National Park Service
U.S. Department of the Interior

Denali National Park and Preserve
Alaska

Environmental Assessment for improving Visitor Access to the Sled Dog Kennels and Demonstrations at Denali National Park and Preserve
December 2009

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I. PURPOSE AND NEED

The National Park Service (NPS) developed a *Headquarters Area Plan and Environmental Assessment* (NPS 2007) to provide detailed guidance and an integrated plan for developments in the headquarters area of Denali National Park and Preserve, including the Headquarters Historic District, an area listed on the National Register of Historic Places. The guidance was needed to complete implementation of components of the 1997 *Entrance Area and Road Corridor Development Concept Plan (DCP) and EIS* (NPS 1997) and included the recommendations of the *Cultural Landscape Report for Park Headquarters* (NPS 2008).

One of the components of the *Headquarters Area Plan and Environmental Assessment* (NPS 2007) and recommendations of the *Cultural Landscape Report for Park Headquarters* (NPS 2008) is to remove the bituminous paving from the headquarters area and replace it with native vegetation, with the following exceptions: 1) a 10 ft wide path between Building 103 and the kennels driveway (see Fig. 2-1 for locations) is to be repaved for administrative access, and 2) drivable surfaces are to be maintained for emergency access to all structures. These actions will result in limiting through traffic in the headquarters area to emergency vehicles only, which in turn require improvements to the Service Road between the west end of the Headquarters Historic District and the Park Road (NPS 2008). These improvements include new parking area and traffic patterns for shuttle buses bringing visitors to the demonstrations at the sled dog kennels. The current arrangement is inadequate due to unimproved boarding and unboarding areas and the need for buses to drive through the headquarters area. In addition to shuttle bus parking, there is a need for additional visitor parking with year-round access. Additional internal scoping regarding the realignment of the kennel access road and needs for associated parking prior to construction resulted in a new proposed action that is sufficiently different from the action defined in the *Headquarters Area Plan and Environmental Assessment* (NPS 2007) to warrant a new Environmental Assessment. This Environmental Assessment will also consider constructing covers over the existing stands as an additional improvement in visitor access to the demonstrations at the kennels.

The purpose of this Environmental Assessment is to consider two action alternatives plus the no-action alternative for the realignment of the Kennel Access Road, parking area and turn-around loop for the Kennel demonstration shuttle buses, year-round visitor parking, and roof structures over the demonstration stands. The proposed realignments would provide improved sled dog demonstration shuttle bus parking and turn around capabilities. A circular or looped access road would redirect traffic, providing safer parking and eliminating pedestrian conflicts in the Headquarters Historic District. Additional year-round parking would provide improved visitor access. Roof structures over the demonstration stands would provide shelter from rain and shade from the sun.

This EA will supersede the components of the 2007 *Headquarters Area Plan and Environmental Assessment* that relate to the Service Road between the park road and headquarters; sled dog demonstration shuttle bus routes, drop-off and pick-up locations; and new proposed visitor parking adjacent to the current ‘flagpole’ parking lot. The remaining reconstruction and rehabilitation efforts put forward in the preferred alternative of the 2007 *Headquarters Area Plan and Environmental Assessment* remain in effect.

Background

Denali National Park and Preserve encompasses 9,419 square miles in central Alaska, with the main entrance along the George Parks Highway approximately 240 miles north of Anchorage and 12 miles south of Healy. Denali (Mt. McKinley), at an elevation of 20,320 feet, is the focal point of the park. The project area lies near mile post (MP) 3.0 of the 92-mile long Park Road (Fig. 1-1).

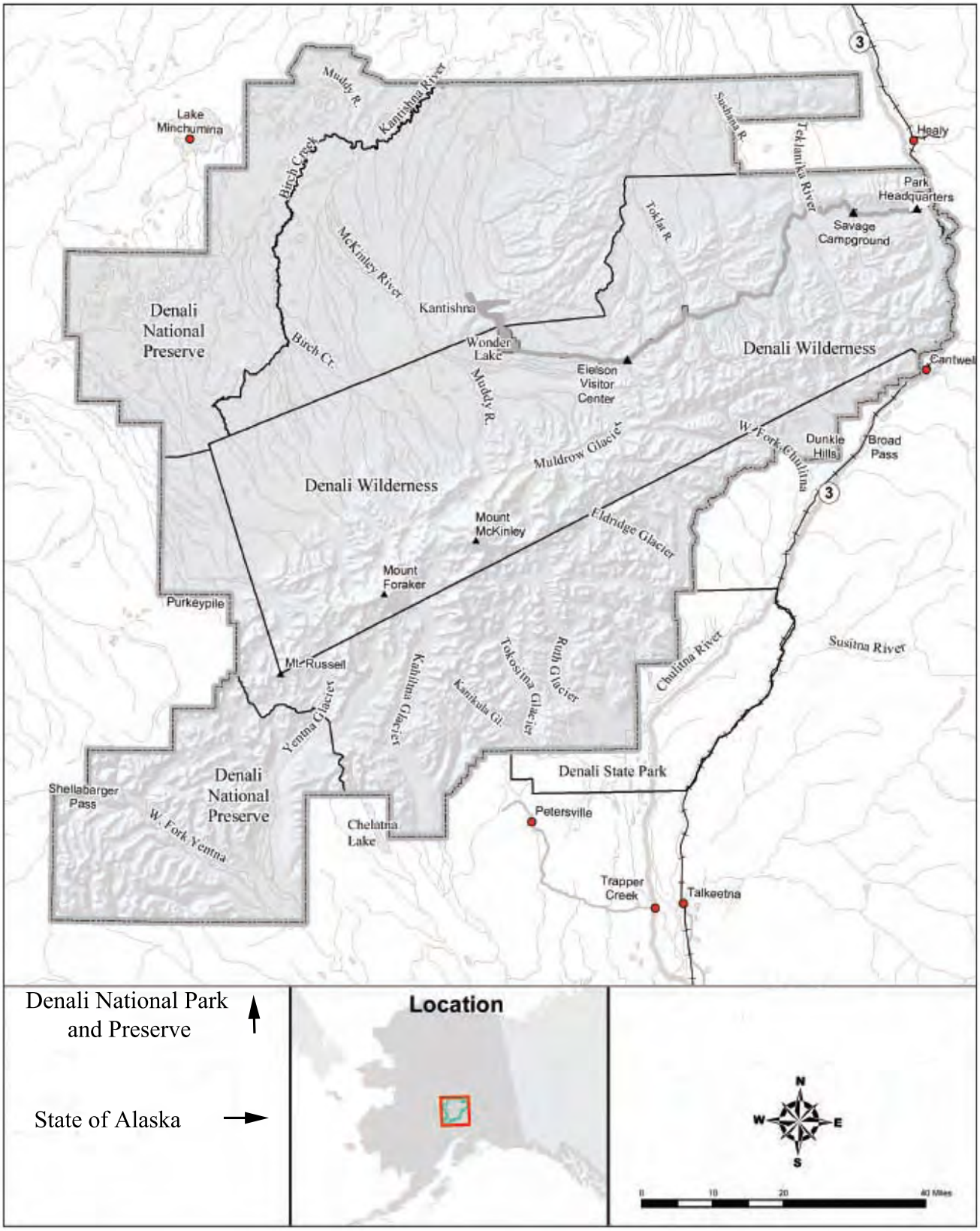
The sled dog kennels at Denali National Park and Preserve were founded by the first Superintendent of the park, Harry Karstens in 1921 as the primary means of patrolling the park in winter. By 1936, the kennels had become one of the most popular summertime attractions for the increasing numbers of tourists visiting the park. In order to provide space for more staff housing, the kennels and building were moved to the present site in 1938. By 1943 however, the park began using mechanized vehicles in place of dog teams for patrols and no dogs were kept at the park until 1949 when a new team of dogs was acquired for short patrols and in 1950 the summer dog demonstrations were resumed.

In 1980, the Alaska National Interest Lands Conservation Act was passed and specifications in this act ensure the continued need for maintaining the kennels at the park. This legislation tripled the size of Mount McKinley National Park, changed its name to Denali National Park and Preserve, and designated 99% of the original two-million acre park parcel as wilderness under the 1964 Wilderness Act. This new legal designation of wilderness prohibits certain activities, such as the use of motorized equipment and mechanized transport. Travel by sled dogs provides the perfect alternative; the dogs allow the rangers to continue carrying out the park's mission during the winter months.

Today, Denali's sled dogs continue to provide transportation for rangers during the winter months and aid one of the park's most popular interpretive programs during the summer. Each year, an average of 3,000 patrol miles are logged throughout the park's interior. During the summer, attendance at the daily sled demonstrations totals over 40,000 annually. The highlight for visitors comes when five dogs are hitched to a wheeled sled and a naturalist takes the dogs for short runs on a gravel track around the kennels. This demonstration lasts approximately 30 minutes; the stands for viewing are currently uncovered and open to the elements. Most visitors arrive for the demonstrations via a shuttle bus from the Denali Visitor Center although some walk to the demonstration along the Roadside Trail while other drive and park their personal vehicles or RVs.

For visitors arriving at the kennels via the shuttle bus, the current drop-off site for passengers is undeveloped, with an uneven landing that has resulted in several injuries over the years. There is no turn-around place for the buses, requiring them to pull through the headquarters administrative area, resulting in conflicts between traffic and pedestrians. Even if a turn-around existed, the steep grade of the service road and the intersection with the service road and the Park Road would be unsafe for buses to use to return to the Park Road following the demonstrations.

Figure 1-1. Map of project Area



Legal Context

The 1916 Organic Act directed the Secretary of the Interior and the NPS to manage national parks and monuments to:

> "…conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." (16 U.S.C. 1.)

The Organic Act also granted the Secretary the authority to implement "rules and regulations as he may deem necessary or proper for the use and management of the parks, monuments and reservations under the jurisdiction of the National Park Service." (16 U.S.C. 3.)

In 1917, Congress established Mount McKinley National Park:

> "…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". (39 Statute 938).

Additions to the park were made in 1922 and 1932 to provide increased protection for park values and, in particular, wildlife. The 1922 addition moved the eastern park boundary from a north-south line about 5 miles west of the Savage River to near park headquarters. The 1932 addition moved the eastern park boundary from a north-south line near park headquarters to the western bank of the Nenana River, including a right-of-way for the Alaska Railroad.

1978 amendments to the 1916 NPS Organic Act and 1970 NPS General Authorities Act expressly articulated the role of the national park system in ecosystem protection. The amendments further reinforce the primary mandate of preservation by stating:

> "The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided for by Congress." (16 U.S.C. 1-a1.)

The Alaska National Interest Lands and Conservation Act of 1980 (ANILCA) added approximately 2,426,000 acres of public land to Mt. McKinley National Park and approximately 1,330,000 acres of public land as Denali National Preserve and re-designated the entirety Denali National Park and Preserve. ANILCA directs the NPS to preserve the natural and cultural resources in the park and preserve for the benefit, use, education, and inspiration of present and future generations. The Act further directs the NPS to manage for the continuation of customary and traditional subsistence uses in the park and preserve additions in accordance with provisions in Title VIII.

The 1966 National Historic Preservation Act, as amended, provides direction to federal agencies for protection of historic resources. Section 106 of the act requires consideration of adverse impacts to historic resources during the course of any federal undertaking. Section 110 provides for an affirmative role of federal agencies in identifying, preserving, and utilizing the historic properties that are in agency ownership.

The NPS Organic Act and the General Authorities Act prohibit impairment of park resources and values. The 2006 NPS Management Policies uses the terms "resources and values" to mean the full spectrum of tangible and intangible attributes for which the park is established and 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 may not be allowed unless directly and specifically provided by statute. The primary responsibility of the NPS 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 opportunities 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 is more likely 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
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

Issues

A listing of environmental concerns identified during scoping is below. These concerns are fully evaluated in Part IV, the Environmental Consequences of the Alternatives.

Air Quality
Local air quality could be affected by heavy machinery emissions during construction activities.

Vegetation, Soils, and Wetlands
Mixed white spruce and hardwood forest vegetation would be removed or disturbed during construction activities proposed in the headquarters area. Existing soil strata would be altered or removed and land contours could be changed as a result of road and parking lot construction.

Wildlife and Habitat
Headquarters area construction could reduce wildlife habitat. The construction activities would temporarily produce noise and activity levels that could disturb wildlife and cause them to disperse from adjacent areas during the construction period.

Cultural Resources
New construction and landscaping would occur in or near the Park, Headquarters Historic District, which is listed on the National Register of Historic Places (with period of significance

from 1928-1941), with an associated Cultural Landscape Report (2008). The preferred alternative varies from the plans in the CLR due to several factors involving steep slopes that would require retaining walls and excessive amounts of fill to achieve a 5-6% slope for the new road. Alternative 2 most closely resembles the plans in the CLR, which has been reviewed by the State Historic Preservation Officer SHPO as having no adverse effects regarding the historic integrity of the historic district. Further SHPO consultation is required and is on-going in order to assess potential effects and possible mitigation. Several archaeological surveys have been conducted in and around the historic district since the 1980s. No known archaeological sites exist in the vicinity. An archaeological survey of the Area of Potential Effects (APE) was completed in 2009. No archaeological resources were identified. This project has the potential to effect cultural resources, namely the Park Headquarters Historic District.

Night Sky/Natural Lightscape
Additional lighting in the headquarters area could affect night sky visibility. Any new lighted added to parking areas and trail will be shielded to reduce light pollution.

Visitor Use and Recreation
Visitor activities in the headquarters area would be temporarily disrupted by construction activity. Visitor access to the kennels would be improved and winter recreation opportunities would be enhanced by additional visitor parking and plug-in stations.

Local Communities and Local Economy
Construction activities could have impacts on local community resources and local businesses.

Park Management and Operations
Management activities in the headquarters would be temporarily disrupted by construction activity, and permanently changed by revised patterns of parking and circulation.
Post-construction, the dog kennels would be the primarily affected park operation. The proximity of the new bus parking loop is likely to cause disturbance of the dogs both during the summer at the dog demonstrations and during the winter with mushers and other winter visitors using the bus parking lot.

Issues Eliminated from Further Consideration

Threatened and Endangered Species
The Endangered Species Act requires an analysis of impacts on all federally listed threatened and endangered species, as well as species of special concern. In compliance with Section 7 of the Act, the U.S. Fish and Wildlife Service (USFWS) has been consulted. No Federally designated threatened or endangered species are known to occur within Denali National Park (personal communication. Ted Swem, USFWS, Fairbanks, Alaska, June 9, 2000).

Environmental Justice
Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, requires all federal agencies to 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 plan would not result

in significant changes in the socioeconomic environment of the area, and therefore is expected to have no direct or indirect impacts to minority or low-income populations or communities.

Floodplains
No floodplains exist in the project area. Executive Order 11988 (Floodplain Management) is not addressed in this EA.

Subsistence
Subsistence is eliminated from further evaluation in this EA because subsistence activities are not allowed in the project area. As required by ANILCA § 810 an evaluation is attached in Appendix A.

Wilderness
The proposed areas for the expansion and improvements to the headquarters area of Denali National Park and Preserve are not located inside designated wilderness boundaries. Project area is in an area found to be not suitable for wilderness designation (NPS 1986) nor is the area proposed for development recommended for wilderness designation in any of the alternatives in the EIS on *Wilderness Recommendations for Denali National Park and Preserve* (NPS 1988). Additionally, noise generated by project activities would not be expected to affect solitude in any adjacent wilderness areas.

Permits and Approvals Needed to Complete the Project

- A concurrence from the State Historic Preservation Officer will be required for the evaluation of the effects of this project on cultural resources.

- Executive Order 11990 (Protection of Wetlands) requires the NPS, and other federal agencies, to evaluate the impacts its actions are likely to have on wetlands. The executive order requires that short- and long-term adverse impacts associated with occupancy, modification or destruction of wetlands be avoided whenever possible. Indirect support of development and new construction in such areas should also be avoided wherever there is a practicable alternative. The NPS Wetland Protection and Procedural Manual 77-1: Wetland Protection, emphasizes exploring all practical alternatives to building on, or otherwise affecting, wetlands; reducing impacts to wetlands whenever possible; and providing direct compensation of wetland resources by restoring degraded or destroyed wetlands on other NPS properties. This evaluation is found in the Statement of Findings (SOF) in Appendix B.

- A Section 404 permit from the Corps of Engineers for filling wetlands will likely be needed prior to construction. An individual Permit would be required because more than ½ acre of wetlands would be affected.

- A Section 402 permit and a storm water discharge plan will be needed prior to construction.

II. DESCRIPTION OF THE ALTERNATIVES

This section describes a no-action alternative and two action alternatives for addressing the realignment of the kennel access road, parking area and turn-around loop for the kennel demonstration shuttle buses, year-round visitor parking, and covers over the demonstration stands. Also discussed are any alternatives and actions that have been considered but dismissed from further analysis.

The alternatives were developed during project scoping with the public and National Park Service staff. Alternatives were developed to the degree necessary to understand the overall impact of the development and rehabilitation plans on park resources, visitor experience, and park management and operations. Specific site and traffic engineering designs would be required prior to construction.

Figs. 2-1, 2-2 and 2-3 and Table 2-1 summarize the components and attributes of each alternative. Table 2-2 summarizes the predicted impacts for each alternative on the issues of concern.

Alternative 1 – Existing Conditions (No Action Alternative)

Under Alternative 1, No Action, new construction would not take place and management practices would not change (Fig. 2-1). The Service Road from the Park Road to headquarters would remain and serve as the primary access for shuttle buses to the kennels. Visitors to the kennels would continue to be let off along this service road, and shuttle buses would pull through the headquarters area to return to the Park Road. No additional parking would be constructed for visitors accessing the kennels with their private vehicles and outlet posts would not be added to the current parking for winter users. No cover would be constructed over the stands for the sled dog demonstrations. This no action alternative represents a continuation of the existing situation and provides a baseline for evaluating the changes and impacts of the action alternatives.

Actions Common to Both Action Alternatives

- The National Park Service would use the palette of fixtures recommended in the *Cultural Landscape Report* (NPS 2008) for new or replacement landscape fixtures, such as signs, lights and posts.
- The National Park Service would provide improved areas for passengers disembarking from shuttle buses. A new parking loop for the kennels shuttle would be constructed. Dimensions, placement and traffic flow patterns for the new parking loop vary with the action alternatives.
- Sled dog demonstration buses will no longer drive through the Headquarters Historic District.
- Storage for equipment and supplies would occur at the mile 4.5 or the 5 mile pit for the duration of the construction period. Access to this storage area would require one lane of the park road to be maintained during the winter.
- All curbs in parking lots (small vehicles and buses) would be composed of recycled plastic bumper logs.

