific purposes identified in the establishing legislation or are key to the natural integrity of the park.

Alternative 2 Cumulative Impacts: The on-going and future activity that would have a cumulative effect on resources of concern within and outside of DENA boundaries analyzed in this Environmental Assessment is the adjacent landowners' fire management option selection. All public land management agencies in Alaska are signatories of the Alaska Interagency Fire Management Plan, which allows for fire to burn on the landscape in the limited suppression option. Much of the public lands surrounding DENA are in a limited suppression option, which has the potential to result in multiple large fires in the area. The results of these multiple fires may be greater than fires managed just within DENA boundaries.

B. Cumulative Impact Mitigation

The convening of a Multi-Agency Coordinating (MAC) group can mitigate potential cumulative impacts. As directed in the Alaska Interagency Fire Management Plan, "A statewide Multi-Agency Coordinating (MAC) group may be convened to implement a

temporary change from the selected management options for a specific geographic area(s) during periods of unusual fire conditions (e.g., numerous fires, predicted drying trends, smoke problems, unusually wet conditions or suppression resource shortages).”

C. IMPACTS OF ALTERNATIVES SUMMARY

	Alternative 1: Wildland Fire Use and Wildland Fire Suppression	Alternative 2 (Preferred): Prescribed Fire Use, Wildland Fire Use, and Wildland Fire Suppression
Vegetation and Biodiversity	Minor impact: continued potential for minimal loss of diversity through fire exclusion in or near Critical and Full Protection Units and sites.	Least impact: maximum potential for diversity through careful implementation of prescribed fire in areas ill-suited to Wildland Fire Use.
Cultural Resources	Minor impact: Increased potential for uncontrolled fire due to increased fuels through fire exclusion in or near Critical and Full Protection Units and sites.	Improved long-term protection of registered and unregistered historic and/or archeological sites; improved maintenance of historical landscapes and conditions.
Aesthetics and Recreation	Minor impact: occasional closures of specific areas; vegetation burned may decrease aesthetics.	Minor impact: occasional closures of specific areas; vegetation burned may decrease aesthetics.
Local Economy	Minor impact	Minor impact
Wetlands and Floodplains	Minor impact: may be some erosion until vegetation returns.	Minor impact; may be some erosion until vegetation returns.
Subsistence Use and Wildlife Habitat	No long-term impact; some potential for short-term displacement of game from specific areas.	No long-term impact; some potential for short-term displacement of game from specific areas.
Water Quality and Fisheries	No long-term impact; some short-term erosion.	No long-term impact; some short-term erosion.
Air Quality	Minor impact.	Minor impact.
Wilderness Character	No long-term impact; some short-term impact from fire suppression activities.	No long-term impact; some short-term impact from fire suppression activities.

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APPENDIX C.2 – ANILCA 810

ANILCA Title VIII Section 810 (a) Summary Evaluation and Findings

I. INTRODUCTION

This section was prepared to comply with Title VIII, Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA). It summarizes the evaluations of potential restrictions to subsistence activities that could result from the implementation of the proposed fire management plan in Denali National Park and Preserve (DENA).

II. EVALUATION PROCESS

Section 810(a) of ANILCA states:

In determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands...the head of the federal agency...over such lands...shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes. No such withdrawal, reservation, lease, permit, or other use, occupancy or disposition of such lands, which would significantly restrict subsistence uses shall be affected until the head of such Federal agency—

- (1) gives notice to the appropriate State agency and the appropriate local committees and regional councils established pursuant to section 805;
- (2) gives notice of, and holds, a hearing in the vicinity of the area involved;
and
- (3) determines that (A) such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands, (B) the proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition, and (C) reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.

In 1980, ANILCA established the boundaries and purposes of new and expanded conservation system units in Alaska, including specific language for the additions in Denali National Park and Preserve:

“To preserve unrivaled scenic and geological values associated with natural landscapes; to provide for the maintenance of sound populations of, and habitat for, wildlife species of inestimable value to the citizens of Alaska and the Nation, including those species dependent on vast relatively undeveloped areas; to preserve in their natural state extensive unaltered

arctic tundra, boreal forest, and coastal rainforest ecosystems; to protect the resources related to subsistence needs; to protect and preserve historic and archeological sites, rivers, and lands, and to preserve wilderness resource values and related recreational opportunities...; and to maintain opportunities for scientific research.”

