

**ENVIRONMENTAL ASSESSMENT
FOR CONSTRUCTION OF NEW TRAILS
IN THE SAVAGE RIVER AREA OF
DENALI NATIONAL PARK**

Prepared by
UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DENALI NATIONAL PARK AND PRESERVE

September 2009

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I. PURPOSE AND NEED

The National Park Service (NPS) is proposing to construct and maintain the Savage Alpine Trail, Savage Camp Interpretive Trail and other short trails improving the connections between the Savage River, Savage Campground, Savage Cabin and the new Savage Rest Stop along the mile 12 to mile 15 section of the park road in the entrance area of Denali National Park and Preserve (Denali).

The Savage Alpine Trail was identified in the 1997 Entrance Area and Road Corridor Development Concept Plan/Environmental Impact Statement (DCP/EIS) as a new trail for increased recreational opportunities. The Savage Alpine Trail would extend the existing trail starting at Savage Rock, would follow the route of the Upper Savage Trail approved in 2006 and continue along a high contour over to the drainage (12.4 Mile Creek) that flows southward east of the Savage Campground and would then connect to the Campground and new Rest Area. The trail would be 18-30 inches wide and would be up to 4.0 miles in length. Due to the challenging terrain, only 0.7 miles of the southern end of the Savage Alpine Trail would be constructed for wheelchair access pursuant to standards from the Americans with Disabilities Act. The project would begin during the summer of 2010.

The Savage Camp Interpretive Trail would leave from the short paved trail being constructed as part of the new Savage Rest Stop and would connect to the internal road system of the former concessioner-operated Savage Camp. Other short trails would connect the historic Savage Cabin, Savage Campground, Campground bus stop and the new Rest Stop. The trails would range from 36-72 inches wide and would total 1.5 miles in length. All of these trails would be constructed for wheelchair access pursuant to standards from the Americans with Disabilities Act. The trail to the top of Savage Rock would be extended by finishing a loop on the north side of the rock back down to the Savage River Trail. These projects would also begin during the summer of 2010.

The purpose of the new trails would be to provide additional recreational and interpretive opportunities near the non-restricted part of the road corridor of Denali, to provide connections between heavily used activity areas within the Savage Campground area, to mitigate resource damage from past and present hiker use in the area, and to lessen safety concerns from pedestrian use of the park road shoulder. These trails are needed because of the increased visitation to Denali. New or improved visitor facilities in the area are attracting increased pedestrian use and this use would cause increased resource damage on unsustainable or unconfined route locations. A couple of the trails proposed are needed to improve visitor safety, by removing increased pedestrian use off of the park road shoulder.

The decision in the DCP/EIS designated certain areas around the park entrance and along the road corridor for increased development which would provide a variety of expanded opportunities for visitors in the entrance area and along the road corridor of the park over the next 15-20 years. Among the developments in which the NPS has traditionally specialized are trails. This concept was widely supported during public review of the DCP/EIS.

This Environmental Assessment (EA) analyzes a No Action Alternative, and the NPS preferred action for the construction of pedestrian trails that connect facilities and provide interpretive and recreational opportunities in the Savage area along the eastern road corridor of Denali National Park and Preserve and has been prepared according to the National Environmental Policy Act of 1969 and regulations of the Council of Environmental Quality (40 CFR 1508.9).

Background

Both the Savage River canyon and the Savage Campground area are popular areas for visitors to spend time (see Figures 1, 2 and 3). For the past 37 years the Savage River has delineated the end of the unrestricted part of the park road and the parking lots there receive visitors who wish to drive their private vehicles as far as they can. It also was used extensively by the early park concessioners, especially with visitor horseback trips, and a trail downstream through the canyon was established at that time. A replacement highway bridge was constructed in 1981 about 750 feet upstream of the previous bridge, and the former roadbed provided a disturbed area that has been turned into parking lots and trailheads on either side of the river. Recent facility upgrades at the area include a loop trail that extends 1 mile downriver to a pedestrian bridge over the river, an accessible loop trail that extends 900 feet downriver onto the floodplain, an 18 car parking lot on the east side of the river, with vault toilets and an information kiosk, and a parking lot for tour bus use on the west side of the river. A welter of social trails leading up from the Savage East parking lot to a rock climbing destination – Savage Rock – was replaced five years ago by a single constructed trail.