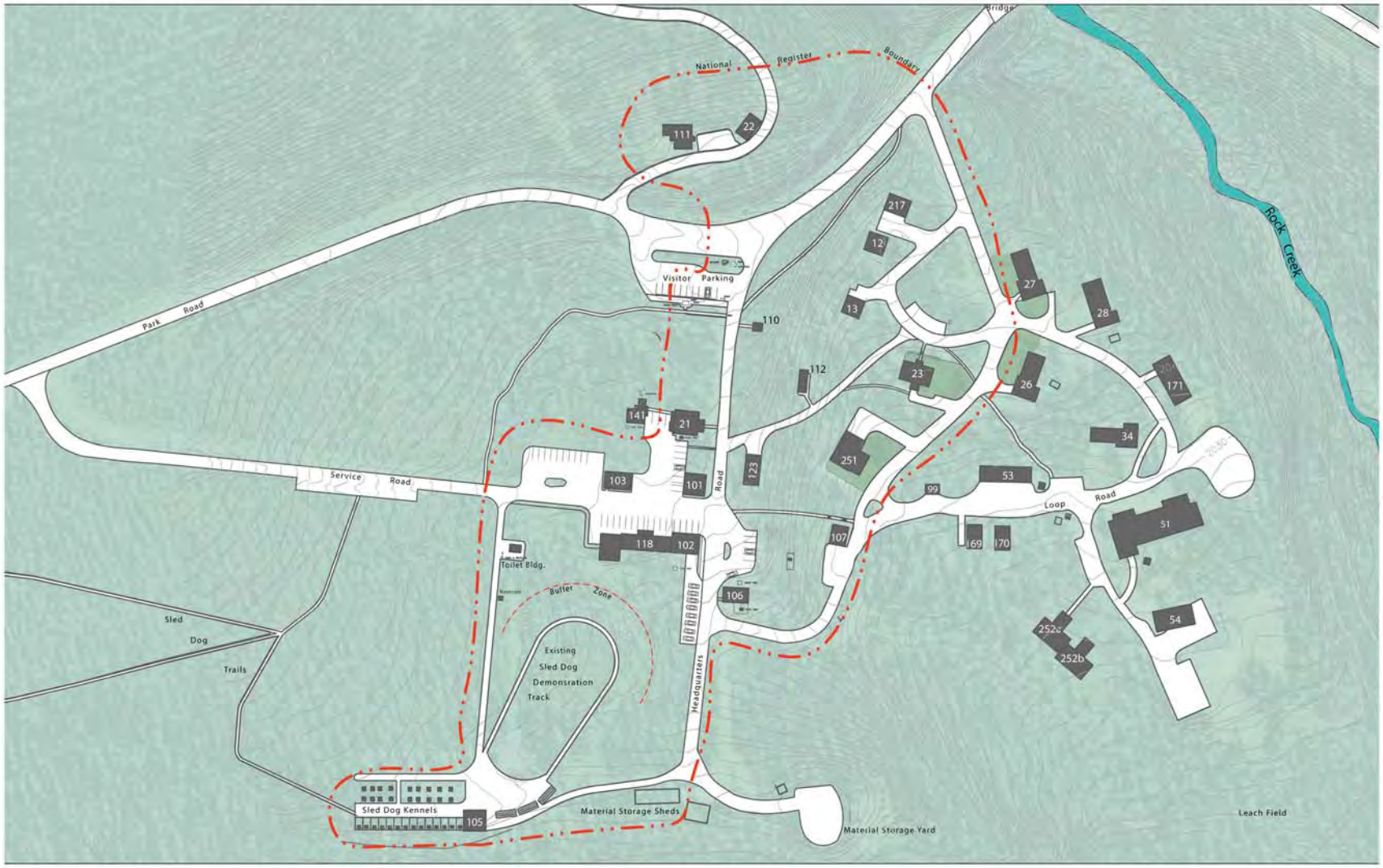


Figure 2-1 Alternative 1 - No Action

Kennel Access Road and Associated Parking

Denali National Park and Preserve
Park Headquarters
Denali Borough of Alaska

National Park Service
Olmsted Center for Landscape Preservation
www.nps.gov/oclp

SOURCES

1. CAD File name EA II No Action Alt
2. Field Survey completed by Olmsted Center, April 2005

DRAWN BY

Joel Smith, AutoCAD 2002 and Illustrator 10, 2006/11/27
Revised: H. Eliot Foulds 2008/06/30
Revised: Paul Schrooten 2009/06/17

LEGEND

123 Existing Building

Existing Circulation

Managed Lawn

National Register Boundary

Base Map from Cultural Landscape Report 2007

0' 37.5' 75' 150' 300'
Approximate Scale

Figure 1

Alternative 2 – Realign Existing Service Road

- A new parking area measuring approximately 22,500 sq ft and sufficient for 28 parking spaces, would be constructed west of the visitor 'flagpole' parking lot, including electric plug-ins for all of the spaces (Fig. 2-2). Access to the new parking area would be from the 'flagpole' parking lot via an approximately 60 ft driveway (included in the 22,500 sq ft). The final design for this parking lot would retain a vegetative screen between the parking area and the park road.
- A short (less than 20 ft) pedestrian trail would be constructed to connect the new parking area to the existing trail leading to the kennels.
- A new parking loop for the kennels shuttle bus would be installed south of the existing parking location (Fig. 2-2), with a one-way service road that supports parking for six buses.
- The service road entry at the juncture with the main park road would be moved west of the current access junction with a level pad at the junction for buses to stop while waiting to turn to the Park Road. This action would allow sled dog demonstration buses to exit out the service road the same way they enter and avoid driving through the core headquarters area. The grade on this alignment of the service road would be as high as 10.9%.
- The upper section of the existing service road would be revegetated.
- Electric plug-ins would be added for each existing parking space in the 'flagpole' parking lot.
- Exterior lights would be added in several locations, in combination with the plug-in bollards when possible, to illuminate pedestrian trails and parking areas. The lights would be responsive to the historic landscape and would meet the intended goals of the *Cultural Landscape Report* (2007). In parking areas and along trails, lights would be affixed to short poles or bollards and fitted with shields to reduce light pollution of the night sky.
- This alternative closely reflects the recommendations of the CLR.

Alternative 3 – NPS Preferred: Construction of New Access Road

- This alternative involves removing and revegetating most of the existing service road, with small sections included in the project area (Fig. 2-3).
- A new parking area, measuring approximately 12,400 sq ft and sufficient for 11 parking spaces, would be constructed west of the visitor 'flagpole' parking lot, including electric plug-ins for all of the spaces. Access to the new parking area would be from the 'flagpole' visitor parking lot. The final design for this parking lot would retain a vegetative screen between the parking area and the park road.
- A new parking loop for the sled dog demonstration shuttle buses would be installed over and south of the existing parking location (Fig. 2-3) that supports parking for six buses.
- This parking loop and the new parking area adjacent to the 'flagpole' parking area would be connected by a two-way road. An additional 17 visitor parking spaces with plug-ins would be placed along the road (Fig. 2-3). In considering designs for the new road, the maximum acceptable grade would be less than 6% to allow for safe travel at slow speeds

during all weather (Personal Communication, Tim Taylor, East District Roads Supervisor, Denali National Park and Preserve).

- A new pedestrian trail would be constructed to connect the parking along the new access road with the existing pedestrian trail to the kennels (Fig. 2-3).
- A short pedestrian trail would be constructed to connect the new bus parking loop with the existing paved access road to the kennels (Fig. 2-3).
- New road and parking areas would be filled with non frost-susceptible material to grade, overlayed with asphalt pavement and include culverts to improve drainage of the area.
- A new system to divert upslope water away from existing heaquarters facilities would be created, directing collected water into a new drainage window (ditch) that would be constructed and revegetated using tundra mat that is already in place from the western edge of the bus turnaround parking lot to west of the kennels, following a natural contour line through the area.
- Electric plug-ins would be added for each existing parking space in the visitor parking lots.
- Exterior lights would be added in several locations in the district to illuminate pedestrian trails and parking areas. The lights would be responsive to the historic landscape and would meet the intended goals of the *Cultural Landscape Report* (2007). In parking areas and along trails, lights would be affixed to short poles or bollards and fitted with shields to reduce light pollution of the night sky.
- Roof structures would be constructed over the existing stands for viewing the sled dog demonstrations.

Alternatives Considered and Eliminated from Further Evaluation

During internal scoping, numerous variations for the placement of the access road to the sled dog demonstration shuttle bus loop and parking area were considered and dismissed as having no benefits over the two action alternatives being considered.

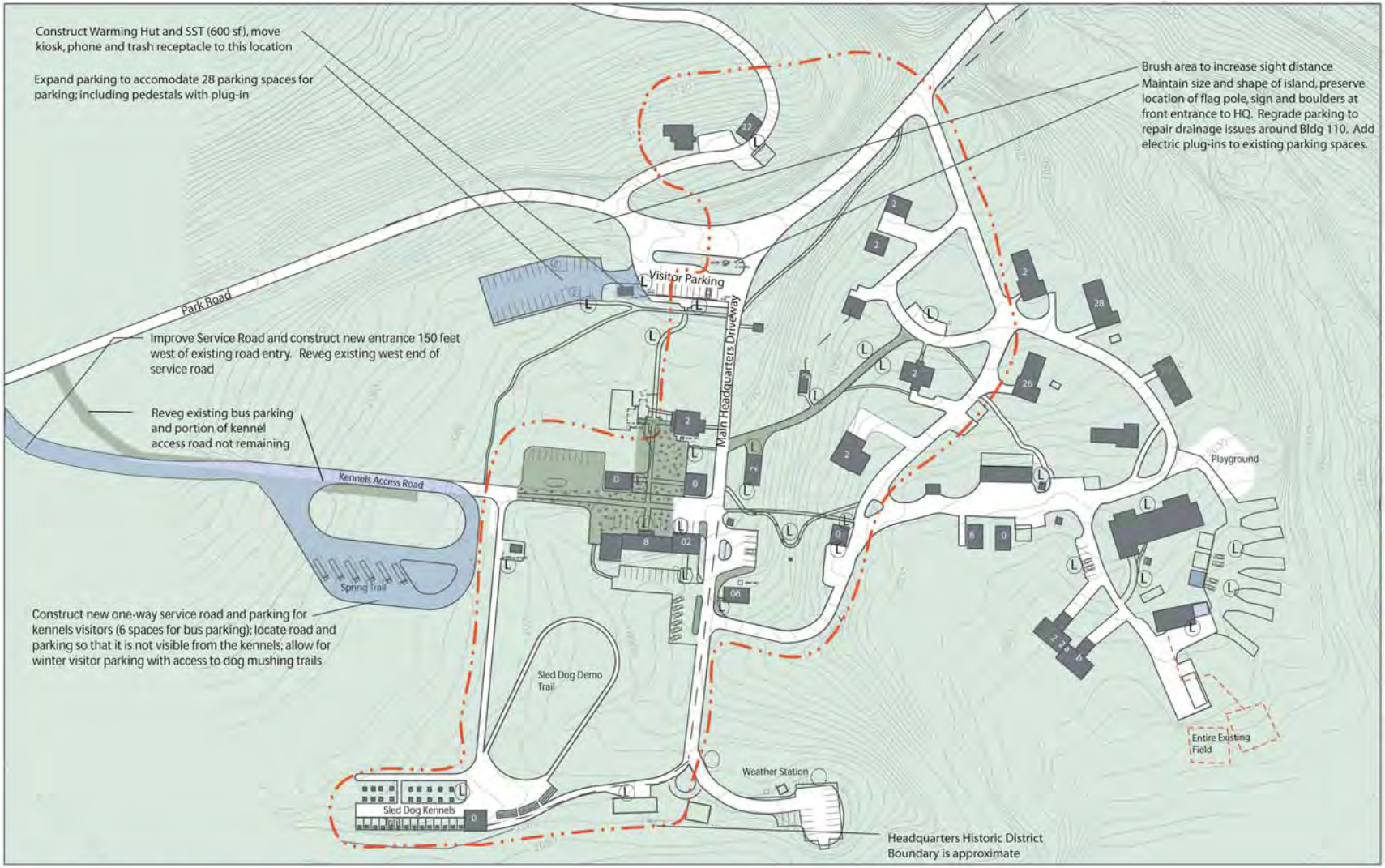
The exact layout for the bus parking loop in the preferred alternative in the *Headquarters Area Plan and Environmental Assessment* (NPS 2007) has been eliminated as there is insufficient space to safely park 6 buses and it is unlikely that adequate space is provided for the turning radius required for the shuttle buses.

Environmentally Preferred Alternative

The environmentally preferred alternative is the alternative that would promote the national environmental policy expressed in NEPA Section 101(b). The environmentally preferred alternative means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources.

Alternative 1, No Action, is the environmentally preferred alternative because it would have the least environmental impact. The developed area would not expand under the No Action, compared to 1.45 – 2.40 and 1.5 – 2.5 acres of expansion under the action alternatives. Estimates of total disturbed area were made from the conceptual designs (Figs. 2-2 and 2-3) and

a variance of ± 25% included to account for uncertainty in the final design. Expansion of the developed area under the action alternatives would impact air quality; vegetation, soils, wetlands; wildlife and habitat; cultural resources; night sky/natural lightscape; visitor use and recreation;



Kennel Access Road and Associated Parking

Headquarters Area Plan

Denali National Park and Preserve

Headquarters Historic District

National Park Service

SOURCES

1. CAD File name HQtopo-master plan
2. Field Survey completed by Olmsted Center, April 2005
3. EA and Planning by Denali Park and Alaska Regional Office Staff

E E

- Light location
- HQ District Boundary
- Revegetation Areas
- New Construction
- Landscaped Areas

DRAWN BY

National Park Service / Joel Smith

NPS/ Mary Tidlow

NPS/ Paul Schrooten

Using AutoCAD 2002 and Abobe Illustrator 10

DRAWN: JS 2006/11/27

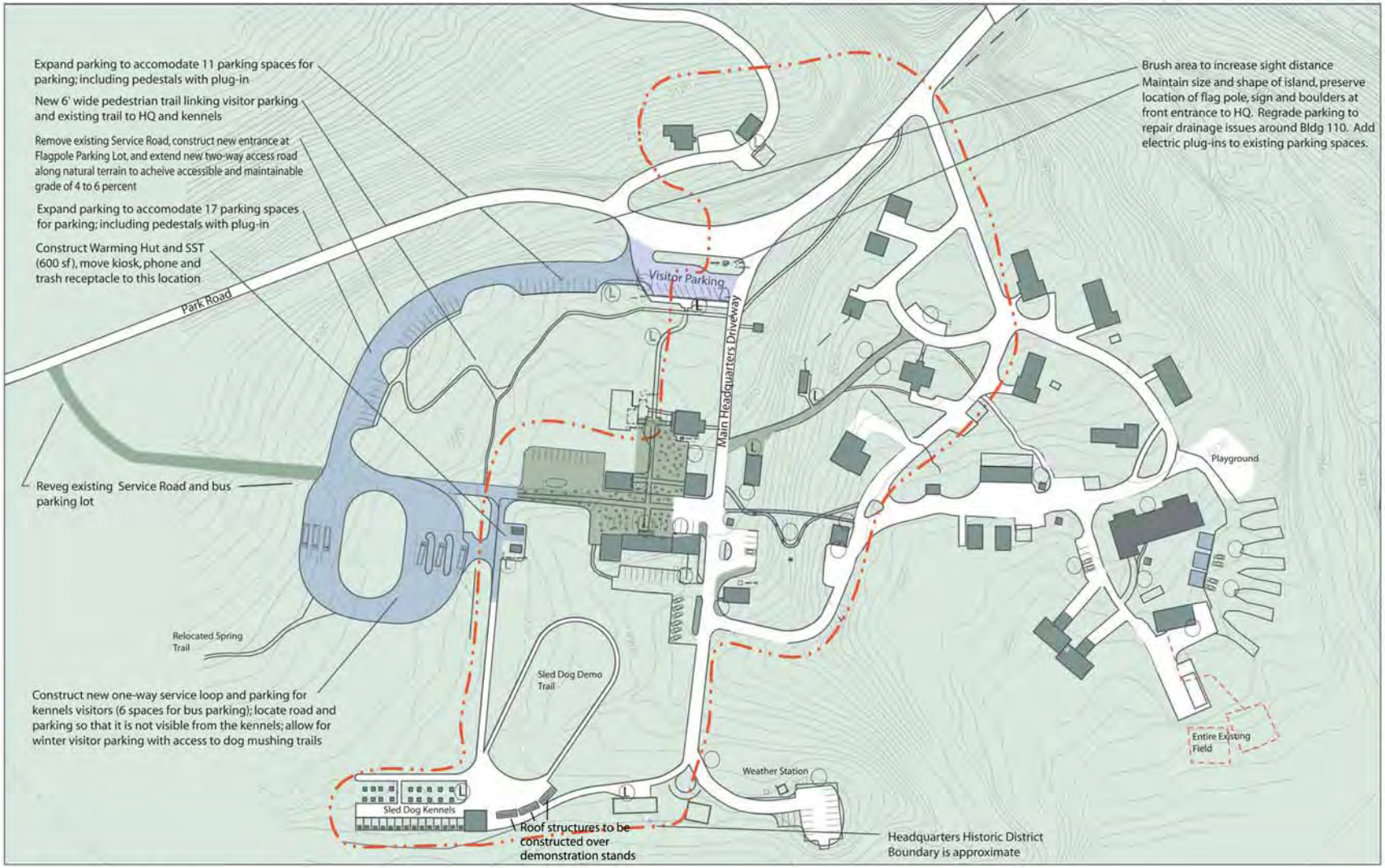
CHANGES: MT 12/07 ; PS 11/09

OLMSTED CENTER

0' 37.5' 75' 150' 300'

Approximate Scale

Figure 2-2 Alternative 2



Kennel Access Road and Associated Parking

Headquarters Area Plan

Denali National Park and Preserve

Headquarters Historic District

National Park Service

SOURCES

1. CAD File name HQtopo-master plan
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D

- Light location
- HQ District Boundary
- Revegetation Areas
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National Park Service / Joel Smith
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Using AutoCAD 2002 and Abobe Illustrator 10
DRAWN: JS 2006/11/27
CHANGES: MT 12/07 ; PS 11/09

ST D
T R

0' 37.5' 75' 150' 300'
Approximate Scale

Figure 2-3 Alternative 3 - Preferred

Table 2-1. Summary of the alternatives.

Attributes	Alternative 1 No Action	Alternative 2 Realign Existing Service Road	Alternative 3 NPS Preferred: Construct New Access Road
Access road to the kennels	Sled dog demonstration shuttle buses continue to enter the Headquarters Area via the Service Road and exit by driving through Headquarters to return to the Park Road	Service road intersection with the Park Road is realigned for a reduced grade at the intersection. This road is used as both entrance and exit for the sled dog demonstration shuttle buses.	New access road is constructed between the 'flagpole' parking lot and the new bus loop. This access road would serve as the entrance and exit point for both sled dog demonstration buses and visitor vehicles. Service road is removed and revegetated between the Park Road and the new bus loop.
Sled dog demonstration bus parking	Buses continue to park and unload/load passengers at the existing gravel parking area	New bus loop and parking constructed to allow buses to exit service road the same way they enter. Includes spaces for six buses.	New bus loop and parking constructed to allow buses to exit service road the same way they enter. Includes spaces for six buses.
Pedestrian Trails	No new pedestrian trails would be constructed	Two pedestrian trails would be needed to connect new parking area to existing trail.	Two pedestrian trails would be needed to connect new parking areas to existing trails and service roads.
Visitor Parking	No new parking is constructed. Visitor parking limited to 11 spaces in the 'flagpole' parking lot. No plug-ins provided for winter use.	28 new parking spaces are constructed adjacent to the 'flagpole' parking lot. Plug-ins constructed for these and the 11 spaces in the 'flagpole' lot for year-round access. No winter access to the bus parking loop.	Total of 28 new parking spaces are constructed, 11 adjacent to the existing 'flagpole' parking lot and an additional 17 along the new access road. Plug-ins constructed for these 28 new and 11 existing spaces in the 'flagpole' lot for year-round access. Year round access and plug-ins provided at the bus parking to allow for the possibility of shuttles to the kennels into winter or for winter visitor use.
Max Grade of Access Road	10.9 %	10.9 %	4.7 %
Kennel demonstration stands	No roof structures are constructed over the existing stands	No roof structures are constructed over the existing stands	Roof structures are constructed over the existing stands consistent with the Cultural Landscape Report for building new structures.