ANILCA also provides direction for the preservation of historic and archeological sites and access to subsistence resources within Denali. Sections 101 (a), (b), and (c) of ANILCA charges all national park units in Alaska with the preservation of historic and archeological sites. Subsistence uses by local residents shall be permitted in the additions, where such uses are traditional (ANILCA, sec 202(3)(a)).

The potential for significant restriction to subsistence resources must be evaluated for the proposed action’s effect upon subsistence uses and needs, the availability of other lands for the purposes sought to be achieved and other alternatives which would reduce or eliminate them.

III. PROPOSED ACTION ON FEDERAL LANDS

The National Park Service requires every administrative unit with burnable vegetation to develop a fire management plan—a unit-specific document outlining fire management goals and describing the policies and actions by which these goals will be realized (Director’s Order 18). Since 1982, the DENA fire management program has operated under the jurisdiction of various statewide interagency documents, including the Alaska Interagency Wildland Fire Management Plan, or AIWFMP (1998). Under the AIWFMP, fire protection needs at Denali National Park and Preserve are determined by NPS and Bureau of Land Management (BLM) and/or State of Alaska, DNR, Division of Forestry (DOF) managers; lands within DENA are categorized as **critical**, **full**, **modified**, or **limited** protection, depending on the proximity of values to be protected and on overall resource management objectives.

The proposed action consists of the establishment of a Fire Management Plan for Denali National Park and Preserve. The preferred alternative and the other considered alternatives (see Appendix C1, Environmental Assessment, this document) specify continued adherence to the AIWFMP as well as compliance with recently developed National Park Service directives. Specifically, NPS Director’s Order 18 mandates a distinction between **prescribed fire** (planned and implemented by management) and **wildland fire** (unplanned ignitions), with wildland fire incidents further categorized, in turn, as either wildland **fire use** or wildland fire **suppression**. Each of the considered alternatives mandate a specific configuration of DO-18 management options and relates these options to the policies and procedures outlined in the AIWFMP.

The preferred alternative allows for the continued management of wildland fire at Denali National Park and Preserve through a combination of wildland fire suppression, wildland fire use, and prescribed fire use. This statement of Summary Evaluations and Findings addresses the impact of these fire management policies and actions on subsistence activities within the management area.

IV. AFFECTED ENVIRONMENT

A summary of the affected environment pertinent to subsistence uses is presented here.

The original Mount McKinley National Park was established in 1917 primarily as a refuge for large mammals. In 1980, ANILCA enlarged the Old Park to more than 6 million acres, and re-designated the area as Denali National Park and Preserve. Subsistence uses within Denali National Park and Preserve are permitted in accordance with Titles II and VIII of ANILCA. Lands within former Mount McKinley National Park are closed to subsistence uses.

A regional population of approximately 300 eligible local rural residents qualifies for subsistence use of park resources. Resident zone communities for Denali National Park and Preserve are Cantwell, Minchumina, Nikolai, and Telida. By virtue of their residence, local rural residents of these communities are eligible to pursue subsistence activities in the new park ANILCA additions. Local rural residents who do not live in the designated resident zone communities, but who have customarily and traditionally engaged in subsistence activities within the park additions, may continue to do so pursuant to a subsistence permit issued by the Superintendent.

The NPS realizes that Denali National Park and Preserve may be especially important to certain communities and households in the area for subsistence purposes. The resident zone communities of Minchumina and Telida use park and preserve lands for trapping and occasional moose hunting along area rivers. Residents of Nikolai have used park resources in the past. Residents of Cantwell, hunt moose and caribou, trap, and harvest firewood and other subsistence resources in the ANILCA park additions. The important subsistence species include moose, caribou, salmon (coho, king, pink and sockeye), Burbot, Dolly Varden, grayling, lake trout, northern pike, rainbow trout, whitefish, beaver, coyote, land otter, weasel, lynx, marten, mink, muskrat, red fox, wolf and wolverine, ptarmigan, grouse, ducks and geese.