A trail (Phase II Trail) was approved in 2006 that would extend uphill from the Savage Rock Trail and would take visitors to the top of the next ridge about 800 feet higher in elevation. Other priorities have taken precedence over the construction of this trail, but the social trails from increased use have proliferated in this area to the degree the NPS plans to start construction on this trail in 2010 to reduce the social trails.

Three major visitor facilities are found in the Savage Campground area. The 33 site campground was established in 1955 and remains popular today because visitors can drive their private vehicles to it, it has a view of Mt. McKinley, and it is surrounded by extensive alpine tundra. A covered bus stop was built on the north side of the park road in the 1980s across from the entrance to the campground.

The Savage Rest Stop, conceptually approved in the 1997 DCP/EIS, was designed in 2007 and was approved that year, with construction underway in 2009. This facility is designed to accommodate 18 cars and 12 oversize vehicles and includes a short trail that will lead to an open view of Mt. McKinley.

The park's 1986 General Management Plan provided on page 61 that: "The trails near the park entrance and the short loop trails along the park road corridor will be maintained for continued use."

The 1997 DCP/EIS mentions the trails in a few different places. It established the groundwork as: "Planning issues considered in developing the alternatives: The appropriate trail network for

the entrance area and the road corridor should be determined. There is not a clear connection to external networks and accessibility for special populations is very limited.” P.16-17

The map for the Savage River Area on p.36 of the DCP/EIS shows a “short loop trail” reaching southward toward the Savage River from a proposed Savage Rest Area near the Savage Campground. It also shows an Alpine Trail that extends high above Savage Rock where it forks, with one limb heading back down to the River Trail footbridge and a longer limb traversing over to the creek valley east of the Savage Campground and following the creek floodplain back down toward the campground. The upper Alpine Trail is shown as “Unmaintained.” Both the maps on p.36 and the map on page 39 show the trail extending toward the high ridgeline. On page 38 this is further described as “...a trail up the ridge to the east [from the Savage Rock]. This trail would connect to hiking trails extending to the top of the ridge and connecting to the Savage River campground.” The routing that shows the hiker zone on the Management Subzone map on page 53 is conceptual and will be adjusted by the decisions made on this proposal. No evaluations of site impacts from establishing the Alpine Trail are given in Chapter 4 of the DCP/EIS.