Table 2-2. Summary of environmental consequences.

Topic	Alternative 1 No Action	Alternative 2 Existing Service Road	Alternative 3 – NPS Preferred: Construct New Access Road
Air Quality	There would be no additional adverse impacts to air quality, although there would be continuing minor adverse impacts from other construction activities.	The increase in construction activity would contribute to minor adverse impacts to air quality associated with construction activities.	The increase in construction activity would contribute to minor adverse impacts to air quality associated with construction activities.
Vegetation, Soils, and Wetlands	There would be no additional impacts to vegetation, soils, or wetlands in the headquarters or entrance areas of the park.	The long-term, noticeable, although localized adverse impacts to vegetation, soils, and wetlands would be moderate.	The long-term, noticeable, although localized adverse impacts to vegetation, soils, and wetlands would be moderate.
Wildlife and Habitat	There would be no additional effects on wildlife habitat, although cumulative moderate adverse effects remain from other developments in the park entrance area.	There would be minor adverse impacts to wildlife and wildlife habitat.	There would be minor adverse impacts to wildlife and wildlife habitat.
Cultural Resources	There would be no additional impact on cultural resources, and a moderate benefit would remain from previous actions.	There would be minor long-term adverse impacts from the construction of a bus parking loop and associated visual impacts near the boundary of the historic district.	There would be minor benefits to cultural landscape by removing service road. New construction would have minor adverse impacts. Overall there would be minor adverse impacts.
Night Sky/Natural Lightscape	There would be no additional impact on night sky visibility, which would remain moderately impacted from exterior lighting elsewhere in the area.	The addition of outdoor lighting would result in minor adverse impacts to night sky visibility in the Denali entrance area.	The addition of outdoor lighting would result in minor adverse impacts to night sky visibility in the Denali entrance area.
Visitor Use and Recreation	There would be no additional impact on visitor use and recreation; prior major benefits remain.	The actions proposed would provide minor beneficial impacts to visitor use and recreational opportunities.	The actions proposed would provide moderate beneficial impacts to visitor use and recreational opportunities.
Local Communities and Economy	There would be no additional impacts to local communities or economies.	There would be minor benefits to the local and regional community and economy as a result of federal expenditures improving park facilities.	There would be minor benefits for the local and regional community and economy as a result of federal expenditures improving park facilities.
Park Management and Operations	There would be no additional impacts on park management and operations.	Overall there would be minor beneficial impacts.	Overall there would be minor beneficial impacts.

Mitigation and Monitoring

Mitigation measures are specific actions that when implemented reduce impacts, protect park resources, and protect visitors. The following mitigation would be implemented under each action alternative and are assumed in the analysis of impacts.

Vegetation, Soils and Groundwater

Disturbed sites within the project area would be replanted with native vegetation, following the Interior Alaska Revegetation Plan (United States Geological Survey 1994). Revegetation and landscaping would employ native plant species only. Measures to prevent invasive plant colonization would include: pressure washing construction equipment and vehicles prior to entering the park, any gravel or fill required would either come from a weed-free materials site (as verified by a park vegetation technician) or would be heated to kill any plant material or seeds, and continuation of the park's existing exotic plant eradication program.

Wetlands

Silt fences and other Best Management Practices (BMP) technologies would be used to protect any adjacent wetlands. As described in the Wetlands Statement of Findings (Appendix B), mitigation by rehabilitating wetlands in another area of the park would be accomplished.

Wildlife and Habitat

Under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703), it is illegal to "take" migratory birds, their eggs, feathers or nests. "Take" includes by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof. The MBTA does not distinguish between intentional and unintentional take. Vegetation clearing, site preparation, or other construction activities that may result in the destruction of active bird nests or nestlings would violate MBTA. In order to avoid violations of the MBTA, bird habitat (vegetation) would not be removed during the nesting season, April 1 through August 1. After completing all the nesting vegetation removal required for the project, there would be no seasonal restriction for construction activities, even during the following nesting seasons. If any active nest of any bird species, including resident species, were encountered at any time, it would be protected from destruction. "Active" is indicated by intact eggs, live chicks, or presence of an adult on the nest. Eggs, chicks, or adults of wild birds would not be destroyed (Zelenak 2005).

Cultural Resources

New construction would use materials and design elements that are compatible with the character of the buildings in the historic district. Landscape features would follow the recommendations of the *Cultural Landscape Report for Park Headquarters* (NPS 2008). Modifications to the headquarters entrance area, construction of a new access road, and removal of the original access road may affect the integrity of the park headquarters historic district. Further consultation with the Alaska State Historic Preservation Officer (SHPO) would determine the necessity and scope of any additional mitigations measures. Project excavations

would be monitored by cultural resource staff. The National Historic Preservation Act (NHPA) requires that if newly discovered cultural resources are identified during project implementation, work in that area must stop and the Superintendent notified immediately (36 CFR 800.13). The Native American Graves Protection and Repatriation Act (NAGPRA) requires that if inadvertent discovery of Native American Remains or Objects occurs, activity must cease in the area of discovery, a reasonable effort made to protect the item(s) discovered, and immediate notice made to the Superintendent, as well as the appropriate Native American group(s)and State Historic Preservation Officer (SHPO). Further actions also require compliance under the provisions of NHPA and the Archaeological Resource Protection Act.

Night Sky/Natural Lightscape

Selection of outdoor lighting fixtures and technology would involve the expertise of the NPS Night Sky Team or other qualified engineers to assist in minimizing the impact of new outdoor lights on night sky visibility. Principles that would guide new lighting include: 1) shielding light fixtures (the engineering term is "full cut-off") so that all the light produced by the fixture shines below the horizontal or, alternatively, using very low illumination "guidance" lighting only, 2) using lower illumination levels (particularly important on light colored ground or snow, as a significant amount of light would reflect upward), 3) using narrow spectrum and/or longer wavelength lamps unless full spectrum lamps are necessary or warranted, and 4) dividing areas into several circuits to allow for phased operation and future smart technology implementation such as dual lighting levels, motion sensors, or timers.

Local Communities/Socioeconomic Resources

No mitigation measures were developed for local communities and socioeconomic resources because the project impacts to these resources included small-scale stimuli to the local economy, consistent with historic limits and trends.

Park Operations and Management

Post-construction, the dog kennels would be the primarily affected park operation. The proximity of the new bus parking loop may cause disturbance of the dogs both during the summer at the dog demonstrations and during the winter with mushers, which introduces the possibility of outside dogs interacting with the park dogs, and other winter visitors using the bus parking lot. Final design on the preferred alternative will include as much distance between the kennels and the bus parking loop as is feasible. Depending on the final design in terms of its proximity to the kennels, mitigation measures for this disturbance would include both visual and sound barriers between the south end of the bus loop and the kennels.

III. AFFECTED ENVIRONMENT

Project Area

Denali National Park and Preserve encompasses 9,419 square miles in central Alaska, with the main entrance along the George Parks Highway approximately 240 miles north of Anchorage and 12 miles south of Healy. Denali (Mt. McKinley), at an elevation of 20,320 feet, is the focal point of the park. The project area lies near mile post (MP) 3.0 of the 92-mile long Park Road (Fig. 1-1).

Air Quality

Denali National Park and Preserve is designated a class I area under the Clean Air Act. Air quality in Denali is generally exceptional, and there have been no documented exceedances of the National Ambient Air Quality Standards. The park is managed to achieve the highest attainable air quality levels and visibility standards consistent with the applicable Clear Air Act designations and mandates specified by the Alaska National Interest Lands Conservation Act and the NPS Organic Act. A nationally important, multi-decadal air quality monitoring station is located just outside of the project areas on the hill above residence buildings 111 and 22 (Fig. 2-1). The station measures ambient air quality and wet deposition of contaminants through several nationwide monitoring networks, and was established to track regional conditions with minimal local influence.

Vegetation, Soils and Wetlands

Soils

Soils within the project area vary according to parent material, topography and vegetation coverage, and generally consist of three types. Sandy and silty soils underlay forested areas, and support moss and lichen groundcover. Wetland soils consist mostly of poorly-drained silts and glacial moraine materials, and typically possess a subsurface accumulation of organic matter and peat layers, with permafrost occasionally at depths less than 3 ft (NPS 1997). Permafrost has not been studied in the project area but can be continuous at higher elevations north of the Alaska Range (NPS 2004).

Vegetation

The park as a whole is comprised of a mosaic of tundra, forest, shrubland and open meadow. The project area, located at an elevation of approximately 2,000 ft, lies within the northern boreal forest biome (taiga).

The taiga immediately surrounding headquarters consists mostly of mixed needle leaf/deciduous forest of white and black spruce (*Picea glauca and P. mariana*) mixed with paper birch (*Betula papyrifera*) and some aspen (*Populus tremuloides*). White spruce occupy areas of well-drained soil, while black spruce are usually found in areas with poor drainage underlain by shallow permafrost. Common tall shrubs in this spruce-paper birch forest include alder (*Alnus crispa*), dwarf birch (*B. glandulosa*), and willows (including *Salix bebbiana, S. arbusculoides, S. glauca,* and *S. planifolia spp. pulchra*). The understory includes, prickly rose (*Rosa acicularis*), shrubby

cinquefoil (*Potentilla fruiticosa*), Labrador tea (*Ledum groenlandium, L. palustre*), bog blueberry (*Vaccinium uliginosum*), and high-bush cranberry (*Viburnum edule*). Ground cover typically consists of lichens mosses including thin feather mosses (*Hylocomium* spp.) (Viereck et al. 1992; NPS 1997; NPS 2005a).

Wetlands

Wetlands are transitional areas between terrestrial and aquatic systems, where the water table is usually at or near the surface or the land is covered by shallow water (NPS 2003a). The project area wetlands are classified as Palustrine Forested, Needle-leaved Evergreen, saturated wetlands (PF04B) under the "Classification of Wetlands and Deepwater Habitats of the United States," the Cowardin Classification System (Cowardin et al. 1979), and are therefore subject to NPS wetlands compliance procedures.

The wetlands under the proposed bus loop road and parking are characterized by poor drainage, stunted white spruce, a thick feather moss cover with significant patches of Sphagnum moss, and scattered diamond-leaf willow. A thick colluvium has built up on the slope leading down to the glacially-cut bench edge just behind the dog kennels and this soil generally has a high-enough clay content to retard oxygen circulation and, when combined with the thick moss cover, keeps the root layer cold late into the growing season.

The wetlands under the proposed visitor parking lot west of the flagpole are right at the edge of the uplands along the edge of the Rock Creek bench and have fairly thin soils, but are covered with a variety of wetland willow species as well as having a few small seeps, with remnant tussocks creating pockets of hummocky terrain from which grow stunted spruce. Vegetation in the forested wetlands is typically dominated by black spruce/white spruce hybrids (Viereck et al. 1992). The understory shrub layer consists of both low and tall shrubs of willow (Salix spp.) diamond leaf willow (*Salix planifolia*), Labrador tea (*Ledum* spp.) and bog blueberry (*Vaccinium uliginosum*). Common ground cover includes feather and sphagnum mosses (*Sphagnum* spp.), leaf lichens, lowbush cranberry (*Vaccinium vitisidaea*), crowberry (*Empetrum nigrum*) and a variety of forbs (Viereck et al. 1992).

These wetlands function to attenuate snow melt surface flow during break-up and discharge during heavy rain events. These wetlands also provide habitat for small mammals, such as red squirrels, snowshoe hares, and porcupine; bird species, including gray jays, robins, thrushes, sparrows, and warblers. Moose frequent the area for forage, and it is considered potential moose calving area.

Wildlife Habitat

Mammals

Large mammal species such as moose (*Alces alces*), caribou (*Rangifer tarandus*), Dall sheep (*Ovis dalli*), brown bear (*Ursus arctos*), black bear (*Ursus americanus*), and gray wolf (*Canis lupus*) are found to the west of the project area, and are frequently seen along the Park Road or in the surrounding hillsides and mountains. Within the project area, moose would likely browse in the wetlands and black and brown bears might forage in the upland forested areas around the

headquarters area. Wolves are generally found wherever prey species, such as moose, are present, and therefore may also be found in the area.

Smaller mammals present within the project area include red fox (*Vulpes vulpes*), snowshoe hare (*Lepus americanus*), ermine (*Mustela erminea*), and red squirrel (*Tamiasciurus hudsonicus*) (NPS 2005a). Red fox are common and very visible along the Park Road whereas snowshoe hares and red squirrels are commonly found in forested areas. Other small mammal species include shrews (*Sorex* spp.), several species of voles, and lemmings.

Birds

The most common resident bird species in the project area include spruce grouse (*Falcipennis canadensis*), willow ptarmigan (*Lagopus lagopus*), northern goshawk (*Accipiter gentilis*), great-horned owl (*Bubo virginianus*),boreal owl (*Aegolius funereus*),downy woodpecker (*Picoides pubescens*), hairy woodpecker (*Picoides villosus*), American three-toed woodpecker (*Picoides dorsalis*), gray jay (*Perisoreus canadensis*), black-billed magpie (*Pica hudsonia*), common raven (*Corvus corax*), , black-capped chickadee (*Poecile atricapillus*), boreal chickadee (*Poecile hudsonica*), pine grosbeak (*Pinicola enucleator*), white-winged crossbill (*Loxia leucoptera*), and common redpoll (*Carduelis flammea*).

Other resident species including northern hawk owl (*Surnia ulula*), great gray owl (Strix nebulosa), red-breasted nuthatch (*Sitta canadensis*),brown creeper (*Certhia americana*), and hoary redpoll (*Carduelis hornemanni*) are not common, but they may be found in the project area.

The numerous migratory species found in the project area from late winter to early autumn include sharp-shinned hawk (*Accipiter striatus*), American kestrel (*Falco sparverius*), merlin (*Falco columbarius*), northern flicker (*Colaptes auratus*), olive-sided flycatcher (*Contopus cooperi*), alder flycatcher (*Empidonax alnorum*), ruby-crowned kinglet (*Regulus calendula*), Swainson's thrush (*Catharus ustulatus*), hermit thrush (*Catharus guttatus*), American robin (*Turdus migratorius*), varied thrush (*Ixoreus naevius*), bohemian waxwing (*Bombycilla garrulus*), orange-crowned warbler (*Vermivora celata*), yellow-rumped warbler (*Dendroica coronata*), Wilson's warbler (*Wilsonia pusilla*), American tree sparrow (*Spizella arborea),* savannah sparrow (*Passerculus sandwichensis),* fox sparrow (*Passerella iliaca),* white-crowned sparrow (*Zonotrichia leucophrys*), and dark-eyed junco (*Junco hyemalis*),
During spring and autumn migration, the other migratory species that might pass through the project area include Wilson's snipe (*Gallinago delicata*), mew gull (*Larus canus*), western wood-pewee (*Contopus sordidulus*), Hammond's flycatcher (*Empidonax hammondii*), Say's phoebe (*Sayornis saya*), northern shrike (*Lanius excubitor*), tree swallow (*Tachycineta bicolor*), violet-green swallow (*Tachycineta thalassina*), cliff swallow (*Petrochelidon pyrrhonota*), Arctic warbler (*Phylloscopus borealis*), gray-cheeked thrush (*Catharus minimus*), yellow warbler (*Dendroica petechia*), blackpoll warbler (*Dendroica striata*), northern waterthrush (*Seiurus noveboracensis*), Lincoln's sparrow (*Melospiza lincolnii*), golden-crowned sparrow (*Zonotrichia atricapilla*), Lapland longspur (*Calcarius lapponicus*), rusty blackbird (*Euphagus carolinus*), and pine siskin (*Carduelis pinus*).

Currently no ESA-listed bird species occur in Denali. The olive-sided flycatcher was previously listed as a Federal Candidate (Category 2) species prior to the discontinuance of the Category 2 list, and is currently listed as a bird of management concern by the FWS Migratory Bird Program (USFWS 2008). Olive-sided flycatcher and rusty blackbird are considered species of continental importance for conservation by Partners in Flight (Rich et al. 2004). Olive-sided flycatcher, gray-cheeked thrush, and blackpoll warbler are on the State of Alaska "species of special concern" list (http://www.adfg.state.ak.us/special/esa/ species_concern.php). Additionally, olive-sided flycatcher, blackpoll warbler, and rusty blackbird are listed as species of conservation concern in the Alaska Comprehensive Wildlife Conservation Strategy (ADFG 2006). Great gray owl, boreal owl, olive-sided flycatcher, Hammond's flycatcher, gray-cheeked thrush, varied thrush, bohemian waxwing, blackpoll warbler, golden-crowned warbler, rusty blackbird, and white-winged crossbill are listed as priority species for conservation in central Alaska by Boreal Partners in Flight (Andres 1999).

Cultural Resources

Several cultural resources surveys have been conducted in the project area. No prehistoric sites are known to exist in the area. The Park Headquarters Historic District is the only known cultural resource in the area, was listed on the National Register of Historic Places in 1987, and is part of historic landscape. The nomination emphasizes the significance of the early park's structures, reminiscent of an early Alaskan frontier settlement laid out in a grid (CLR 2008). Initially designed by the park's first superintendent, Harry Karstens, it was later expanded upon by other NPS designers including Thomas Vint, the first NPS landscape architect. It is important to incorporate historic landscape preservation concepts in order to avoid undesirable incremental changes that could affect the historic character of the landscape, which could potentially threaten the integrity of the National Register district. The park headquarters historic district is significant based in part on its architecture and setting. Therefore, thorough examinations of the effects regarding viewsheds from outside and within the historic district are necessary. Important characteristics and features that contribute to the historic landscape that need to be carefully considered include spatial organization, land use, vegetation, circulation, buildings and structures, small-scale features, cluster arrangement, and views. The Secretary of the Interior's Standards for the Treatment of Historic Properties recommend rehabilitation over new construction for such projects.