The NPS recognizes that patterns of subsistence use vary from time to time and from place to place depending on the availability of wildlife and other renewable natural resources. A subsistence harvest in any given year may vary considerably from previous years because of such factors as weather, migration patterns and natural population cycles. However, the pattern is assumed to be generally applicable to harvests in recent years with variations of reasonable magnitude.

Denali National Park and Preserve is located in the interior of Alaska and is dominated by an east to west line of towering glaciated mountains known as the Alaska Range. The range rises abruptly from lowlands 500 to 2,000 feet in elevation to the pinnacle of Mount McKinley, North America's highest mountain, at 20,320 feet. The range is perpetually snow clad above approximately 7,000 feet on the north and 6,000 on the south. Glaciers are numerous and tend to be larger and longer on the south side of the range than on the north.

Moisture from the Gulf of Alaska is blocked by the Alaska Range causing a continental climate to the north of the range and more of a maritime climate to the south. Moisture laden air from the south results in greater levels of precipitation on the southern flanks of the range. The average annual precipitation at park headquarters is 15 inches, while at some higher

elevations in the park, the total precipitation exceeds 80 inches and snowfall exceeds 400 inches. Normal snowpack throughout the region averages between 20 and 40 inches.

Vegetative cover in Denali is typical of interior Alaska taiga. Lowland floodplains are dominated by dense, deciduous or coniferous forest, or by a mixed forest of balsam poplar and white spruce. Upland forests tend to be more open with mixed or continuous stand of black spruce, white spruce, or aspen. Upland forests give way to shrub communities at elevations above approximately 2,400 feet. Glacial rivers flowing from the Alaska Range create broad floodplains that are sparsely vegetated. Tall shrub communities of willow and alder grow on moist slopes and along drainages, and low shrub communities of dwarf birch and willow grow at higher elevations or on dry slopes. Alpine tundra, composed of dryas and dwarf willow shrub, mat and cushion species, or grass and sedge mixes grows on slopes and ridges to about 6,000 feet. More than 650 species of flowering plants inhabit the slopes and valleys of the park.

DENA area was used by several Athabascan Indian groups. The Ahtna people of Cantwell arrived from the east, the Tanana people came into the area from the north traveling up the Nenana and Toklat Rivers, the Koyukon people who lived at Lake Minchumina ascended the McKinley-Foraker-Herron Rivers, the Upper Kuskokwim people who still live in Nikolai and Telida, approached the park from the west, and the Dena'ina people approached the park from the south. Subsistence activities included large mammal hunting, fishing, and small game trapping.

More comprehensive descriptions of the affected environment within Denali National Park and Preserve can be found in the following park documents:

- Draft Backcountry Management Plan/ EIS, Chapter 3. 2001.
- Environmental Impact Statement (EIS) on the Entrance Area and Road Corridor Development Concept Plan for Denali National Park and Preserve, 1996.
- EIS on the South Side Denali Development Concept Plan, 1996.
- EIS on the Cumulative Impacts of Mining in Denali National Park and Preserve, 1990.
- An Overview and Assessment of Archeological Resources, Denali National Park and Preserve, Alaska, Research/Resources Management Report AR-16, Kristen Griffin, 1990.
- EIS on the Wilderness Recommendation, Denali National Park and Preserve, Alaska Planning Group, 1988.
- General Management Plan, Land Protection Plan, Wilderness Suitability Recommendation, Denali National Park and Preserve, 1986.
- Land Use in the North Additions of Denali National Park and Preserve: An Historical Perspective, Research/Resources Management Report AR-9, William Schneider, Dianne Gudel-Holmes and John Dalle-Molle, 1984.

The majority of DENA lies within the Limited Protection Fire Management Unit. Under the proposed action, wildland fire ignitions occurring within this unit would be managed for the accomplishment of resource management goals, including the preservation of the natural fire regime, and the perpetuation, in turn, of healthy and biologically diverse plant communities and fish and game habitat.

V. SUBSISTENCE USES AND NEEDS EVALUATION

To determine the potential impact on existing subsistence activities, three evaluation criteria were analyzed relative to existing subsistence resources that could be impacted.