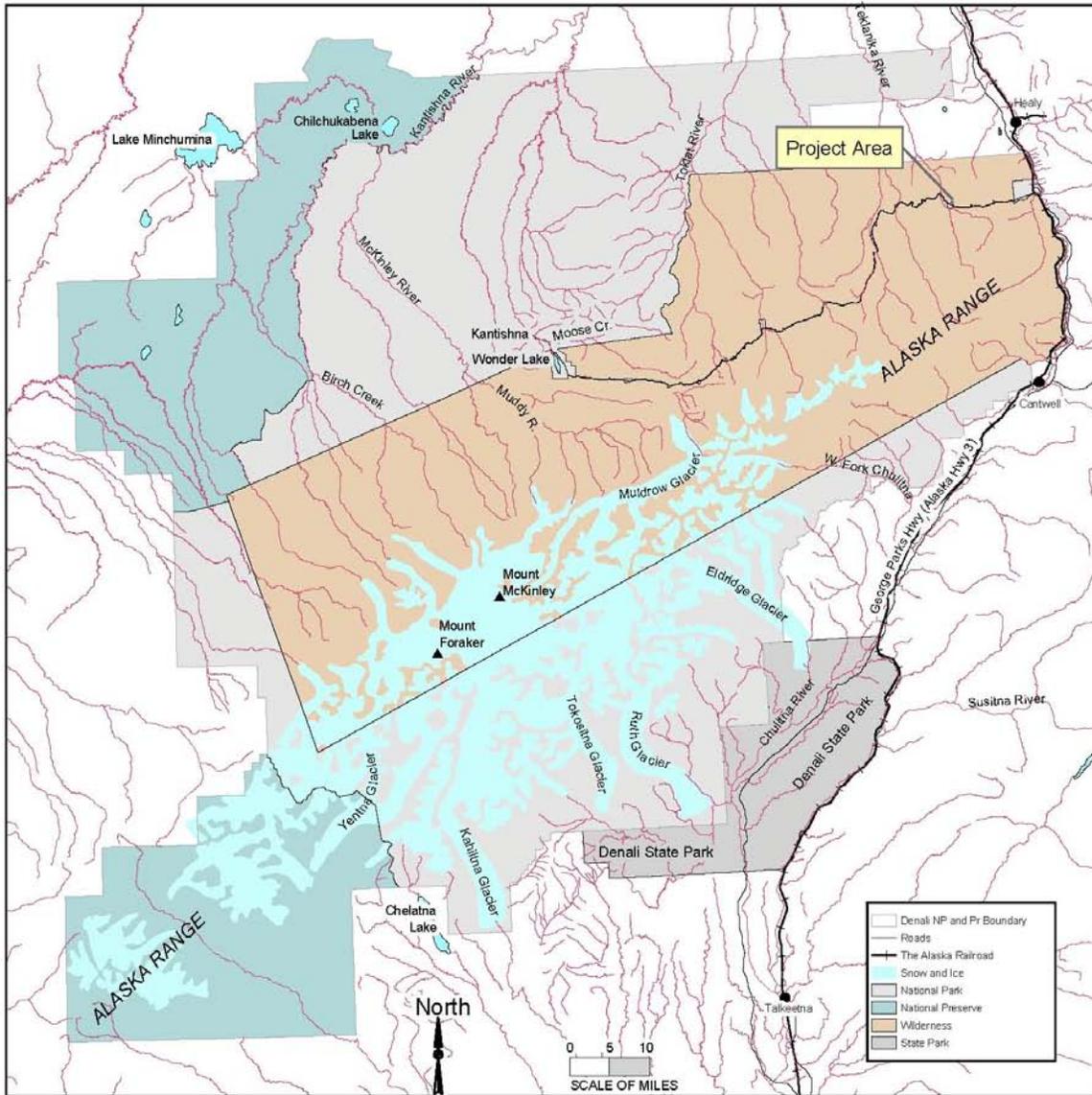


Figure 1
 Project Location
 Denali National Park and Preserve
 U.S. Department of the Interior National Park Service