The 11.91-acre Headquarters Historic District encompasses 18 buildings, including the sled dog kennels, associated buildings and demonstration area, and a network of narrow connecting roads (Fig. 2-1). In keeping with the National Park Service philosophy of rustic (or nonintrusive) architecture; the physical features of the majority of buildings in the District reflect a conscious attempt to harmonize with their natural surroundings through the use of building materials and techniques indigenous to interior Alaska and through sensitive siting. Horizontal log (or log veneer), vertical log plank; board and batten, and clapboard siding are used predominantly on exterior walls. Logs or rough sawn lumber; characteristically exposed under the eaves or at the ends of gable roofs; serve to emphasize the rustic qualities of buildings. The contributing buildings in the District were erected between 1926 and 1941. Fourteen buildings, including the Dog feed cache and cookhouse (Bldg 105), maintain significant exterior integrity and contribute to the ambience of the District. Five are considered noncontributing structures due to their recent

construction; loss of physical integrity; and/or their non-rustic architectural features.

The historic buildings in the district are used for both administrative and residential purposes. The park kennels hosts a program interpreting the history and current use of sled dog patrols in the park. The boundaries of the historic district are depicted on Fig. 2-1.

The Headquarters District is historically significant since it illustrates the presence and early growth of the National Park Service in the State of Alaska. The National Park Service was established for the stated purpose of conserving areas of outstanding national beauty and wildlife and for providing outdoor recreational opportunities to the American public. The Civilian Conservation Corps (CCC), a Depression—era program whose life extended from about 1933 to 1942, contributed greatly to the expansion and development of the Headquarters District in the late l930s. Throughout the nation and locally at Mount McKinley National Park; the CCC facilitated and enhanced the efforts of the National Park Service. The Headquarters District represents the two historical themes of conservation and recreation.

The Dog feed cache and cookhouse (Bldg 105) was originally built around 1929 and moved from the residential area to its current location about 1938 by the CCC. In their evaluation, the Cultural Landscape Report found this building to contribute to the significance of the historic landscape. The dog kennels have undergone numerous renovations since their initial construction in 1929, most recently they were extensively renovated in 1997. This is also when the dog demonstration loop trail was re-routed off the vehicle road to the east and the viewing stands for the demonstration were constructed. In spite of the recent renovations, the Cultural Landscape Report findings indicate that the kennels contribute to the significance of the historic landscape.

Night Sky/Natural Lightscape

The primary visual resource of concern is the park's night sky visibility, or "natural lightscape." Night sky visibility is an important part of the scenic resources that national parks protect, and one that is increasingly endangered throughout the United States because of exterior lighting associated with buildings, parking lots, and industry. There has been no inventory completed that describes the status of Denali's natural lightscape, however the absence of nearby urban centers and the park's remoteness mean that Denali has outstanding opportunities for night sky viewing. In the immediate area near Headquarters, businesses in Nenana Canyon use outdoor lighting and the Department of Transportation and Public Facilities has light poles on the divided portion of the Parks Highway, although typically most of these light sources are turned off during the dark winter months so only the fall shoulder season is impacted.

Visitor Use and Recreation

Approximately 400,000 people visit the park annually, primarily between mid-May and mid-September (NPS 2009). Within the project area, most visitor use occurs at the sled dog kennels. The only working sled dog kennel in the National Park Service is found at Denali, and rangers provide 30-45 minute demonstration programs at the historic Kennels building three times a day during peak season. It is the most popular interpretive program at the park, hosting approximately 40,000 visitors annually. Almost all visitors to the sled dog demonstrations ride a

free shuttle bus to the program which boards at the Denali Visitor Center approximately 40 minutes before the presentation. Up to 6 buses may carry passengers to a single sled dog demonstration. The buses drive uphill past the 'flagpole' parking lot and main headquarters driveway to the service road and pull down to unload prior to the demonstration, remain parked while visitors are at the demonstration, and then pull through the core of the historic district and exit along the main driveway. Visitors also walk to demonstrations along the Roadside and Rock Creek Trails or use the Savage River Shuttle. Few visitors drive private vehicles, park in the limited visitor parking at the flagpole parking lot, and walk a short trail to the Kennels.

During winter, the park road is closed just west of the 'flagpole' visitor parking lot. Visitors leave cars in this parking lot while on day or overnight ski, snowshoe, or dog mushing trips that start along the park road corridor. The Spring Trail near the Kennels is also available for starting trips, and is the principal route used by visitors after road plowing begins in March. Dog mushers are allowed to unload vehicles on the service road by the starting point of the Spring Trail where tie-off posts are provided for attaching gang lines during hookup while the dogs are being brought unto harness. Musher must drive through the historic district and park headquarters to reach the start of the spring trail in winter.

Local Communities and Local Economy

The Denali Borough has a diverse economy for a rural community. Major sources of employment include Clear Air Force Station near Anderson, the Usibelli Coal Mine and an associated Golden Valley Electric Association (GVEA) coal-fired power plant in Healy, Denali National Park and Preserve, and tourism businesses that depend upon visitation to the national park. While all four are substantial contributors to the local economy, the tourism industry is the driving force behind employment growth in the borough. Hotels, restaurants, transport services, retail shops, gas stations, and guide services are among the many services available for people coming to visit the national park. To illustrate the growth, in 1980 the National Park service counted just 133 hotel rooms near the park's entrance. By 1990 this number was approximately 1800 and in 2008 the count was 2100 rooms plus more than 900 cabins, bunks and RV spaces, exclusive of those in Denali National Park and Preserve (Fried 2009).

Employment in the Denali Borough is strongly seasonal because of the importance of the tourism industry within the borough's economy compared to the other industries. Jobs within the Borough vary from less than 1000 in late winter to more than 4000 during the peak tourist season (Fried 2009). The fluctuation in the jobless rate is one indicator of this seasonality: the rate was at 20.1% in January 2009 and then declined to just 3.2% the following June. Even more telling is workforce residency. In 2007, 45% of the private sector wage and salary workforce in the borough were nonresidents of the state. Another 31% resided in Alaska but not in Denali Borough. That means that during the summer, non-resident private-sector workers outnumber the local workers 4 to 1 (Fried 2009). The top four employers in the borough are all related to tourism to the Park and in total 10 of the top 15 employers provide services to tourism (Fried 2009). One locationin the borough, the Nenana Canyon business area just outside the park boundary along the Parks Highway, is inhabited by thousands of employees and visitors any given night of the summer, but is unpopulated from October through April, the businesses boarded up for the winter.

Park Management and Operations

The headquarters area is the administrative hub for Denali National Park and Preserve. The superintendent and principal personnel in concessions management, interpretation, communications, law enforcement/emergency medical services, information technology, administration, and and resource management all have offices in the headquarters area, primarily within the historic district.

The main headquarters road starting by the flagpole and visitor parking lot served as the primary entry point to the headquarters area historically and continues to serve as the primary entry point for administrative traffic today. Most residential traffic enters on the driveway to the northeast. The service road to the west primarily serves west-bound administrative traffic and access to the parking area west of the Cache (building 103) and to the Kennels. Sled dog demonstration buses also enter the headquarters area along this road. However, public use of the service road is not possible due to the severe slope gradient. When icy or slippery conditions prevail, it causes a lack of traction and potential for accidents.
The kennels house the National Park Service's only working sled dog team. These working dogs are kept at the kennels year-round and provide transportation for rangers during the winter months and aid one of the park's most popular interpretive programs during the summer. Each year, an average of 3,000 patrol miles are logged throughout the park's interior. During the summer, attendance at the daily sled demonstrations totals over 40,000 annually. The demonstration lasts about 30 minutes; the stands for viewing are currently uncovered and open to the elements. Most visitors arrive for the demonstrations via a shuttle bus from the Denali Visitor Center although some walk to the demonstration along the Roadside Trail while others drive and park their personal vehicles or RV's.

IV.ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

Introduction

This section provides an evaluation of the impacts or potential impacts of each of the alternatives on the resources described in the issue statements presented in Section 1, Purpose and Need.

Methods

Impact Criteria and Assessment

The impact analysis was conducted in a consistent manner based on standardized impact definitions. For each issue selected for detailed analysis (see Chapter 1) direct, indirect, and cumulative impacts have been described. Impacts identified for each issue are based on the duration, extent, and intensity of the impact. Summary impact levels (characterized as negligible, minor, moderate, or major) are given for each impact topic (issue). Impact level thresholds are defined in Table 4-1.

The proposed development areas are shown conceptually on Figures 2-2, and 2-3 for the action alternatives. As the designs for the facilities are finalized, the actual area of disturbance may be less, depending on how the new paved areas are designed to fit within the landscape. The area of potential effect of the proposed actions was calculated for each alternative using the conceptual areas and a 25% variance rate. Therefore, the area of potential effect is the entire conceptual area, while the actual footprint would likely be less.

Table 4-1 Resource Assessment Impact Levels

Impact Level	Negligible	Minor	Moderate	Major
Intensity	Little or no impact to the resource would occur; any change that might occur may be perceptible but difficult to measure.	Change in a resource would occur, but no substantial resource impact would result; The change in the resource would be perceptible but would not alter the condition of the resource.	Noticeable change in a resource would occur and this change would alter the condition or appearance of the resource, but the integrity of the resource would remain.	Substantial impact or change in a resource area would occur that is easily defined and highly noticeable, and that measurably alters the condition or appearance of the resource.
Extent	None	Localized – Impact would occur only at alternative site or its immediate surroundings, and would not extend into the region.	Wide Area of Park – Impact would affect the resource on a regional level or in the park as a whole, extending well beyond the	Park-wide – Impact would affect the resource on a national level, extending well beyond the region or park as a

			immediate alternative site.	whole.
Duration	None	Temporary – Impact would occur only during construction. After construction, the resource conditions would return to pre-construction conditions.	Short-term – Impact would extend beyond the time of construction, but would not last more than two years.	Long-term – Impact would likely last more than two years and may continue beyond the lifetime of the project.

Cumulative Impacts

As defined in 40 CFR 1508.7, cumulative impacts are the incremental impacts on the environment resulting from adding the proposed action to other past, present, and reasonably foreseeable future actions. Cumulative impacts were assessed by combining the potential environmental impacts of the alternatives with the impacts of projects that have occurred in the past, are currently occurring, or are proposed in the future within the entrance area. In the past, these cumulative impacts have mainly been due to increased visitor use along the park road, and development and improvement of administrative and visitor services in the entrance area (defined as the area along the park road from the intersection with the George Parks Highway to park headquarters situated at about MP 3.4). See Fig. 2-1 for locations of the buildings in the headquarters area.

Implementation of the *Entrance Area and Road Corridor Development Concept Plan/EIS* (NPS 1997) is continuing with general programming for all facilities and the design of several development components. Facilities and services in the park entrance area implemented since 1997 include:

- Visitor Center Complex, completed in 2005 with a bookstore/gift shop and cafeteria/deli,
- Murie Science and Learning Center Complex,
- Riley Creek Campground, rehabilitation and expansion completed in 2002,
- Railroad Depot expansion,
- A network of hiking trails that connects the Nenana Canyon to the entrance area and the entrance area to the C-Camp/headquarters area,
- Riley Creek Mercantile, with camper convenience services such as a general store and showers.

The Park has completed several components described in the DCP/EIS for the headquarters area including:

- Rerouting the sled dog demonstration trail,
- Installing Sweet Smelling Toilets (SST) for the dog demonstration area,
- Restoring most of the historic structures in the Headquarters Historic District,

- Conversion of many rehabilitated structures to propane furnaces.

Actions completed in the headquarters area that were decided separately from DCP/EIS have included the following:

- Construction of a new residence (B251) in the historic district in 1994,
- Removal of 31 single-wall underground fuel oil tanks and replacement with double-wall above-ground tanks or propane tanks,
- Excavation and remediation of 2,000 cubic yards of contaminated soils and installation of 9 groundwater monitoring wells,
- Removal and thinning of vegetation to protect from wildfire, as described in the *Environmental Assessment for Hazardous Vegetative Fuel Treatment* (NPS 2003b),
- Expansion of the gravel pad by the steam plant to accommodate parking of employee recreational vehicles (NPS 2001),
- Constructing the B&U pad and building (1997-1999),
- Adding 18-ft to the Auto Shop for offices and Alaska Natural History Association warehouse.

The park has plans in the near future to implement other items in the DCP/EIS that include:

- Rehabilitating the entrance area wastewater treatment facility and collection system,
- Bringing the water treatment system into compliance with new regulations,

The National Park Service has begun implementing components of the C-Camp area plan (NPS 2006), which itself was an implementation document for the DCP/EIS but included other items:

- A new road parallel to the east side of the residential area would be constructed,
- An Emergency Services Building and separate Annex would be constructed near the existing C-Camp entrance, along with a parking lot for 29 vehicles,
- A new vehicle fueling system would be located directly south of the Auto Shop pad along the new parallel road,
- The Auto Shop pad would be expanded to the east.
- Upgrade employee housing, parking and common facilities for residents in C-Camp.
- Expand the C-Camp maintenance area and improve maintenance, storage and parking facilities.
- Replace the vehicle fueling system in the maintenance area of C-Camp and remediate source-contaminated soils
- Realign a section of the Rock Creek Trail to minimize intersections with an existing power line.

Other future and ongoing projects in the headquarters area that were not specifically addressed in the DCP/EIS include:

- Cyclically removing brush from beneath the overhead power line,
- Repairing roads and trails,
- Continuing remediation of contaminated soils and groundwater at various locations,
- Replacing the Rock Creek bridge located near milepost 3 of the park road,

- Rehabilitating the park road at mile 4 and mile 4.5 (finished except for reveg),
- Periodic resurfacing of park road in the entrance area, and
- Deepening of the parking spaces on the road between building 51 and the duplex (B252; NPS 2001).

Components of the Heaquarters Area Plan have begun to be implemented or are planned in the foreseeable future.

- Rehabilitation of historic and non-historic buildings in the headquarters area that have not been renovated
- Remove Building 141 and replace with a 1500 sq ft. footprint Administrative Building
- Remove Pipe storage and shed
- Construct 800 sq ft unheated storage building 20 ft west of Pipe storage and shed for Kennels.
- Remove parking and bituminous paving from the area between the headquarters building (21), the Communications Center building (141), the Cache (103), the interpretive building (101), the Resources building (118), and along the service road to the junction with the kennels driveway. Drivable surfaces would be retained to provide emergency and service access to all structures.
- Construct new pedestrian trails to link parking lots and administrative buildings.
- The parking area west of the Cache (103) would also be removed and revegetated.
- The parking behind Resources (Buildings 102 and 118) would be expanded into an L-shaped parking lot allowing for 16 parking spaces with electric plug-ins.
- Remove one parking space and pavement north and west of the Barn (106) and the bituminous swale would be removed from in front of the Barn (106) and replaced with a stone rubble-lined swale. The site would be revegetated to re-establish the historic setting.
- The road that leads from upper headquarters, beside the Administration Building (123), down the hill past the “John” house (112) narrowed to a foot path. The pedestrian trail leading from the Administration building (123) and building 107 would be realigned to lower the grade.
- Construct 600 sq ft unheated storage building on pad south of the steam plant
- Renovate building 51 (6-plex residential).
- Expand building 53 by 225 ft and renovate to provide bathroom, temporary IT offices, storage and workout facility
- Renovate building 54 for IT office, workspace, storage and a meeting/training room.
- Remove building 99 once new workout facility is constructed
- Construct 2-car garage across from building 22
- Construct three 2-car garages behind building 51
- Construct six pull-in pads for RV’s or trailers with sewer, water and electric hook-ups.
- Add two spaces of paved parking to the east of the IT shop/former garage (53), extending the existing parking area east toward the driveway of residence building 34.

Impacts of Alternative 1: No Action

Air Quality

There would be no new construction activities under Alternative 1 or other activities that might cause impacts to air quality.

Cumulative Effects

Construction activities in the entrance area (including headquarters) have been ongoing over the past 10 years and are projected to continue, as have associated emissions from construction equipment. Projects have included the Riley Creek Campground expansion, Denali Depot expansion, the Murie Science and Learning Center development, and the Visitor Center campus, the approved actions in the 2006 *C-Camp Improvements Environmental Assessment* the approved actions in the 2007 *Headquarters Area Plan and Environmental Assessment*, and activities involved with rehabilitating the park road at mileposts 4.0 and 4.5. While the continuous nature of the projects in this time frame mean the impacts could be characterized as short-term, the effects are definitely localized and oftentimes imperceptible. Potential long-term air quality effects from creating new visitor opportunities in the entrance area and thereby encouraging more visitors and visitor-related traffic are offset by encouraging visitors to leave their cars outside of the park. New trail and pedestrian connections, the Savage River shuttle, and limits on road use past Savage all serve or would serve to minimize the increase in emissions associated with new visitor opportunities. The park is converting from a fuel oil to a primarily propane heating infrastructure and this is improving overall air quality in the park. Overall, there are minor cumulative adverse impacts to air quality, but this alternative does not contribute to them.

Conclusion

There would be no additional adverse impacts to air quality under this alternative, although there would be continuing minor adverse impacts from other construction activities in the entrance area. This alternative would not result in the impairment of the park's air quality. The level of impact on air quality would not result in an impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Vegetation, Soils, and Wetlands

There would be no new disturbance to park vegetation, soils, or wetlands under this alternative since there would be no new construction projects. The absence of action also would not lead to destruction of vegetation, soils, or wetlands in the headquarters area.

Cumulative Effects

The existing development and rehabilitation in the entrance area includes areas cleared of vegetation for the Visitor Center Complex, the Murie Science and Learning Center complex, the Wilderness Access Center, the Riley Creek Campground, the Riley Creek Mercantile, the water treatment plant, the airstrip, the railroad depot, the park road, C-Camp residential and maintenance facilities, and headquarters-area administrative buildings and residences. The total acreage of existing disturbance to vegetation and soils in the entrance area is about 83 acres (NPS 2005a). Actions approved in the *C-Camp Improvements Environmental Assessment* will

disturb another 4.6 acres, the park road rehabilitation at mileposts 4 and 4.5 are expected to result in 2.6 acres of vegetation loss, and the actions approved in the 2007 *Headquarters Area Plan and Environmental Assessment* will disturb another 1.7 acres (discounting the anticipated disturbance from the Kennel road realignment being considered here).

Total quantifiable past, present, and foreseeable future activities other than those proposed in this alternative are 91.9 acres. Additional foreseeable future actions that could have the highest potential to impact vegetation and soils include the replacement of the Rock Creek bridge, rehabilitation of the Rock Creek water system, and cyclic brush removal beneath power lines.

Indirect impacts on vegetation and soils from these past and ongoing activities include creation of social trails and trampling of vegetation, filling of vegetated areas, and introduction of invasive species. Other indirect impacts include channelization of runoff from paved areas and footpaths and subsequent erosion of soils. These past and present impacts can be seen at many of the developed sites in the entrance area, and could be considered moderate impacts on vegetation and soils.

Wetlands
About 4 acres of wetlands have been impacted by previous road, trail and building construction in the park entrance area. C-Camp improvements and road rehabilitation activities at milepost 4 and 4.5 will result in 1.7 acres of additional wetland loss.

Overall, the cumulative adverse impacts on vegetation, wetlands, and soils would be moderate. This alternative would be responsible for none of the cumulative impacts.