The evaluation criteria are:

- The potential to reduce important subsistence fish and wildlife populations by (a) reductions in numbers, (b) redistribution of subsistence resources, or (c) habitat losses;
- The effect the action might have on subsistence fisherman or hunter access; and
- The potential for the action to increase fisherman or hunter competition for subsistence resources.

1) Potential to Reduce Populations:

The National Park Service has generally found populations of plants and animals important to subsistence activities to be healthy. However, site-specific information on populations, distribution, and harvest is lacking for many of these species; therefore, recognition of declining populations has been difficult.

The actions that would be implemented under the preferred alternative would be aimed directly at the safe and cost-effective preservation of the area's natural fire ecology. As such, DENA enactment of the preferred alternative would have a beneficial effect on the long-term viability of plant and animal populations pertinent to subsistence use within DENA. The occasional displacement of plant and animal populations from specific locales by wildland fire is a natural and inevitable occurrence within the fire-dependent ecosystems of DENA. Although current populations may experience some adverse effects, usually those effects are greatly offset by the benefits accrued to future generations of populations.

Under the proposed action, land managers could mitigate potential losses to subsistence users through the consideration of hunting and trapping activities in the planning and implementation of wildland fire use and prescribed fire incidents. There are a few users who have permits for the use of public structures within the management area. These structures are protected under Critical Suppression as noted in the accompanying Fire Management Plan (FMP, Section XVI Protection of Sensitive Resources). In the event of loss of or damage to this structure, the Superintendent of the Preserve may permit reconstruction of this structure. The long-term benefits of fire to the wildlife habitats of DENA outweigh any short-term losses by subsistence users and, therefore, will not be the sole reason for suppressing a wildland fire. However, subsistence use is an important factor in the determination of prescribed fire within DENA.

2) Restriction of Access:

NPS lands are managed according to legislative mandates, NPS management policies, and guidelines. The proposed action is not anticipated to significantly restrict access of subsistence users to natural resources on NPS lands. Under the proposed action, restrictions would be minimized by the continual reduction of hazardous fuels on the landscape by allowing fire to fulfill its natural role. This in turn would reduce the possibility of widespread, catastrophic fire due to heavy fuel build up, in the future.

3) Increase in Competition:

NPS regulations and provisions of ANILCA provide the tools for adequate protection for fish and wildlife populations on Federal Public lands while ensuring subsistence priority for local rural residents. The enactment of the preferred alternative would not significantly increase competition for the use of subsistence resources. Displacement of plant and animal populations from specific sites would be short-term, and, in fact, in most cases the long-term viability of the populations in question depends directly on the natural processes that the proposed plan is intended to safely perpetuate.

VI. AVAILABILITY OF OTHER LANDS

As stated earlier, wildland fire is an inevitable component of the plant and animal communities of Denali National Park and Preserve. Consequently, the availability of other lands is not a pertinent consideration in this particular case.

With respect to the question of subsistence use, the scope and intensity of wildland fire incidents managed for resource benefit (i.e., fire use incidents) will generally be of small significance when considered within the context of overall available acreage. Prescribed fires will be planned and managed so as to avoid any significant hardship to subsistence users.

VII. ALTERNATIVES CONSIDERED

This section discusses the considered alternatives with respect to their respective reduction or elimination of the need to use public lands necessary for subsistence purposes.

Alternative 1 (a combination of prescribed fire use and wildland fire suppression) would perhaps result in the least short-term disruption of subsistence activities, with suppression responses preventing the spread of multiple wildland fire ignitions. The long-term impacts of this alternative, however, would be negative, with the exclusion of wildland fire leading to the gradual decline of biodiversity and viable habitat throughout all areas within DENA utilized by subsistence hunters and trappers.

Preferred alternative (a combination of wildland fire use, wildland fire suppression, and prescribed fire use) would yield the same favorable long-term effects on lands used for

subsistence activities as alternative two, while allowing more effective protection and restoration of significant fire-sensitive sites and/or landscapes.

Alternative 2 (a combination of wildland fire use and wildland fire suppression) would not significantly differ from the preferred alternative with respect to the reduction or elimination of the need to use public lands for the accomplishment of fire management goals.

VIII. FINDINGS

This analysis concludes that the proposed action will not result in a significant restriction of subsistence uses.