Figure 2 - Savage Area

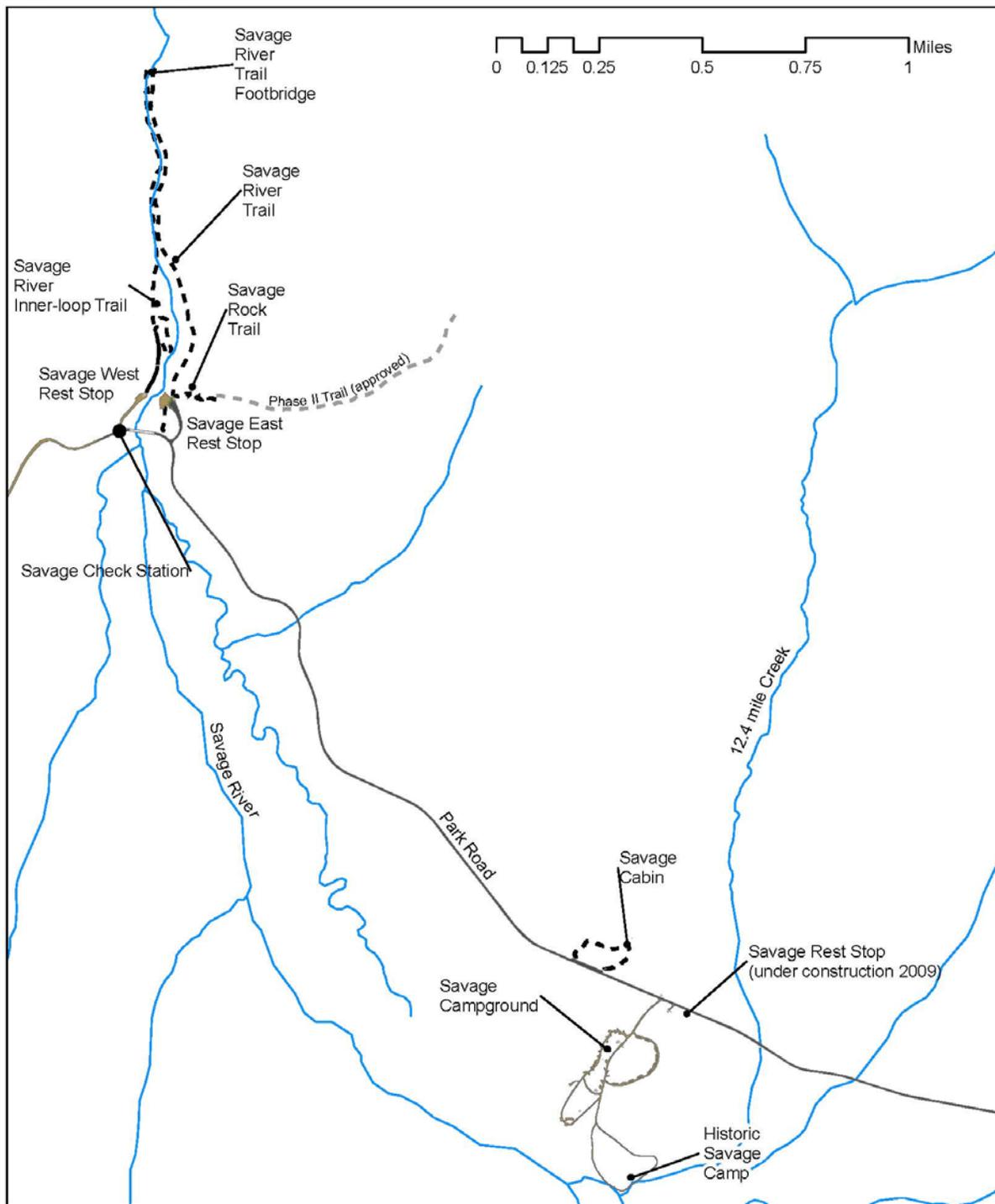
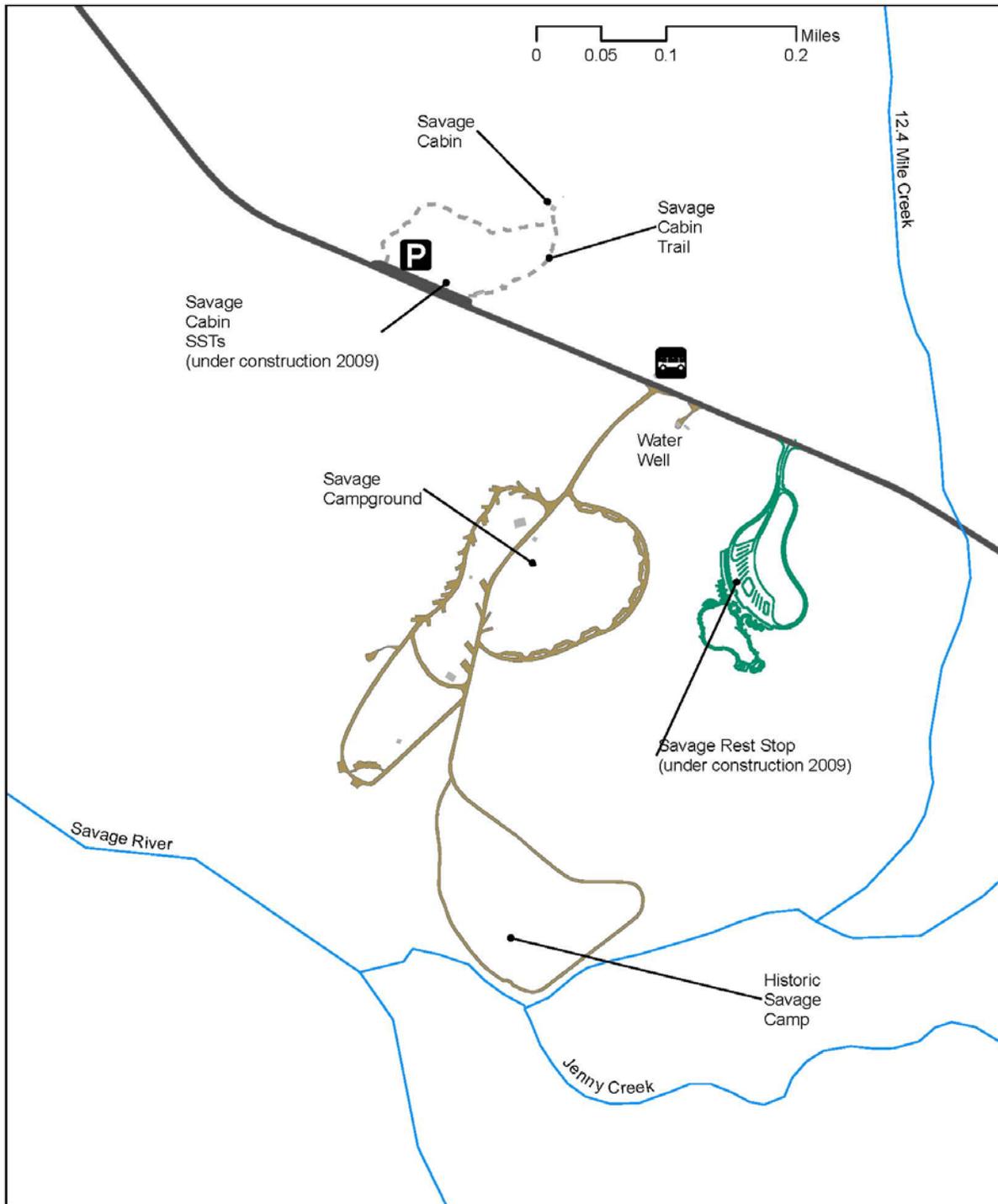