Conclusion
This alternative would cause no additional impacts to vegetation, soils, or wetlands in the headquarters or entrance areas of the park. Previous disturbance and projected future disturbance has caused moderate adverse impacts. This alternative would not result in impairment of the park's vegetation, wetlands, or soils. The level of impact on the park's vegetation, wetlands and soils would not result in an impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Wildlife and Habitat
There would be no new development activity under this alternative, so no new disturbance to wildlife or wildlife habitat.

Cumulative Effects
There are 83 acres of developed land in the entrance area of Denali. The *C-Camp Improvements EA* will develop another 4.6 acres, the milepost 4 and 4.5 road rehabilitation EA disturbed 2.6 additional acres and the 2007 *Headquarters Area Plan and Environmental Assessment* will add another 1.7 acres. Other foreseeable projects such as the Rock Creek bridge replacement could have small additional effects. Cumulatively, this action plus previous developments in the entrance area and headquarters/C-Camp area have gradually reduced the amount of habitat available for wildlife. However, these are still very small nodes of development in relationship to

the vast acreage of similar surrounding habitat, much of which is protected as designated wilderness. Overall, there are moderate adverse impacts to wildlife and wildlife habitat, none of which are caused by this alternative.

Conclusion
There would be no additional effects on wildlife habitat as a result of this alternative, although cumulative moderate adverse effects remain from other developments in the park entrance area.. The level of impact on the park's wildlife and habitat would not result in an impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Cultural Resources
There would be no actions taken under this alternative to either rehabilitate or harm cultural resources. The 2007 *Headquarters Area Plan and EA* proposed project to rehabilitate and revegetate the headquarters area, returning it to historic conditions, could not be implemented. The existing service road would continue to detract from the historic district.

Cumulative Effects
Since the Headquarters Historic District was added to the National Register of Historic Places in 1987, National Park Service activities have both enhanced and detracted from the character of the district. Historic building rehabilitation since completion of the 1997 *Entrance Area and Road Corridor DCP* has emphasized the reconstruction of the historic exterior appearance of the buildings, such as the garage facade on the eastern portion of the Resources building (102) and the loading dock and doorway reconfiguration on the interpretive building (101). However, new non-contributing structures have been added to the district including the SST serving kennels visitors in 2005, the viewing stand for the sled dog demonstrations constructed in 1997, and one residence (251) in 1994. Formal and informal parking has expanded along road edges.

The cumulative effects of the proposed action along with the effects of other past, present, and foreseeable future actions have been mixed, but with an overall moderate beneficial influence since the completion of approved actions in NPS 1997. The actions proposed in this alternative would not contribute to the benefits achieved.

Conclusion
This alternative would have no additional impact on cultural resources, and a moderate benefit would remain from previous actions. The level of impact on the park's cultural resources would not result in an impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Night Sky/Natural Lightscape
This alternative would not result in the installation of additional exterior lighting in the headquarters area, so there would be no impacts to visual or night-sky resources from this alternative.

Cumulative Effects
Night sky visibility has not been an identified concern in previous planning efforts. Lights have been added to new facilities such as the Buildings and Utilities structure at C-Camp and the concession bus barn without contemplation of the overall impact. In addition, various businesses in the Nenana Canyon area have exterior lighting, and the Alaska Department of Transportation and Public Facilities installed streetlights along a half-mile stretch of the Parks Highway when constructing pedestrian trails and highway crossings in the Nenana Canyon. No research has been conducted to identify the level of present impact to night sky visibility in the park entrance area and headquarters area from these lighting efforts. However, the combined impacts are certainly noticeable, change the character of the resource, are long-term, and affect a localized area, though it is the area experienced by most winter Denali visitors. There is a moderate cumulative adverse impact. This alternative does not contribute to that impact.

Conclusion
This alternative would have no additional impact on night sky visibility, which would be subject to moderate adverse impacts from exterior lighting elsewhere in the area. The level of impact on the park's night sky and natural lightscape would not result in an impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Visitor Use and Recreation
There are no actions proposed under this alternative that would affect current visitor use and recreation. Visitors to the sled dog demonstrations would continue to have an unimproved and uneven landing area when disembarking from the shuttle buses. No new visitor parking would be constructed and no plug-ins would be added to the existing parking.

Cumulative Effects
The 1997 *Entrance Area and Road Corridor DCP* articulated a strategy to enhance visitor opportunities in the entrance area of the park. Combined with the extensive new visitor facilities centered on the Denali Visitor Center and improvements planned or underway in the Savage River area, the National Park Service has provided long-term, substantial improvements in the opportunities for visitors to use, recreate in, and learn about Denali. Although localized in the Denali entrance area, because virtually all of the park visitors pass through the entrance area the significance of the improvements can be considered park-wide. Thus there are major cumulative benefits of past, present, and foreseeable future actions. This alternative would contribute none of those benefits.

Conclusion
This alternative would have no additional impact on or benefit to visitor use and recreation, which has seen major benefits with implementation of other elements of the 1997 *Entrance Area and Road Corridor DCP*. There would be no impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Local Communities and Local Economy

There are no actions proposed under this alternative that would impact local communities or the local economy.

Cumulative Effects

Since the completion of the 1997 *Entrance Area and Road Corridor DCP*, the National Park Service has continually invested in new entrance area facilities. The construction of the entrance area visitor facilities as well as rehabilitation of administrative facilities has provided a steady flow of federal dollars into the local and regional economy, and created local employment. The National Park Service has spent approximately $40 million on frontcountry projects since 1997. Overall, the implementation of the 1997 *Entrance Area and Road Corridor DCP* will provide moderate benefits to the local community and economy, but implementation of this alternative would provide none of those benefits.

A goal of the 1997 *Entrance Area and Road Corridor DCP* was to provide a wide range of visitor opportunities in the Denali frontcountry, with a particular emphasis on increasing the number of opportunities in the entrance area and along the park road to Savage River. A new destination visitor center, the Murie Science and Learning Center, Savage Cabin living history, and new trails, picnic areas, and rest stops have all contributed to achieving this goal. Creating new opportunities provides a reason for visitors to spend more time at Denali, and as a result to spend more money buying local goods and services, creating moderate benefits for the local economy. Although no documentation of additional expenditures by park visitors has been completed since the opening of the new facilities, two-day stays are becoming more typical for Denali visitors than the previous one-day norm for most visitors (HDR 2006). This alternative would not contribute to this local benefit.

Conclusion

There would be no additional beneficial or adverse impacts to local communities or economies under this alternative, which have received moderate direct and indirect benefits from prior National Park Service projects in the Denali frontcountry.

Park Management and Operations

There would be no changes to park management and operations under this alternative, and no beneficial or adverse impacts. Buses would continue to pull through the historic district, posing conflicts between pedestrians and traffic. The 2007 *Headquarters Area Plan and EA* proposed project to revegetate the headquarters area, returning it to historic conditions, could not be implemented. The HQ historic district sits on a ledge on a hillside where water drains from the north and somewhat from the west directly into and around the kennels and historic district. Drainage issues would remain the same with the existing alignment.

Cumulative Effects

Implementation of the 1997 *Entrance Area and Road Corridor DCP* has generally improved park management and operations, which has been particularly important for addressing the increased complexity of visitor facilities and services and the increasing number of visitors over time. In the headquarters area, the rehabilitation of historic structures into modern, functional

offices has increased office capacity without adding new buildings. The construction of the Building and Utilities building in C-Camp and expansion of the Auto Shop also provided new office space to accommodate growing staff and responsibilities. Changes such as the conversion from fuel oil to propane for heating reduce operational complexity, and improvements such as the repair of the mile 4 and 4.5 section of the park road remove maintenance burdens. These improvements and efficiencies help to offset the impact of increasing complexity and scale of park operations. Overall, there have been major beneficial impacts on park management and operations from improvements in the headquarters area, but this alternative would not add to these improvements.

Conclusion
This alternative would have no additional impacts on or benefits to park management and operations, which otherwise have seen major beneficial impacts from improvements in the headquarters area.

Impacts of Alternative 2 – Realign Existing Service Road

Air Quality
The increase in construction activities in the headquarters area necessary to implement this alternative would cause some increase in airborne pollutants over existing levels, as noted in the 1997 *Entrance Area and Road Corridor DCP*. These pollutants would include carbon monoxide, sulfur dioxide, nitrogen oxides, volatile organic compounds, and particulates, primarily originating from construction equipment. However, the impacts would be localized and temporary. There would thus be minor adverse impacts to the park's air quality.

Cumulative Effects
Construction activities in the entrance area (including headquarters) have been ongoing over the past 10 years and are projected to continue, as have associated emissions from construction equipment. Projects include the Riley Creek Campground expansion, Denali Depot expansion, the Murie Science and Learning Center development, and the Visitor Center campus, the approved actions in the 2006 *C-Camp Improvements Environmental Assessment*, activities involved with rehabilitating the park road at mileposts 4.0 and 4.5 and the approved actions in the 2007 *Headquarters Area Plan and Environmental Assessment*. While the continuous nature of the projects in this time frame mean the impacts could be characterized as short-term, the effects are definitely localized and oftentimes imperceptible. Potential long-term air quality effects from creating new visitor opportunities in the entrance area and thereby encouraging more visitors and visitor-related traffic are offset by encouraging visitors to leave their cars outside of the park. New trail and pedestrian connections, the Savage River shuttle, and limits on road use past Savage all serve or would serve to minimize the increase in emissions associated with new visitor opportunities. The park is converting from a fuel oil to a primarily propane heating infrastructure and this is improving overall air quality in the park. Overall, there are minor cumulative adverse impacts to air quality, of which this project contributes a minor portion.

Conclusion
The increase in construction activity would contribute to the minor adverse impacts to air quality that have taken place because of implementation of the *Entrance Area and Road Corridor DCP*. The level of impact on air quality would not result in an impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Vegetation, Soils, and Wetlands
There would be moderate adverse impacts to vegetation, soils, and wetlands from the actions in this alternative. These adverse impacts result from disturbance of previous undeveloped ground and vegetation. Adverse impacts arise from the direct loss of habitat, direct loss of native plant cover, loss of natural wetlands, and a potential reduction in function such as biomass production. The impacts on soils would include exposure of local soils to potential erosion, and invasive plant species.

New disturbance in this alternative is associated with the service road realignment, the new kennels bus parking and turnaround, and the new parking adjacent to the current 'flagpole' parking lot. Collectively these projects would cause direct loss of 1.45-2.4 acres of native plant cover and a loss of 0.9-1.5 acres of wetlands.

Potential indirect impacts associated with the construction of the parking areas and roads include sedimentation of adjacent habitats and pollutants introduced from road runoff, and potential introduction of invasive species, subsequently reducing ecological diversity. Best Management Practices and design standards can minimize contaminant introduction from road runoff.

The adverse direct and indirect impacts to vegetation are localized, but represent permanent obvious change to the resource. The adverse impacts are therefore moderate overall.

Cumulative Effects

The existing development in the entrance area includes areas cleared of vegetation for the Visitor Center Complex, the Murie Science and Learning Center complex, the Wilderness Access Center, the Riley Creek Campground, the Riley Creek Mercantile, the water treatment plant, the airstrip, the railroad depot, the park road, C-Camp residential and maintenance facilities, and headquarters-area administrative buildings and residences. The total acreage of existing disturbance to vegetation and soils in the entrance area is about 83 acres (NPS 2005a). Actions approved in the *C-Camp Improvements Environmental Assessment* will disturb another 4.6 acres, the park road rehabilitation at mileposts 4 and 4.5 are expected to result in 2.6 acres of vegetation loss, and the actions approved in the 2007 *Headquarters Area Plan and Environmental Assessment* will disturb another 1.7 acres (discounting the anticipated disturbance from the Kennel road realignment being considered here).

Total quantifiable past, present, and foreseeable future activities other than those proposed in this alternative are 91.9 acres. Additional foreseeable future actions that could have the highest

potential to impact vegetation and soils include the replacement of the Rock Creek bridge, rehabilitation of the Rock Creek water system, and cyclic brush removal beneath power lines.

Indirect impacts on vegetation and soils from these past and ongoing activities include creation of social trails and trampling of vegetation, filling of vegetated areas, and introduction of invasive species. Other indirect impacts include channelization of runoff from paved areas and footpaths and subsequent erosion of soils. These past and present impacts can be seen at many of the developed sites in the entrance area, and could be considered moderate impacts on vegetation and soils.

Wetlands
About 5.7 acres of wetlands have been impacted by previous road, trail and building construction in the park entrance area. Recently initiated C-Camp improvements will result in 1.7 acres of additional wetland loss. Overall, the cumulative adverse impacts on vegetation, wetlands, and soils would be moderate. This alternative would add 0.9-1.5 acres of known disturbance to wetlands.

Conclusion
The long-term, noticeable, although localized, adverse impacts to vegetation, soils, and wetlands would be moderate under this alternative. The level of impact on the park's vegetation, wetlands and soils would not result in an impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Wildlife and Habitat
There would be minor adverse impacts to wildlife and wildlife habitat as a result of the actions in this alternative. Impacts would result both from new development on undisturbed ground and from the noise and other disturbance associated with construction activities.

The actions in this alternative would result in 1.45 – 2.4 acres of new disturbance associated with new parking areas and roadways. There are no sensitive habitats in the area, although 0.9 – 1.5 acres are wetlands. Because these areas are very close to existing developments and human activity areas, they are not utilized to any great degree by large mammals such as grizzly bears or moose. There is an abundance of similar habitat nearby, and small mammals and birds utilizing these areas would likely simply move to these areas. There would be an increase in edge effects and small-scale habitat fragmentation. All of these effects would be permanent, noticeable changes in the quality of the resource, although very localized, amounting to a moderate adverse impact overall.

Construction activities would also have an impact on wildlife. These activities would likely stretch out over several years. Operations associated with the proposed construction and development would temporarily produce noise and activity levels that could cause localized displacement and disturbance of resident wildlife. However, some birds and small mammals that utilize habitats near headquarters may have become habituated to some degree to noise and human activity. There would continue to be activity-avoidance of the general area by large mammals; new construction is not likely to increase this impact. For these reasons, any

disturbance of wildlife from an increase in activity or operation of the proposed facilities would be minor. Post-construction, traffic would continue to bisect a limited area of migration and nesting.

Some small mammals, such as snowshoe hare and Arctic ground squirrels, could potentially experience direct mortality during construction activities. However, given the relatively small amount of habitat involved, the low numbers of affected individuals, and the likelihood that small mammals occupy adjacent habitats, the impacts of mortality on wildlife would be considered minor.

Cumulative Effects
There are 83 acres of developed land in the entrance area of Denali. The *C-Camp Improvements EA* calls for another 4.6 acres, the milepost 4 and 4.5 road rehabilitation EA developed 2.6 additional acres, and the 2007 headquarters EA will disturb another 1.7 acres. Other foreseeable projects such as the Rock Creek bridge replacement could have small additional effects. Cumulatively, this action plus previous developments in the entrance area and headquarters/C-Camp area have gradually reduced the amount of habitat available for wildlife. However, these are still very small nodes of development in relationship to the vast acreage of similar surrounding habitat, much of which is protected as designated wilderness. Overall, there are moderate adverse impacts to wildlife and wildlife habitat, of which this action contributes a minor amount.

Conclusion
There would be minor adverse impacts to wildlife and wildlife habitat that result from implementation of the actions in this alternative. The level of impact on the park's wildlife and habitat would not result in an impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Cultural Resources
The cultural resource affected by actions in this alternative would be the historic district and associated cultural landscape. This alternative most closely resembles the plans outlined in the Cultural Landscape Report (2008) and has been approved conceptually by the SHPO as having no adverse effects on the historic district. Further SHPO consultation is necessary in order to complete the Section 106 process.

The sled dog demonstration bus parking loop on the edge of the historic district and the installation of outdoor lighting have the potential to detract from the character of the district to the extent that they did not exist during the historic period of significance. However, the impact of these actions would be mitigated through compatible design. The new parking areas would be screened with native vegetation. The lighting fixtures would be selected to be compatible with the rustic appearance of the district. The existing road alignment would continue to affect the historic district due to surface drainage directly into the heart of the area and also maintaining a visual intrusion contrary to what would be found during the period of significance. However, the

current alignment is consistent with the overall organizational grid that was established during the period of significance.

The net result of the action in this alternative would result in a long-term, minor adverse impact to the character of the historic district.

Cumulative Effects
Since the Headquarters Historic District was listed on the National Register of Historic Places in 1987, National Park Service activities have both enhanced and detracted from the character of the district. Historic building rehabilitation since the mid 1980s has emphasized the reconstruction of historic exterior appearance of the buildings, such as the garage facade on the eastern portion of the Resources building (102) and the loading dock and doorway reconfiguration on the interpretive building (101). However, new non-contributing structures have been added to the district including the SST serving kennels visitors in 2005, the viewing stand for the sled dog demonstrations constructed in 1997, and one residence (251) in 1994. Formal and informal parking has expanded along road edges. Recently, the approved actions in the 2007 *Headquarters Area Plan and Environmental Assessment* for the most part will rehabilitate the cultural landscape of the Headquarters Historic District by returning it to an appearance more similar to what it had during the district's historic period of significance between 1928 and 1941. Some projects approved in that EA will have an adverse effect on the district's character.

The cumulative effects of the proposed action along with the effects of other past, present, and foreseeable future actions have been mixed, but with an overall major beneficial influence since the completion of the 1997 DCP. This results in a moderate beneficial impact overall.

Conclusion
This alternative closely reflects the recommendations of the CLR and is the most sympathetic to the Historic District . There would be minor adverse impacts to the historic district with the implementation of this alternative. The level of impact on the park's cultural resources would not result in an impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Night Sky/Natural Lightscape
There would be minor adverse impacts to the natural lightscape of the headquarters area. The impacts would result primarily from the impact of outdoor lighting on the night sky. However, the mitigation measures identified in section Chapter 2 would be utilized so that the increase in outdoor lighting would affect primarily visibility within the headquarters area itself, with very minimal impact beyond the headquarters area. The adverse impact on night sky visibility would therefore be long-term, but noticeable only in a localized area.

Cumulative Effects
Night sky visibility has not been an identified concern in previous planning efforts. Lights have been added to new facilities such as the Buildings and Utilities structure at C-Camp and the concession bus barn without contemplation of the overall impact. Additional lighting is called for in the approved actions of the 2007 *Headquarters Area Plan and Environmental Assessment.* In

addition, various businesses in the Nenana Canyon area have exterior lighting, and the Alaska Department of Transportation and Public Facilities installed streetlights along a half-mile stretch of the Parks Highway when constructing pedestrian trails and highway crossings in the Nenana Canyon. No research has been conducted to identify the level of present impact to night sky visibility in the park entrance area and headquarters area from these lighting efforts. However, the combined impacts are certainly noticeable and change the character of the resource, are long-term, and affect a localized area, though it is the area experienced by most winter Denali visitors. There is moderate cumulative adverse impact. Because of the mitigation suggested in this alternative, the contribution of this action would be minor.

Conclusion
The addition of outdoor lighting as part of this alternative would result in minor adverse impacts to night sky visibility in the Denali entrance area. The level of impact on the park's night sky and natural lightscape would not result in an impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Visitor Use and Recreation
The actions in this alternative would have minor beneficial effects on visitor use and recreation. While the actions do not extend to the specific interpretive and recreational opportunities that would accompany the infrastructure changes, the new parking for the sled dog demonstration buses would be closer to the sled dog kennels and the location of the demonstrations, enabling visitors with limited mobility to more easily access the demonstrations and the historic kennels building. There would be an improvement to visitor access by providing a bus loading and unloading area that conforms to standards for accessibility. Winter access would be improved by the inclusion of plug-ins to all new parking lots and the addition of plug-ins to the existing 'flagpole' parking lot.

Cumulative Effects
Making the Headquarters Historic District more visitor-friendly is part of the larger effort articulated in the 1997 *Entrance Area and Road Corridor DCP* and further developed in the 2007 *Headquarter Plan and Environmental Assessment* to enhance visitor opportunities in the entrance area of the park. Combined with the extensive new visitor facilities centered on the Denali Visitor Center and improvements planned or underway in the Savage River area, the National Park Service has provided long-term, substantial improvements in the opportunities for visitors to use, recreate in, and learn about Denali. Although localized in the Denali entrance area, because virtually all of the park visitors pass through the entrance area the significance of the improvements can be considered park-wide. Thus there are major cumulative benefits of past, present, and foreseeable future actions. The actions in this alternative provide only a minor portion of those overall benefits.

Conclusion
The actions proposed in this alternative would provide minor beneficial impacts to visitor use and recreational opportunities, and would contribute to the major beneficial impacts resulting from implementation of the provisions of the 1997 *Entrance Area and Road Corridor DCP*.

There would be no impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Local Communities and Local Economy

The actions associated with this alternative would have minor benefits to the local community and economy. Direct economic benefits arise from the construction projects associated with constructing roads and parking lots. Some of this work is accomplished through contracts which might result in employment for local workers. On past projects, some of the work has been accomplished through hiring term employees who have often been local residents. In addition, there are indirect benefits to the local economy as contract workers and park employees associated with these projects purchase goods and services in the community. These effects would be short-term, perceptible, and localized, accounting for only minor benefits.

Cumulative Effects

Since the completion of the 1997 *Entrance Area and Road Corridor DCP*, the National Park Service has continually invested in new entrance area facilities. The construction of the entrance area visitor facilities as well as rehabilitation of administrative facilities has provided a steady flow of federal dollars into the local and regional economy, and created local employment. The National Park Service has spent approximately $40 million on frontcountry projects since 1997. The projects in this alternative would continue this trend by contributing another $11.6 million. Overall, the implementation of the 1997 *Entrance Area and Road Corridor DCP* will provide moderate benefits to the local community and economy, but this project would provide a minor moderate portion of those benefits.

A goal of the 1997 *Entrance Area and Road Corridor DCP* was to provide a wide range of visitor opportunities in the Denali frontcountry, with a particular emphasis on increasing the number of opportunities in the entrance area and along the park road to Savage River. A new destination visitor center, the Murie Science and Learning Center, Savage Cabin living history, and new trails, picnic areas, and rest stops have all contributed to achieving this goal. Enhancing visitor opportunities at the Headquarters Historic District is one further step. Creating new opportunities provides a reason for visitors to spend more time at Denali, and as a result to spend more money buying local goods and services, creating a moderate benefit for the local economy. Although no documentation of additional expenditures by park visitors has been completed since the opening of the new facilities, two-day stays are becoming more typical for Denali visitors than the previous one-day norm for most visitors (HDR 2006). This project would contribute a minor amount to this local benefit.

Conclusion

Implementation of this alternative would have minor benefits to the local and regional community as a result of increased federal expenditures improving park facilities. The overall implementation of the *Entrance Area and Road Corridor DCP* and the 2007 *Headquarters Area Environmental Assessment* have provided moderate benefits to the local community over the past 10 years and will continue to do so in the future, both because of direct expenditures and the addition of new visitor opportunities inside the park.

Park Management and Operations

The alternative presented would have minor beneficial impacts on park management and operations. The 2007 *Headquarters Area Environmental Assessment* calls for a net loss of 28 parking spaces with plug-ins within the Historic District, and these would be recouped in this alternative. All new parking spaces and existing spaces in the 'flagpole' parking area would be equipped with electric plug-ins for use in winter. The existing service road would be re-aligned and limited to use only by sled dog demonstration shuttle buses, hence park staff would no longer have this option of accessing the park road from headquarters. Winter use of this parking area would be limited due to the steep grade and slow speeds. With the bus turn-around loop, sled dog demonstration buses would no longer drive through the historic district, eliminating that vehicle/pedestrian conflict.

Post-construction, there is the potential for moderate adverse impacts, which would be localized and long-term, to kennel operations from the proximity of the south end of the bus parking loop to the kennels. Sounds from the parking area could disturb the dogs and disrupt demonstrations. Mitigation measures for these impacts include physical visual and sound barriers, and the final design for the placement of the loop will place it as far away from the kennels as is feasible.

Cumulative Effects

Implementation of the 1997 *Entrance Area and Road Corridor DCP* and the 2007 *Headquarters Area Environmental Assessment* have or will generally improve park management and operations, which has been particularly important for addressing the increased complexity of visitor facilities and services and increasing number of visitors over time. In the headquarters area, the rehabilitation of historic structures into modern, functional offices has increased office capacity without adding new buildings. The construction of the Building and Utilities building in C-Camp and expansion of the Auto Shop also provided new office space to accommodate growing staff and responsibilities. Changes such as the conversion from fuel oil to propane for heating reduce operational complexity, and improvements such as the repair of the mile 4 and 4.5 section of the park road remove maintenance burdens. These improvements and efficiencies help to offset the impact of increasing complexity and scale of park operations. Overall, there have been major beneficial impacts on park management and operations from improvements in the headquarters area, and the actions in this alternative would contribute moderately to further benefits.

Conclusion

There would be some minor adverse impacts to employees from the changes in parking and circulation, but overall there would be minor beneficial impacts to park management and operations resulting from improved vehicle circulation and enhanced parking options with lighting.

Impacts of Alternative 3 – NPS Preferred: Construction of New Access Road

Air Quality

The increase in construction activities in the headquarters area necessary to implement this alternative would cause some increase in airborne pollutants over existing levels, as noted in the 1997 *Entrance Area and Road Corridor DCP*. These pollutants would include carbon monoxide,

sulfur dioxide, nitrogen oxides, volatile organic compounds, and particulates, primarily originating from construction equipment. However, the impacts would be localized and temporary. There would thus be minor adverse impacts to the park's air quality.

Cumulative Effects
Construction activities in the entrance area (including headquarters) have been ongoing over the past 10 years and are projected to continue, as have associated emissions from construction equipment. Projects include the Riley Creek Campground expansion, Denali Depot expansion, the Murie Science and Learning Center development, and the Visitor Center campus, the approved actions in the 2006 *C-Camp Improvements Environmental Assessment*, activities involved with rehabilitating the park road at mileposts 4.0 and 4.5 and the approved actions in the 2007 *Headquarters Area Plan and Environmental Assessment*. While the continuous nature of the projects in this time frame means the impacts could be characterized as short-term, the effects are definitely localized and oftentimes imperceptible. Potential long-term air quality effects from creating new visitor opportunities in the entrance area and thereby encouraging more visitors and visitor-related traffic are offset by encouraging visitors to leave their cars outside of the park. New trail and pedestrian connections, the Savage River shuttle, and limits on road use past Savage all serve or would serve to minimize the increase in emissions associated with new visitor opportunities. The park is converting from a fuel oil to a primarily propane heating infrastructure and this is improving overall air quality in the park. Overall, there are minor cumulative adverse impacts to air quality, of which this project contributes a minor portion.

Conclusion
The increase in construction activity would contribute to the minor adverse impacts to air quality that have taken place because of implementation of the *Entrance Area and Road Corridor DCP*. The level of impact on air quality would not result in an impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

<u>Vegetation, Soils, and Wetlands</u>
There would be moderate adverse impacts to vegetation, soils, and wetlands from the actions in this alternative. These adverse impacts result from disturbance of previous undeveloped ground and vegetation. Adverse impacts arise from the direct loss of habitat, direct loss of native plant cover, loss of natural wetlands, and a potential reduction in function such as biomass production. The impacts on soils would include exposure of local soils to potential erosion, and invasive plant species. A minor, localized but long-term benefit from this alternative would be the removal of the existing service road, which would result in a continuous vegetative habitat that is currently bisected.

New disturbance in this alternative is associated with the new kennels bus parking and turnaround, the new parking adjacent to the current 'flagpole' parking lot, and a new road connecting these two parking areas. Collectively these projects would cause direct loss of 1.5-2.5 acres of native plant cover. All of this area is located in wetlands. This alternative would

have some offsetting benefits in that drainage improvements would provide minor benefits to wetland function in this area.

Potential indirect impacts associated with the construction of the parking areas and roads include sedimentation of adjacent habitats and pollutants introduced from road runoff, and potential introduction of invasive species, subsequently reducing ecological diversity. Best Management Practices and design standards can minimize contaminant introduction from road runoff.

The adverse direct and indirect impacts to vegetation are localized, but represent permanent obvious change to the resource. The adverse impacts are therefore moderate overall.

Cumulative Effects

The existing development in the entrance area includes areas cleared of vegetation for the Visitor Center Complex, the Murie Science and Learning Center complex, the Wilderness Access Center, the Riley Creek Campground, the Riley Creek Mercantile, the water treatment plant, the airstrip, the railroad depot, the park road, C-Camp residential and maintenance facilities, and headquarters-area administrative buildings and residences. The total acreage of existing disturbance to vegetation and soils in the entrance area is about 83 acres (NPS 2005a). Actions approved in the *C-Camp Improvements Environmental Assessment* will disturb another 4.6 acres, the park road rehabilitation at mileposts 4 and 4.5 are expected to result in 2.6 acres of vegetation loss, and the actions approved in the 2007 *Headquarters Area Plan and Environmental Assessment* will disturb another 1.7 acres (discounting the anticipated disturbance from the Kennel road realignment being considered here).

Total quantifiable past, present, and foreseeable future activities other than those proposed in this alternative are 91.9 acres. Additional foreseeable future actions that could have the highest potential to impact vegetation and soils include the replacement of the Rock Creek bridge, rehabilitation of the Rock Creek water system, and cyclic brush removal beneath power lines.

Indirect impacts on vegetation and soils from these past and ongoing activities include creation of social trails and trampling of vegetation, filling of vegetated areas, and introduction of invasive species. Other indirect impacts include channelization of runoff from paved areas and footpaths and subsequent erosion of soils. These past and present impacts can be seen at many of the developed sites in the entrance area, and could be considered moderate impacts on vegetation and soils.

Wetlands

About 5.7 acres of wetlands have been impacted by previous road, trail and building construction in the park entrance area. Recently initiated C-Camp improvements will result in 1.7 acres of additional wetland loss. Overall, the cumulative adverse impacts on vegetation, wetlands, and soils would be moderate. This alternative would add 1.5-2.5 acres of known disturbance to wetlands.

Conclusion
The long-term, noticeable, although localized, adverse impacts to vegetation, soils, and wetlands would be moderate under this alternative. The level of impact on the park's vegetation, wetlands and soils would not result in an impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Wildlife and Habitat
There would be minor adverse impacts to wildlife and wildlife habitat as a result of the actions in this alternative. Impacts would result both from new development on undisturbed ground and from the noise and other disturbance associated with construction activities.

The actions in this alternative would result in 1.5 – 2.5 acres of new disturbance associated with new parking areas and roadways. There are no sensitive habitats in the area, although all of it is wetlands. Because these areas are very close to existing developments and human activity areas, they are not utilized to any great degree by large mammals such as grizzly bears or moose. There is an abundance of similar habitat nearby, and small mammals and birds utilizing these areas would likely simply move to these areas. There would be an increase in edge effects and small-scale habitat fragmentation. All of these effects would be permanent, noticeable changes in the quality of the resource, although very localized, amounting to a minor adverse impact overall. A minor, localized but long-term benefit from this alternative would be the removal of the existing service road, which would result in a continuous habitat that is currently bisected.

Construction activities would also have an impact on wildlife. These activities would likely stretch out over several years. Operations associated with the proposed construction and development would temporarily produce noise and activity levels that could cause localized displacement and disturbance of resident wildlife. However, some birds and small mammals that utilize habitats near headquarters may have become habituated to some degree to noise and human activity. There would continue to be activity-avoidance of the general area by large mammals; new construction is not likely to increase this impact. For these reasons, any disturbance of wildlife from an increase in activity or operation of the proposed facilities would be minor.

Some small mammals, such as snowshoe hare and Arctic ground squirrels, could potentially experience direct mortality during construction activities. However, given the relatively small amount of habitat involved, the low numbers of affected individuals, and the likelihood that small mammals occupy adjacent habitats, the impacts of mortality on wildlife would be considered minor.

Cumulative Effects
There are 83 acres of developed land in the entrance area of Denali. The *C-Camp Improvements EA* calls for another 4.6 acres, the milepost 4 and 4.5 road rehabilitation EA developed 2.6 additional acres, and the 2007 headquarters EA will disturb another 1.7 acres. Other foreseeable projects such as the Rock Creek bridge replacement could have small additional effects. Cumulatively, this action plus previous developments in the entrance area and headquarters/C-Camp area have gradually reduced the amount of habitat available for wildlife. However, these

are still very small nodes of development in relationship to the vast acreage of similar surrounding habitat, much of which is protected as designated wilderness. Overall, there are moderate adverse impacts to wildlife and wildlife habitat, of which this action contributes a minor amount.

Conclusion
There would be minor adverse impacts to wildlife and wildlife habitat that result from implementation of the actions in this alternative. The level of impact on the park's wildlife and habitat would not result in an impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Cultural Resources
The cultural resource affected by actions in this alternative would be the historic district and associated cultural landscape of the Headquarters Historic District.

The sled dog demonstration bus parking loop on the edge of the historic district, modifications to the entrance area, effects to the viewshed, changes in the organizational grid, the overall footprint of the parking area, effects to the overall cultural landscape, addition of a roof structure over the dog sled demonstration stands, and the installation of outdoor lighting have the potential to detract from the character of the district to the extent that they did not exist during the historic period of significance and may detract from the historic structures in the district. However, the impact of these actions would be mitigated through compatible design and other recommendations from the State Historic Preservation Officer (SHPO). The new parking areas would be screened with native vegetation. The lighting fixtures would be selected to be compatible with the rustic appearance of the district. There would be a minor benefit to the historic district by re-routing bus traffic out of the district. There would also be minor benefits to the historic district with improvements to drainage that would protect the district from surface flow.

The net result of the action in this alternative may result in a long-term, adverse impact to the character of the historic district. Further SHPO consultation regarding potential effects and mitigation measures are in progress in order to complete the National Historic Preservation Act Section 106 process.

Cumulative Effects
Since the Headquarters Historic District was listed on the National Register of Historic Places in 1987, National Park Service activities have both enhanced and detracted from the character of the district. Historic building rehabilitation since the mid 1980s has emphasized the reconstruction of historic exterior appearance of the buildings, such as the garage facade on the eastern portion of the Resources building (102) and the loading dock and doorway reconfiguration on the interpretive building (101). However, new non-contributing structures have been added to the district including the SST serving kennels visitors in 2005, the viewing stand for the sled dog demonstrations constructed in 1997, and one residence (251) in 1994. Formal and informal parking has expanded along road edges. Recently, the approved actions in

the 2007 *Headquarters Area Plan and Environmental Assessment* for the most part will rehabilitate the cultural landscape of the Headquarters Historic District by returning it to an appearance more similar to what it had during the district's historic period of significance between 1928 and 1941. Some projects approved in that EA will have an adverse effect on the district's character.

The cumulative effects of the proposed action along with the effects of other past, present, and foreseeable future actions have been mixed, but with an overall major beneficial influence since the completion of the 1997 DCP. This results in a moderate beneficial impact overall.

Conclusion
There would be minor adverse impacts to the historic district with the implementation of this alternative. The level of impact on the park's cultural resources would not result in an impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Night Sky/Natural Lightscape
There would be minor adverse impacts to the natural lightscape of the headquarters area. The impacts would result primarily from the impact of outdoor lighting on the night sky. However, the mitigation measures identified in section Chapter 2 would be utilized so that the increase in outdoor lighting would affect primarily visibility within the headquarters area itself, with very minimal impact beyond the headquarters area. The adverse impact on night sky visibility would therefore be long-term, but noticeable only in a localized area.

Cumulative Effects
Night sky visibility has not been an identified concern in previous planning efforts. Lights have been added to new facilities such as the Buildings and Utilities structure at C-Camp and the concession bus barn without contemplation of the overall impact. Additional lighting is called for in the approved actions of the 2007 *Headquarters Area Plan and Environmental Assessment.* In addition, various businesses in the Nenana Canyon area have exterior lighting, and the Alaska Department of Transportation and Public Facilities installed streetlights along a half-mile stretch of the Parks Highway when constructing pedestrian trails and highway crossings in the Nenana Canyon. No research has been conducted to identify the level of present impact to night sky visibility in the park entrance area and headquarters area from these lighting efforts. However, the combined impacts are certainly noticeable and change the character of the resource, are long-term, and affect a localized area, though it is the area experienced by most winter Denali visitors. There is moderate cumulative adverse impact. Because of the mitigation suggested in this alternative, the contribution of this action would be minor.

Conclusion
The addition of outdoor lighting as part of this alternative would result in minor adverse impacts to night sky visibility in the Denali entrance area. The level of impact on the park's night sky and natural lightscape would not result in an impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Visitor Use and Recreation

The actions in this alternative would have moderate beneficial effects on visitor use and recreation. While the actions do not extend to the specific interpretive and recreational opportunities that would accompany the infrastructure changes, the new parking for the sled dog demonstration buses would be closer to the sled dog kennels and the location of the demonstrations, enabling visitors with limited mobility to more easily access the demonstrations and the historic kennels building. There would be an improvement to visitor access by providing a bus loading and unloading area that conforms to standards for accessibility. Winter access would be improved by the inclusion of plug-ins to all new parking spaces and the addition of plug-ins to the existing 'flagpole' parking lot. The ability to maintain the access road to the bus parking loop throughout the winter opens up possibilities for additional visitor interpretive and recreational opportunities not currently available such as winter tours of the kennels.

Cumulative Effects

Making the Headquarters Historic District more visitor-friendly is part of the larger effort articulated in the 1997 *Entrance Area and Road Corridor DCP* and further developed in the 2007 *Headquarter Plan and Environmental Assessment* to enhance visitor opportunities in the entrance area of the park. Combined with the extensive new visitor facilities centered on the Denali Visitor Center and improvements planned or underway in the Savage River area, the National Park Service has provided long-term, substantial improvements in the opportunities for visitors to use, recreate in, and learn about Denali. Although localized in the Denali entrance area, because virtually all of the park visitors pass through the entrance area the significance of the improvements can be considered park-wide. Thus there are major cumulative benefits of past, present, and foreseeable future actions. The actions in this alternative provide a moderate portion of those overall benefits.