Figure 3 - Savage Campground/Cabin Rest Stop Existing Conditions



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 . . . 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 also designated 99% of the former Mt. McKinley National Park as wilderness. 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 NPS Organic Act and the General Authorities Act prohibit impairment of park resources and values. The 2001 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

Issues and impact topics are identified and form the basis for environmental analysis in this EA. A brief rationale is provided for each issue or topic that is analyzed in the environmental consequences section of this EA. Issues and topics considered but not addressed in this document also are identified.

Vegetation, Wetlands and Soils

Trail construction would remove vegetation and soils in the project area and fill wetlands. Specific concerns include:

- Trail construction would remove over one acre of white spruce mixed forest, and around two acres of low shrub and alpine dwarf shrub communities.
- Soils would be removed during construction of the trail and soils exposed because of the project could be susceptible to erosion.
- About one acre of wetlands would be disturbed during construction.

Wildlife Values and Habitat

Trail construction and visitor use would remove wildlife habitat and affect habitat use. Specific concerns include:

- Large mammal habitat would be removed and adjacent habitat use would be affected.
- About three acres of small-mammal and bird habitat would be removed.

Aquatic Resources and Water Quality

Initial trail routing of part of the Savage Alpine Trail would follow a cairned route in the floodplain of 12.4 Mile Creek. Specific concerns include:

- This use would temporarily create erosion from foot traffic that could increase turbidity in the stream.

Cultural Resources

Trail construction and visitor use could affect known cultural resources. Specific concerns include:

- The roadside path and Savage Alpine Trail could affect the cultural landscape of the park road, which is a facility eligible for the National Register of Historic Places.

Wilderness Resource Values

Trail construction and visitor use could affect wilderness resource values. Specific concerns include:

- New trails constructed inside designated wilderness boundaries could reduce the feeling of solitude and freedom from man-made facilities.
- New trails would reduce wilderness resource impacts from social trail formation.

Visitor Use and Recreation

Trail construction could affect visitor use. Specific concerns include:

- A roadside path would separate pedestrians from the park road and would make movement in the area safer for both pedestrians and motorists.
- Additional recreational and interpretive trails would provide new opportunities for visitors in the eastern road corridor of the park.

Park Management

Trail construction could affect park management. Specific concerns include:

- Additional trails would require additional staff time to maintain.
- Additional trails could reduce visitor demands for facilities deeper in the park

Issues Eliminated from Further Consideration

Effects on 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) was consulted. No federally designated threatened or endangered species are known to occur within Denali National Park (pers. comm. Ted Swem, USFWS, Fairbanks, Alaska, June 9, 2000).

Air Quality

Exhaust from equipment such as power wheelbarrows and skid-steer loaders would contribute a negligible amount of air pollution due to the short duration of operation.