Conclusion

The actions proposed in this alternative would provide moderate beneficial impacts to visitor use and recreational opportunities, and would contribute to the major beneficial impacts resulting from implementation of the provisions of the 1997 *Entrance Area and Road Corridor DCP*. There would be no impairment of park resources that fulfill specific purposes identified in the enabling legislation or that are critical to the natural or cultural integrity of the park.

Local Communities and Local Economy

The actions associated with this alternative would have minor benefits to the local community and economy. Direct economic benefits arise from the construction projects associated with constructing roads and parking lots. Some of this work is accomplished through contracts which might result in employment for local workers. On past projects, some of the work has been accomplished through hiring term employees who have often been local residents. In addition, there are indirect benefits to the local economy as contract workers and park employees associated with these projects purchase goods and services in the community. These effects would be short-term, perceptible, and localized, accounting for only minor benefits.

Cumulative Effects

Since the completion of the 1997 *Entrance Area and Road Corridor DCP*, the National Park Service has continually invested in new entrance area facilities. The construction of the entrance

area visitor facilities as well as rehabilitation of administrative facilities has provided a steady flow of federal dollars into the local and regional economy, and created local employment. The National Park Service has spent approximately $40 million on frontcountry projects since 1997. The projects in this alternative would continue this trend by contributing another $11.6 million. Overall, the implementation of the 1997 *Entrance Area and Road Corridor DCP* will provide moderate benefits to the local community and economy, but this project would provide a minor moderate portion of those benefits.

A goal of the 1997 *Entrance Area and Road Corridor DCP* was to provide a wide range of visitor opportunities in the Denali frontcountry, with a particular emphasis on increasing the number of opportunities in the entrance area and along the park road to Savage River. A new destination visitor center, the Murie Science and Learning Center, Savage Cabin living history, and new trails, picnic areas, and rest stops have all contributed to achieving this goal. Enhancing visitor opportunities at the Headquarters Historic District is one further step. Creating new opportunities provides a reason for visitors to spend more time at Denali, and as a result to spend more money buying local goods and services, creating a moderate benefit for the local economy. Although no documentation of additional expenditures by park visitors has been completed since the opening of the new facilities, two-day stays are becoming more typical for Denali visitors than the previous one-day norm for most visitors (HDR 2006). This project would contribute a minor amount to this local benefit.

Conclusion
Implementation of this alternative would have minor benefits to the local and regional community as a result of increased federal expenditures improving park facilities. The overall implementation of the *Entrance Area and Road Corridor DCP* and the 2007 *Headquarters Area Environmental Assessment* have provided moderate benefits to the local community over the past 10 years and will continue to do so in the future, both because of direct expenditures and the addition of new visitor opportunities inside the park.

Park Management and Operations
The alternative presented would have minor beneficial impacts on park management and operations. The 2007 *Headquarters Area Environmental Assessment* calls for a net loss of 28 parking spaces with plug-ins within the Historic District, and these would be recouped in this alternative. All new parking spaces, including the bus parking, and existing spaces in the 'flagpole' parking area would be equipped with electric plug-ins for use in winter. The existing service road would be removed, hence park staff would no longer have this option of accessing the park road from headquarters. With the bus turn-around loop, sled dog demonstration buses would no longer drive through the historic district, eliminating that vehicle/pedestrian conflict. The lower grade in the kennel access road as compared to Alternative 2 improves safety for the sled dog demonstration shuttle buses returning to the Park Road. This road would be maintained year-round, which would impact road maintenance operations. While there will be more snow plowing required, the area to be plowed will be easier to plow and safer for visitor use.

Post-construction, there is the potential for moderate adverse impacts, which would be localized and long-term, to kennel operations from the proximity of the south end of the bus parking loop

to the kennels. Sounds from the parking area could disturb the dogs and disrupt demonstrations. Mushers using the parking area in the winter could result in interactions between outside dogs and the park dogs if dogs were to get loose. Mitigation measures for these impacts include physical visual and sound barriers; and the final design for the placement of the loop will place it as far away from the kennels as is feasible.

Cumulative Effects
Implementation of the 1997 *Entrance Area and Road Corridor DCP* and the 2007 *Headquarters Area Environmental Assessment* have or will generally improve park management and operations, which has been particularly important for addressing the increased complexity of visitor facilities and services and increasing number of visitors over time. In the headquarters area, the rehabilitation of historic structures into modern, functional offices has increased office capacity without adding new buildings. The construction of the Building and Utilities building in C-Camp and expansion of the Auto Shop also provided new office space to accommodate growing staff and responsibilities. Changes such as the conversion from fuel oil to propane for heating reduce operational complexity, and improvements such as the repair of the mile 4 and 4.5 section of the park road remove maintenance burdens. These improvements and efficiencies help to offset the impact of increasing complexity and scale of park operations. Overall, there have been major beneficial impacts on park management and operations from improvements in the headquarters area, and the actions in this alternative would contribute moderately to further benefits.

Conclusion
There would be some minor adverse impacts to employees from the changes in parking and circulation, the potential for localized moderate adverse impacts to kennel operations, but overall there would be minor beneficial impacts to park management and operations resulting from improved vehicle circulation and enhanced parking options with lighting and plug-in stations.

V. CONSULTATION AND COORDINATION

The Federal Highway Administration is a cooperating agency. Engineers from the Federal Highway Administration provided draft engineering drawings for some of the road and parking modifications.

The NPS has determined that there are no Threatened and Endangered Species expected in the project area; therefore Section 7 consultation with the USFWS is not required (personal communication. Ted Swem, USFWS, Fairbanks, Alaska, June 9, 2000).

The State Historic Preservation Officer (SHPO) was consulted during preparation of this assessment and will be provided a 30-day review of the environmental assessment.

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Appendix A – ANILCA 810 Evaluation

SUBSISTENCE – SECTION 810(a) OF ANILCA
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) of 1980. It summarizes the evaluation of potential restrictions to subsistence uses in Denali National Park and Preserve that could result from the proposed improvements in the headquarters area.

II. THE 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 effected 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.*

ANILCA created new units and additions to existing units of the National Park System in Alaska. Denali National Park and Preserve was created by ANILCA Section 202(3)(a):

> *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.

Title I of ANILCA established national parks for the following purposes:

. . . 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 including but not limited to hiking, canoeing, fishing, and sport hunting, within large arctic and subarctic wildlands and on free-flowing rivers; and to maintain opportunities for scientific research and undisturbed ecosystems.

. . . consistent with management of fish and wildlife in accordance with recognized scientific principles and the purposes for which each conservation system unit is established, designated, or expanded by or pursuant to this Act, to provide the opportunity for rural residents engaged in a subsistence way of life to continue to do so.

The potential for significant restriction 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 the use. . . ." (Section 810(a))

III. PROPOSED ACTION ON FEDERAL LANDS

Alternatives are described in detail in the Environmental Assessment. Customary and traditional subsistence use on NPS lands will continue as authorized by federal law under all alternatives. Federal regulations implement a subsistence priority for rural residents of Alaska under Title VIII of ANILCA.

The NPS proposes alternatives for realigning the kennel access road, adding parking for shuttle buses and private vehicles, and constructing a cover over the stands. The plan addresses cultural landscape issues and visitor amenities in the Headquarters area, visitor parking, vehicle and pedestrian circulation.

The site is in the former Mount McKinley National Park wherein subsistence activities are not allowed.

IV. AFFECTED ENVIRONMENT

Subsistence uses within Denali National Park and Preserve are permitted in accordance with

Titles II and VIII of ANILCA. Section 202(3)(a) of ANILCA authorizes subsistence uses, where traditional, in the national park additions and the northwestern and southwestern preserves of Denali National Preserve. 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 (1980) park 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 park superintendent in accordance with state law and regulations.

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 (population 22) and Telida (population 11) use park and preserve lands for trapping and occasional moose hunting along area rivers. Nikolai (population 122) is a growing community and has used park resources in the past. Cantwell (population 147) is the largest resident zone community for Denali National Park and Preserve, and local residents hunt moose and caribou, trap furbearers, and harvest firewood and other subsistence resources in the new park area.

The main subsistence species, by edible weight, are moose, caribou, furbearers and fish. Varieties of subsistence fish include coho, king, pink and sockeye salmon. Burbot, dolly varden, grayling, lake trout, northern pike, rainbow trout and whitefish are also among the variety of fish used by local people. Beaver, coyote, land otter, weasel, lynx, marten, mink, muskrat, red fox, wolf and wolverine are important furbearer resources. Rock and willow ptarmigan, grouse, ducks and geese complete the park/preserve subsistence small game list.

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 many 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.

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 affect the action might have on subsistence fishing or hunting access; and

- the potential to increase fishing or hunting competition for subsistence resources.

The potential to reduce populations:

Land use activities could have temporary and/or long-term impacts on wildlife habitat, depending on the nature and extent of the disturbance. The alternatives would not adversely affect the distribution or migration patterns of subsistence resources. Therefore, no change in the availability of subsistence resources is anticipated as a result of the implementation of this proposed action.

Restriction of Access:

All rights of access for subsistence harvests on NPS lands are granted by Section 811 of ANILCA. Denali National Park and Preserve is managed according to legislative mandates, NPS management policies and the park's General Management Plan. No actions under the alternatives described in the Environmental Assessment should affect the access of subsistence users to natural resources in the park and preserve.

Increase in Competition:

The alternatives should not produce any increase in competition for resources to subsistence users. If, and when, it is necessary to restrict taking, subsistence uses are the priority consumptive users on public lands of Alaska and will be given preference on such lands over other consumptive uses (ANILCA, Section 802(2)). Continued implementation of provisions of ANILCA should mitigate any increased competition, however significant, from resource users other than subsistence users. Therefore, the proposed action would not adversely affect resource competition.

VI. AVAILABILITY OF OTHER LANDS

Choosing a different alternative would not decrease the impacts to park resources for subsistence. The preferred alternative is consistent with the mandates of ANILCA, including Title VIII, and the NPS Organic Act of 1916.

VII. ALTERNATIVES CONSIDERED

The alternatives considered for this project were limited to 1) a No Action Alternative and 2) two potential alternatives traffic patterns and visitor parking for access to the dog kennels and the park road for winter use.

VIII. FINDINGS

This analysis concludes that the preferred alternative would not result in a significant restriction of subsistence uses.

Appendix B – Wetlands Statement of Findings

STATEMENT OF FINDINGS FOR EXECUTIVE ORDER 11990
PROTECTION OF WETLANDS

ENVIRONMENTAL ASSESSMENT FOR IMPROVING VISITOR ACCESS TO THE SLED DOG KENNELS AND DEMONSTRATIONS AT DENALI NATIONAL PARK AND PRESERVE

Denali National Park and Preserve, Alaska

December 2009

Recommended: _____ _____
Superintendent, Denali National Park and Preserve Date

Certified for Technical Accuracy and Servicewide Consistency:

_____ _____
Chief, Water Resources Division, Washington Office Date

Approved: _____ _____
Regional Director, Alaska Region Date

PURPOSE AND NEED FOR ACTION

The National Park Service (NPS) has prepared and made available for public review an environmental assessment (EA) to evaluate the impacts of a new access road and parking areas for the sled dog kennels at Denali National Park and Preserve.

The National Park Service developed a *Headquarters Area Plan and Environmental Assessment* (2007) to provide detailed guidance and an integrated plan for developments in the headquarters area of Denali National Park and Preserve, including the Headquarters Historic District, an area listed on the National Register of Historic Places. The guidance was needed to complete implementation of components of the 1997 *Entrance Area and Road Corridor Development Concept Plan (DCP) and EIS* including the recommendations of the *Cultural Landscape Report* for the Headquarters Historic District.

One of the components of the *Headquarters Area Plan and Environmental Assessment* was to improve the Service Road between the west end of the Headquarters Historic District and the Park Road. These improvements include new parking area and traffic patterns for shuttle buses bringing visitors to the demonstrations at the sled dog kennels. The current arrangement is inadequate due to unimproved boarding and unboarding areas and the need for buses to drive through the headquarters area. In addition to shuttle bus parking, there is a need for additional visitor parking year-round. Additional internal scoping regarding the realignment of the kennel access road and needs for associated parking prior to construction resulted in a new proposed action that is sufficiently different from the action defined in the *Headquarters Area Plan and Environmental Assessment* to warrant a new Environmental Assessment. This Environmental Assessment will also consider constructing covers over the existing stands as an additional improvement in visitor access to the demonstrations at the kennels.

To implement these recommendations, the National Park Service proposes to take the following actions that would impact wetlands:

1) Construct a new parking area west of the visitor “flagpole” parking lot.

2) Construct a new turnaround loop and parking area for sled dog demonstration buses so that they no longer need to exit through the historic district.

3) Construct an access road linking the ‘flagpole’ parking lot with the new turnaround loop for bus parking.

4) Construct additional visitor parking either in the same loop as constructed for the bus loop or along the new access road.

Executive Order 11990, *Protection of Wetlands*, requires the NPS, and other federal agencies, to evaluate the likely impacts of actions in wetlands. The executive order requires that short and long-term adverse impacts associated with occupancy, modification or destruction of wetlands be avoided whenever possible. Indirect support of development and new construction in such areas should also be avoided wherever there is a practicable alternative.

To comply with these orders, the NPS has developed a set of agency policies and procedures which can be found in Director's Order 77-1, *Wetland Protection*, and Procedural Manual 77-1, *Wetland Protection*. The policies and procedures related to wetlands emphasize: exploring all practical alternatives to building on, or otherwise affecting, wetlands; reducing impacts to wetlands whenever possible; and providing direct compensation for any unavoidable wetland impact by restoring degraded or destroyed wetlands on other NPS properties.

The purpose of this Statement of Findings (SOF) is to present the NPS rationale for its proposed plan to construct the new kennel access road and associated parking project in the wetland area. This SOF also documents the anticipated effects on these resources.

WETLANDS WITHIN THE PROJECT AREA

Wetland boundaries were identified and mapped with GPS in the field by NPS personnel (Carwile and Paynter) in May 2007. As much as 2.5 acres could be newly disturbed by the proposed action (design estimate ranges from 1.5 – 2.5), and all of the area (Fig. B-1) was classified as wetlands under the "Classification of Wetlands and Deepwater Habitats of the United States," the Cowardin Classification System (Cowardin et al. 1979), and are therefore subject to NPS wetlands compliance procedures. Depending on the final plans, the placement of the upper parking lot adjacent to the current 'flagpole' parking lot may not be in wetlands, this is ~ 0.3 acres and as the placement is not certain this analysis will assume the parking lot will be constructed on wetlands.

The wetlands under the proposed bus loop, a portion of the access road and associated parking are characterized by poor drainage, stunted white spruce, a thick feather moss cover with significant patches of sphagnum moss, and scattered diamond-leaf willow. A thick colluvium has built up on the slope leading down to the glacially-cut bench edge just behind the dog kennels and this soil generally has a high-enough clay content to retard oxygen circulation and, when combined with the thick moss cover, keeps the root layer cold late into the growing season.

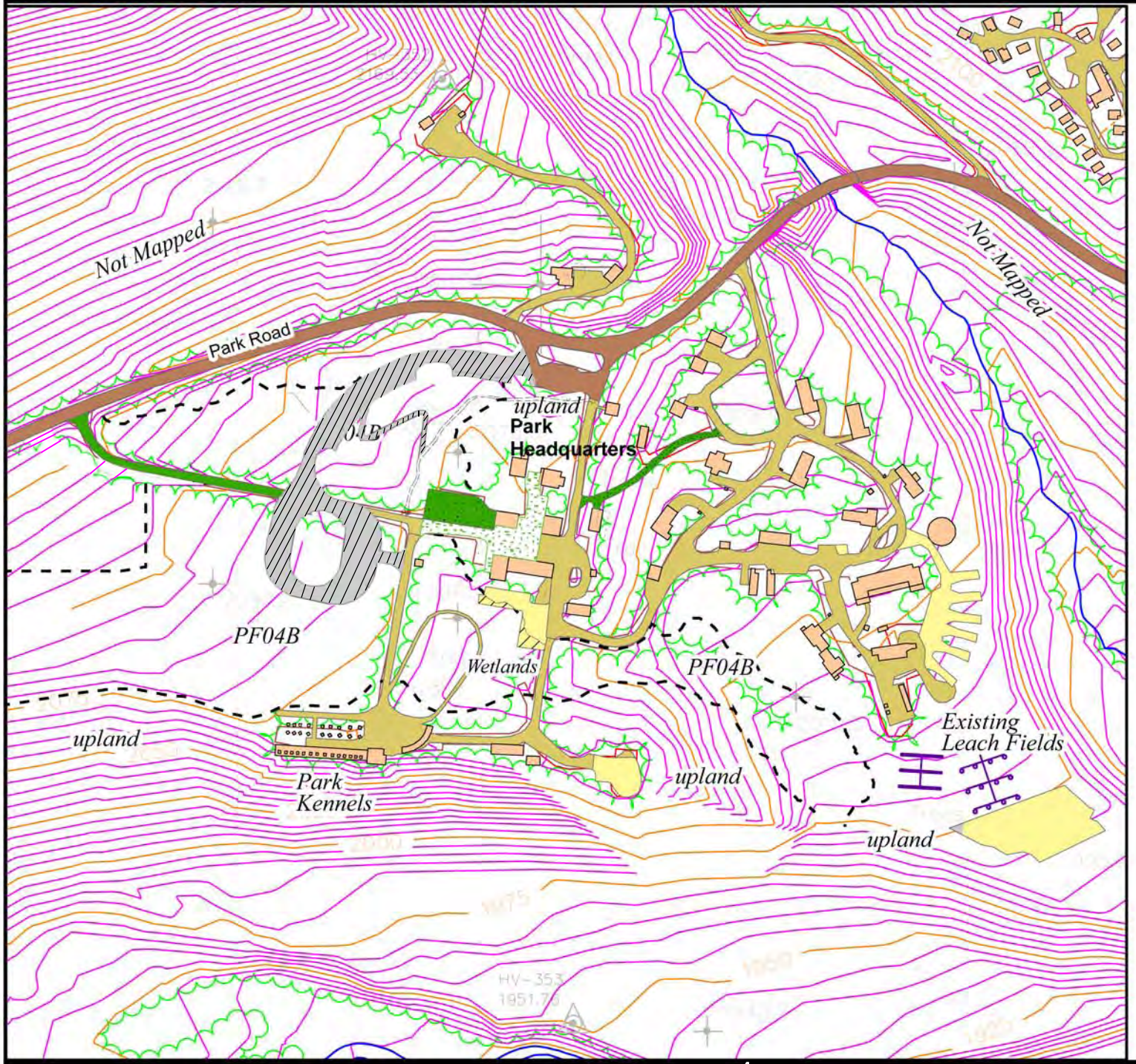
The wetlands located within the proposed project area are classified as palustrine forested, needle-leaved evergreen, saturated wetlands – PF04B. These wetlands provide habitat for small mammals, such as red squirrels, snowshoe hares, and porcupine; bird species, including gray jays, robins, thrushes, sparrows, and warblers. Moose frequent the area for forage, and it is considered potential moose calving area.

The wetlands under the upper portion of the access road and some of the associated parking at the edge of the uplands along the edge of the Rock Creek bench and have fairly thin soils, but are covered with a variety of wetland willow species as well as having a few small seeps, with remnant tussocks creating pockets of hummocky terrain from which grow stunted spruce. Vegetation in the rest of the forested wetlands is typically dominated by white spruce stunted by the nutrient conditions related to the cold soils (Viereck et al. 1992). The understory shrub layer consists of both low and tall shrubs of willow (Salix spp.) diamond leaf willow (*Salix planifolia*), Labrador tea (*Ledum* spp.) and bog blueberry (*Vaccinium uliginosum*). Common ground cover includes feather and sphagnum mosses (*Sphagnum* spp.), leaf lichens, lowbush cranberry (*Vaccinium vitis-idaea*), crowberry (*Empetrum nigrum*) and a variety of forbs (Viereck et al. 1992; NPS 2005c).

Figure B-1 -- Wetlands Delineation

Headquarters Area

Alaska Region
National Park Service
U. S. Department of the Interior



Legend

- Impacted Wetlands

Alternative 3

- New Construction
- Re-vegetate
- Landscaped - Headquarters Area Plan
- Wetlands Boundary
- New Construction - Headquarters Area Plan
- Re-vegetate - Headquarters Area Plan

National Park Service
Denali National Park and Preserve

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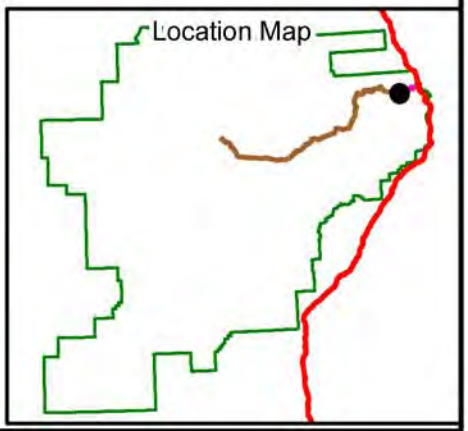

These wetlands function to attenuate snow melt surface flow during break-up and discharge during heavy rain events, which helps reduce sediment input and to keep high values for surface water quality. No water supply points or wells are located downhill between the project site and the park entrance area water supply wells and stream galleries, approximately 8,000 feet away. The park headquarters water supply is located on Rock Creek, upstream of the project area. No floods are known from the site, as forests and open wetlands cover most of the adjacent land and gravelly layers which absorb the rainfall are below the surface soils.

These wetlands also provide habitat for small mammals, such as red squirrels, snowshoe hares, and porcupine; bird species, including gray jays, robins, thrushes, sparrows, and warblers. Moose frequent the area for forage, and it is considered potential moose calving area. No threatened or endangered animal or plant species are found in the area and no research or reference sites have been developed in the project area.

The wetland type described above is common throughout the eastern areas of Denali National Park and Preserve. The park has determined that the potential wetlands located at the project site are a relatively minor part of the fringe of large acreages of wetlands, are locally common, and that removing the wetlands would have a minor impact on surface water quality, including sediment control and water purification, and animal habitat.

THE PROPOSAL IN RELATION TO WETLANDS

The proposal and alternatives are described in detail in the project EA.

The components of the proposal that would affect wetland areas include the construction of

1) A new parking lot adjacent to the current 'flagpole' parking lot (~11 additional spaces)
2) a bus parking and turn-around loop
3) an access road between the new parking lot and the new bus loop
4) a pedestrian trail connecting this new parking lot with the existing pedestrian trail to the kennels
5) a short pedestrian trail (< 10 ft) connecting the bus loop with the existing paved access road to the kennels
6) associated visitor parking (~17 additional spaces) located off of the access road

The construction of new parking areas and roads would impact a maximum of 2.5 acres of wetlands.

The reasons for the expansion into wetlands would be to remove some of the functions that conflict with the integrity of the Headquarters Historic District, such as administrative parking and sled dog demonstration bus traffic, in an effort to restore the cultural landscape to its period of significance, provide additional visitor parking, and allow for the possibility of continued access to the bus parking area through the winter.

The wetland soils include up to three feet of colluvium over gravelly glacial till. The

construction of the new access road and parking areas would be accomplished by removing the colluvium and replacing it with clean fill on top of the glacial till to the depth necessary to support a paved road for vehicular traffic.

Discharge of dredged or fill material into jurisdictional wetlands is regulated by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act. According to a recent determination by Corps personnel, the project would not affect wetlands under the jurisdiction of the Corps (Don Rice, pers. comm.).

MITIGATION PROPOSED

Federal and NPS policy is to avoid siting projects in wetlands whenever possible. If circumstances make it impracticable to avoid wetlands, then mitigation of unavoidable impacts must be planned. An NPS wetlands no-net-loss policy requires that wetland losses be compensated for by restoration of wetlands, preferably of comparable wetland type and function and in the same watershed if possible.

All of 2.5 acres affected by the proposed action are classified as wetlands. This SOF commits to 2:1 compensation for the 2.5 acres of disturbed wetlands.

On-Site Rehabilitation

As much as possible, disturbance of wetlands in and around the project area would be avoided. Silt fences would be set up to define construction impact limits. Any areas disturbed by construction activities would be restored to as near natural conditions as possible. Prior to the start of construction activities, the NPS would salvage as much topsoil, organic matter and vegetation as necessary for later use in site revegetation or for use in revegetating other local sites. Salvaged material would be stockpiled separately and would be placed in the disturbed areas following construction.

Some wetlands would likely be replaced on-site. The removal of most of the existing service road would allow for the restoration of 0.3 acres of wetlands similar to the ones being lost.

Off-Site Compensation (Wetland Restoration)

Compensation, by restoration of previously disturbed degraded wetlands, is required under the NPS no-net-loss policy for projects involving disturbance or loss of wetlands. Compensation will occur for the loss of 2.5 acres of palustrine forested wetland. Two-for-one compensation will be completed within the park, rather than one-for-one, because the wetland type being lost is different from the type being restored with the exception of a small amount of acreage on site. By restoring riverine and palustrine wetlands in the Kantishna Hills region at a two-for-one compensation rate, it is anticipated that the wetland functions of wildlife habitat and surface water flow attenuation and purification at the project site will be balanced by the functions of flood control and aquatic habitat restoration regained at a restored former placer mine site. The project site and the compensation site are separated by about 65 miles but are both within Denali National Park. They have different wetland values and functions. The wetlands impacted by the project are described above as a PF04B type. The wetlands to be

restored at the compensation site are described below as a PSS1D/R3US5 type.

An ONPS-funded projects to restore former placer mined areas in Kantishna is scheduled for 2008-2010. A 1.6 acre portion within the park's upper Glen Creek floodplain and a 3.4 acre portion within the park's upper Caribou Creek watershed have been selected for restoration (Figure B-2 and B-3) within the scope of this mitigation, for compensation for this kennel road realignment and associated parking project. The Glen Creek project is complete. This disturbed site has been restored to wetlands classified as riverine upper perennial vegetated unconsolidated shore – R3US5, and palustrine scrub shrub broad-leaved deciduous that is seasonally flooded/well-drained – PSS1D. Restoration at the upper Glen Creek site included removing and disposing of debris; stabilizing the channel and floodplain and re-introducing sinuosity where it was missing; stabilizing the access road; and revegetating the stripped areas. The disturbed site at Caribou Creek is going to be restored to wetlands. The goals of the restoration plans at the upper Caribou Creek site include improving aquatic, riparian, and upslope habitat conditions by reducing bank erosion, stabilizing channel conditions and restoring a functional floodplain. A portion of the work will involve repairing sections of a stream reclamation project that was conducted in 2001 and 2002 that created a highly sinuous new channel resulting in severe bank erosion. The current project will remove some of the sinuosity. Plans include removing and disposing of debris; stabilizing the channel and floodplain; and revegetating the stripped areas.

Cost estimate for this compensation project is approximately $25,000 per acre, based on the $17,000 per acre figure calculated in an unpublished report, "Cost Estimation for Reclamation, National Park Service, Alaska Regional Office, January 1994." This report reviewed three separate mining reclamation projects that were conducted on abandoned claims in Denali National Park and Preserve.

Stream channel and floodplain restoration will be based on the techniques of the 1988 lower Glen Creek restoration project at Denali. Project design requirements will include a channel capacity for a 1.5-year (bank full) discharge and a floodplain capacity for up to a 100-year discharge. The project designs will include the use of bio-revetment, located on meanders, to encourage channel stabilization using natural methods. Brush bars, located in areas of little or no fines, will be employed to dissipate floodwater energy and encourage sediment deposition. Riparian areas will be revegetated with willow cuttings and other appropriate vegetation. Depending on the results from the soils nutrient analysis, fertilizer will be used to ensure a quick start for new vegetation.

Monitoring of the stream channel and riparian areas will occur to determine the success of the reclamation efforts. Vegetation plots and permanently mounted cross-sections will be surveyed and measured again after the first year. Additional seeding and revegetation will occur on areas not vegetated during the first year. It is anticipated that these sites will be functional wetlands within 3-5 years after treatment, and will be fully-functioning within 15 years.

Figure B-2 - Wetlands Compensation Area Location - Glen Creek, Kantishna Hills, Denali National Park and Preserve, 1.6 acres - Latitude N63.57 / Longitude W150.75, WGS84

Image date: July 2005

Denali NP and Preserve

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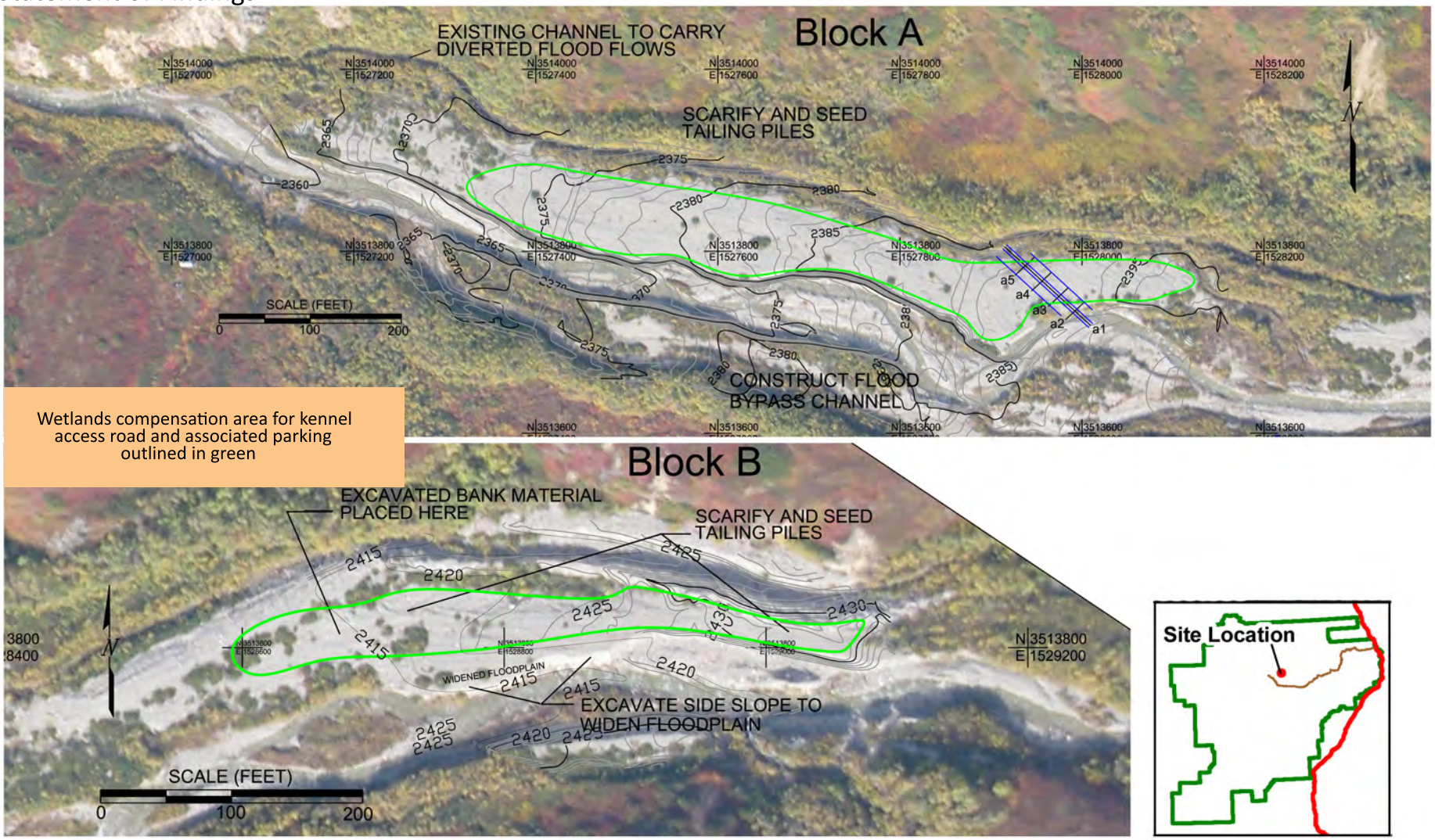
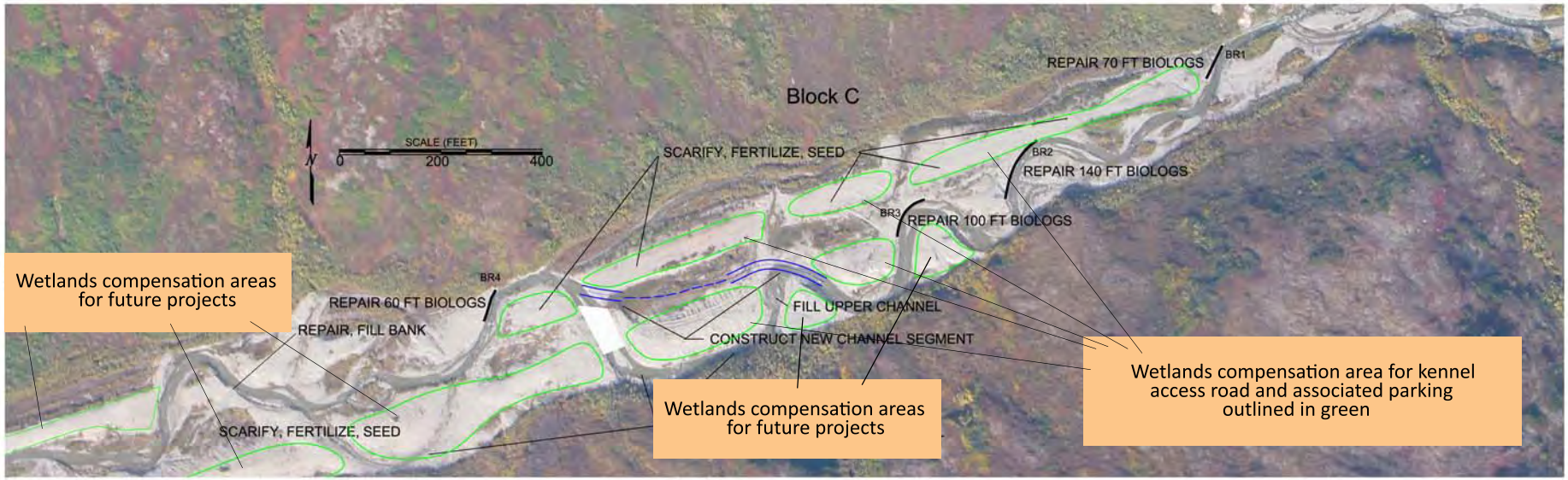


Figure B-3 - Wetlands Compensation Area outlined in green.
Location: - Caribou Creek, Denali National Park and Preserve, 1.5 acres - Latitude N63.61 / Longitude W 150.73



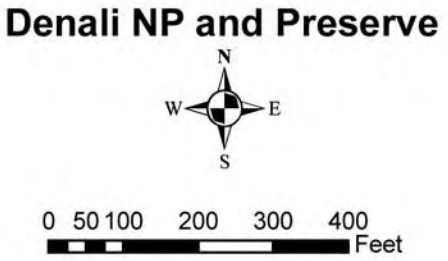


Figure B-4 - Wetlands Compensation Area outlined in green.
Location: - Caribou Creek, Denali National Park and Preserve, 1.9 acres - Latitude N63.61 / Longitude W 150.73

ALTERNATIVES CONSIDERED

Alternative 1 describes the existing conditions, No Action, in the headquarters area. No additional facilities would be constructed in the headquarters area but normal activities and operations would continue.

Alternative 2 describes one possible configuration of parking lots and roadways that would accomplish the project purpose of rehabilitating the cultural landscape and creating a pedestrian zone in the core area of the Headquarters Historic District. This alternative creates a new bus turnaround, realigns the service road to enable buses to exit without driving through the administrative area of park headquarters. This alternative would impact 0.9 – 1.5 acres of wetlands.

Alternative 3 describes the NPS preferred alternative which is another possible configuration of parking lots and roadways that would accomplish the project purpose of rehabilitating the cultural landscape and creating a pedestrian zone in the core area of the Headquarters Historic District. This alternative includes the removal (revegetation) of most of the existing paved service road, a new paved bus parking area and turn-around loop, an access road from the 'flagpole' parking area to the bus loop, and additional visitor parking for private vehicles. This alternative would impact 1.5 – 2.5 acres of wetland

The NPS preferred alternative is Alternative 3, which impacts ~ one acre more wetlands than the other action alternative. This alternative better accomplishes the purposes of the project with minimal additional wetland disturbance. The most important purpose is the protection/rehabilitation of the historic character of the central part of the Headquarters Historic District and this is best served by removing bus traffic and vehicle parking from the core of the District and by placing it in expanded satellite lots, which both alternatives accomplish. Alternative 3 allows for a low grade in the bus loop and associated parking access road, enabling it to be maintained year-round and provide more parking facilities for winter visitors to the park. None of the impacted wetlands are high value, with either standing water or aquatic resources.

Several other alternatives were discussed during the project scoping process but were then eliminated from further evaluations. These are briefly explained in the EA.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES ASSOCIATED WITH THE PROPOSED ACTION

The potential environmental consequences of the proposed action and alternatives are fully described in the EA.

CONCLUSION

The NPS concludes that there are no practicable alternatives to disturbing up to 2.5 acres of wetlands for the purposes of constructing new parking areas and roadways that will enable improved, year-round access to the Kennels and associated parking. Wetlands would be avoided

to the maximum extent practicable. The wetland impacts that could not be avoided would be minimized. The NPS acknowledges that some natural localized wetlands processes would be lost during implementation of the Headquarters Area Plan. Impacts on the 2.5 acres of wetlands would be compensated for, on a minimum 2-for-1 acreage basis, by restoring riverine and palustrine wetland habitat and associated riparian habitat in a former placer-mined stream valleys in the Kantishna Hills region of the park. The NPS finds that this project is consistent with the Procedural Manual #77-1, *Wetland Protection*, and with NPS Director's Order #77-1, *Wetland Protection*. The NPS finds that this project is in compliance with Executive Order 11990, *Protection of Wetlands*.