Floodplains

The temporary routing of the Alpine Trail through the 12.4 Creek floodplain would have a negligible effect on floodplain values such as floodwater retention and animal habitat and a positive impact on recreation in floodplains. This stream flows intermittently, does not support fish and the low amount of macroinvertebrate life would not be affected by the foot traffic.

Natural Soundscape

Trail construction activities would degrade natural sounds by only a negligible amount due to the context of existing background of noise from automobiles and buses.

Subsistence Use

Subsistence uses are not allowed in the entrance area or on any of the lands of the former Mt. McKinley National Park, and no adverse affects to subsistence activities would occur. See Appendix A.

Local Communities/Socioeconomic Resources

Although the trails would provide additional recreation opportunities in the entrance area, it would be unreasonable to attribute any increased visitation to the area to these trails, or anything other than a negligible impact on socioeconomic resources.

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 project 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.

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.

A Section 404 permit from the Corps of Engineers for filling wetlands will be needed if and when the upper section of the Alpine Trail is constructed adjacent to the 12.4 Mile Creek. This permit would be approved under Nationwide Permit #42 – Recreational Facilities.

A National Park Service Wetlands Statement of Findings to evaluate wetlands impacts and prescribe mitigation measures and compensation efforts is required for this project and is attached as Appendix C.

A National Park Service Statement of Findings to evaluate impacts to floodplains is not required because the establishment of foot trails in non high-hazard areas is an excepted action as it requires little physical development and does not involve overnight occupation.

II. DESCRIPTION OF THE ALTERNATIVES

Alternative 1 - Existing Conditions (No Action Alternative)

No Savage Alpine Trail would be constructed above the Phase II Trail planned to be constructed above Savage Rock. Visitors hiking above that point or over toward the Savage Campground would find their own path to ascend or descend. No roadside path would be built from the Savage Cabin to the new Rest Stop. Pedestrians would continue to walk along the road shoulder. No connector trail would be built between the Savage Campground and the new Rest Stop and no pedestrian path would be built alongside the Rest Stop entrance road.

Actions Common to Both Action Alternatives

Under both action alternatives the NPS would construct and maintain the following trails: the Savage Camp Interpretive Trail, the Savage Campground to Rest Stop Connector Trail, the Savage Rest Stop to Park Road Sidewalk, the Savage Roadside Path, and the Savage Rock Loop Trail. (see Figures 6, 7 and 8) Gravel to build the trails will either be found onsite through cut and fill methods, will come from the Mile 27 Teklanika Pit, or will be purchased from outside the park sources. Most of the trails common to both action alternatives would be constructed to be accessible to ADA standards for width, slope, and compaction.

Savage Rest Stop Interpretive Trail

The Savage Rest Stop Interpretive Trail (Interpretive Trail) would begin at the southern end of the paved trail being constructed as part of the new Savage Rest Stop. The whole of the trail would be built up to 6 feet wide and would meet ADA standards. This trail would have three sections:

Section A would angle southeastward for about 1,200 feet through the open spruce forest out of the line of sight from the Rest Stop to Mt. McKinley. It would connect with the abandoned road that takes off from the northern end of the Savage Camp airstrip.

Section B would utilize for about 1,000 feet the abandoned road branching from the northern end of the Savage Camp airstrip and the central road of the former concessioner Savage Camp.

Section C would angle back northeastward to the Savage Rest Stop for about 1,500 feet through the open spruce forest out of the sight line between the Rest Stop and Mt. McKinley.

Based on further evaluations, the NPS could extend the Interpretive Trail along the disturbed area of the old Savage Camp airstrip and old road that connected the campground to a former water well near the Savage River, which road continued to the southern end of the airstrip. This ground is previously disturbed, unvegetated, and would only require that the surface be brought up to ADA standards for surfacing and compaction.

Savage Campground to Rest Stop Connector Trail

This 500 foot long trail would connect the Savage Campground to the new Rest Stop. This section would be built up to 6 feet wide and to ADA standards.

Savage Rest Stop to Park Road Sidewalk

This 1,000 foot long trail would connect the park road and other facilities and trails north of the park road with the parking lot at the new Savage Rest Stop. This sidewalk would be built adjacent to the Rest Stop paved road and up to 6 feet wide.

Savage Roadside Path

This trail would extend for about 2,500 feet from the west end of the Savage Cabin Parking Lot eastward to the Savage Campground Bus Stop and to a point across the park road from the new Savage Rest Stop entrance where it would meet the eastern end of the Savage Alpine Trail. This trail would be up to 6 feet wide and constructed about 30-60 feet away from the park road, keeping a buffer of spruce and shrubs.

Savage Rock Loop Trail

This trail would be about 600 feet long and would extend the existing Savage Rock Trail back down the north side of Savage Rock on developing social trails to the Savage River Trail. This trail would be about 24-30 inches wide and due to the steepness would not be built to ADA standards.

Maintenance

Use of the trails to be constructed under this alternative would require maintenance. The trails in the campground area may need to have the snow plowed off them in the spring so that they dry out in time for pedestrian traffic. Brushing vegetation would be a normal maintenance function on the trails passing through shrubs or forests. The trails would also need maintenance to assure compaction standards are being met for accessibility.

Work Areas and Materials

The trail crews would use two of the three Group Camping Sites at the Savage Campground for two summers. Use of the campsites would shorten the vehicular and pedestrian commute time to work sites on all of the trails and would increase the amount of hours during the day available for trail construction.

The southern limb of the approved Phase II Trail would not be constructed at this time.

Alternative 2 – Construction of Savage Area Trails including a High Alpine Trail

In addition to the trails described in the Actions Common section, under this alternative the NPS would construct and maintain a Savage High Alpine Trail (see Figures 4, 5 and 6). Gravel to

build the trails would either be obtained onsite through cut and fill methods or purchased from outside the park.

Approximately 0.7 miles of the Savage High Alpine Trail would be constructed to ADA standards for accessibility with appropriate widths, slopes, and compaction.

Savage High Alpine Trail

This 18-30 inch wide trail would be constructed to extend uphill from the approved Phase II Trail that extends above the Savage Rock Trail above the Savage East parking lot. Most of this trail would be built in designated wilderness. The Savage Rock Trail extends up to an elevation of about 2,800 feet, and the Phase II Trail is slated to extend that trail to about 3,600 feet elevation.

The Savage High Alpine Trail would have 4 sections:

Section A would extend eastward from the 3,600 feet elevation to a high ridgeline at about 4,600 feet elevation. This section of the Alpine Trail would be about 5,000 long and would be fairly steady at a 20% grade. The tread would be benched into the slope and most of the material used to shape the tread would be from the cuts used to create the benched trail. The trail would be outsloped up to 10% to shed water without the need for structures like waterbars.

Section B would descend from the minor saddle at 4,600 feet back down to the 12.4 Mile creekbed at about 3,500 feet elevation. This section of trail would be about 6,000 feet long and would traverse and turn down the open hillside to keep a steady 20% grade. The tread would be benched into the slope and most of the material used to shape the tread would be from the cuts used to create the benched trail.

Section C would extend for about 7,000 feet within the floodplain of 12.4 Mile Creek. This section would drop from about 3,500 feet elevation to about 2,950 feet elevation. This section would be constructed as a cairned route on the creekbed in year 2010 and would be eventually built on the creek bench where it would require heavier constructions methods because of the soft soils.

Section D would extend for about 3,000 feet within the spruce-cottonwood forest on the west side of 12.4 Mile Creek from the 2,950 foot elevation to about 2,800 feet elevation at the park road near the Savage Rest Stop under construction. This section would be built up to 6 feet wide and would be built to ADA standards. About 1,000 feet of this trail section would be built in designated wilderness and would be built to minimum ADA standards for width, and about 2,000 feet of this trail would be built in a wilderness exclusion.

Maintenance

Maintenance would be required to keep these new trails functional over time. The Savage Alpine Trail crosses a dynamic landscape with earthquakes or other earth (geomorphological) processes such as landslides and solifluction, which would require episodic trail maintenance or

reconstruction. Brushing vegetation would be a normal periodic maintenance function along the trails passing through shrubs or forests. The accessible part of the Alpine Trail would need maintenance to assure compaction standards are being met.

Work Areas and Materials

The trail crews may set up a spike camp at the upper end of the forest on 12.4 Mile Creek, about 0.6 miles upstream. Use of the camp would shorten the vehicular and pedestrian commute time to work sites on the eastern alpine part of the trail and would increase the amount of hours during the day available for trail construction.

Figure 4 - Proposed Savage Alpine Trails

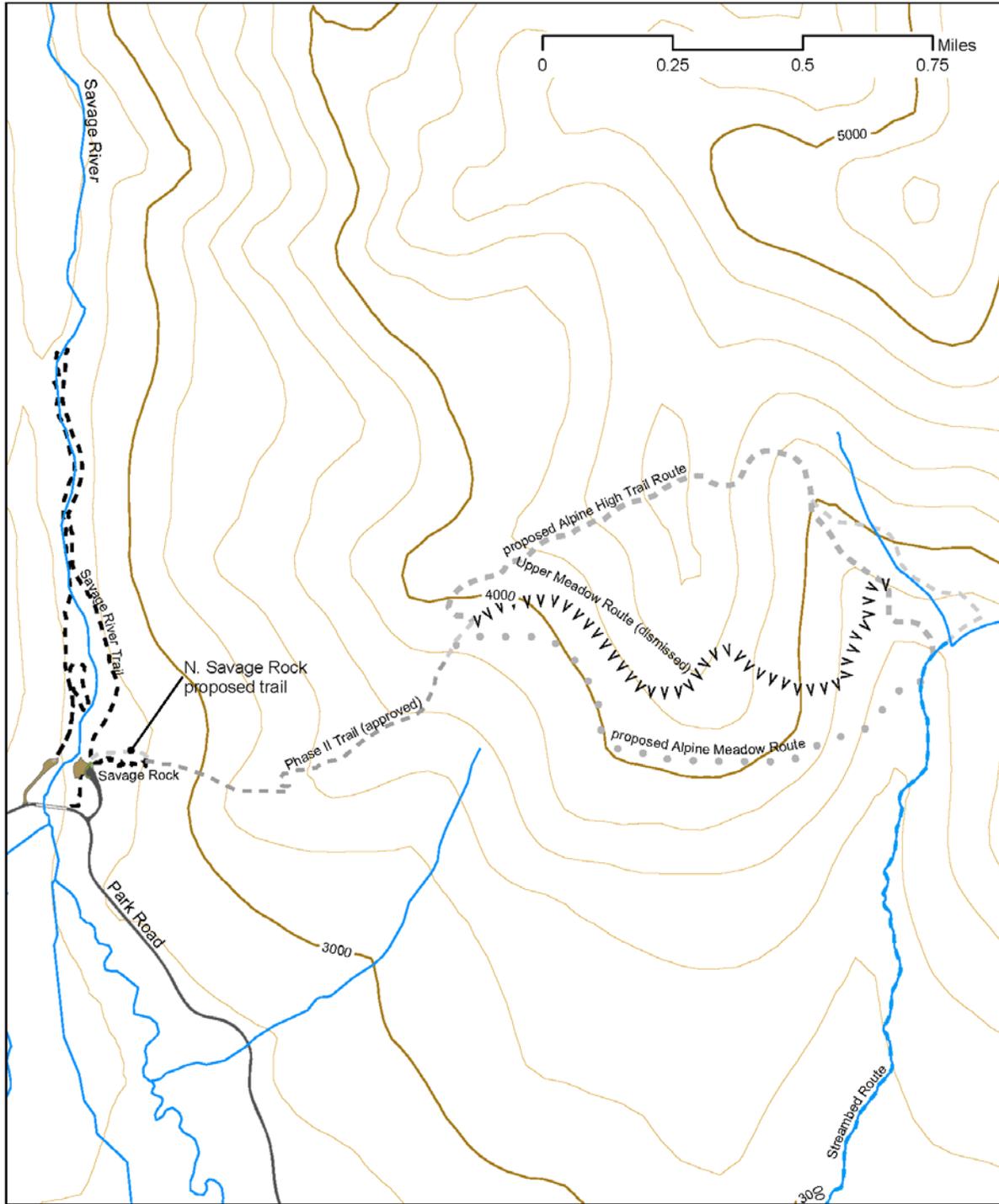


Figure 5 - Proposed Savage Alpine Trail



Figure 6 - Proposed Trails

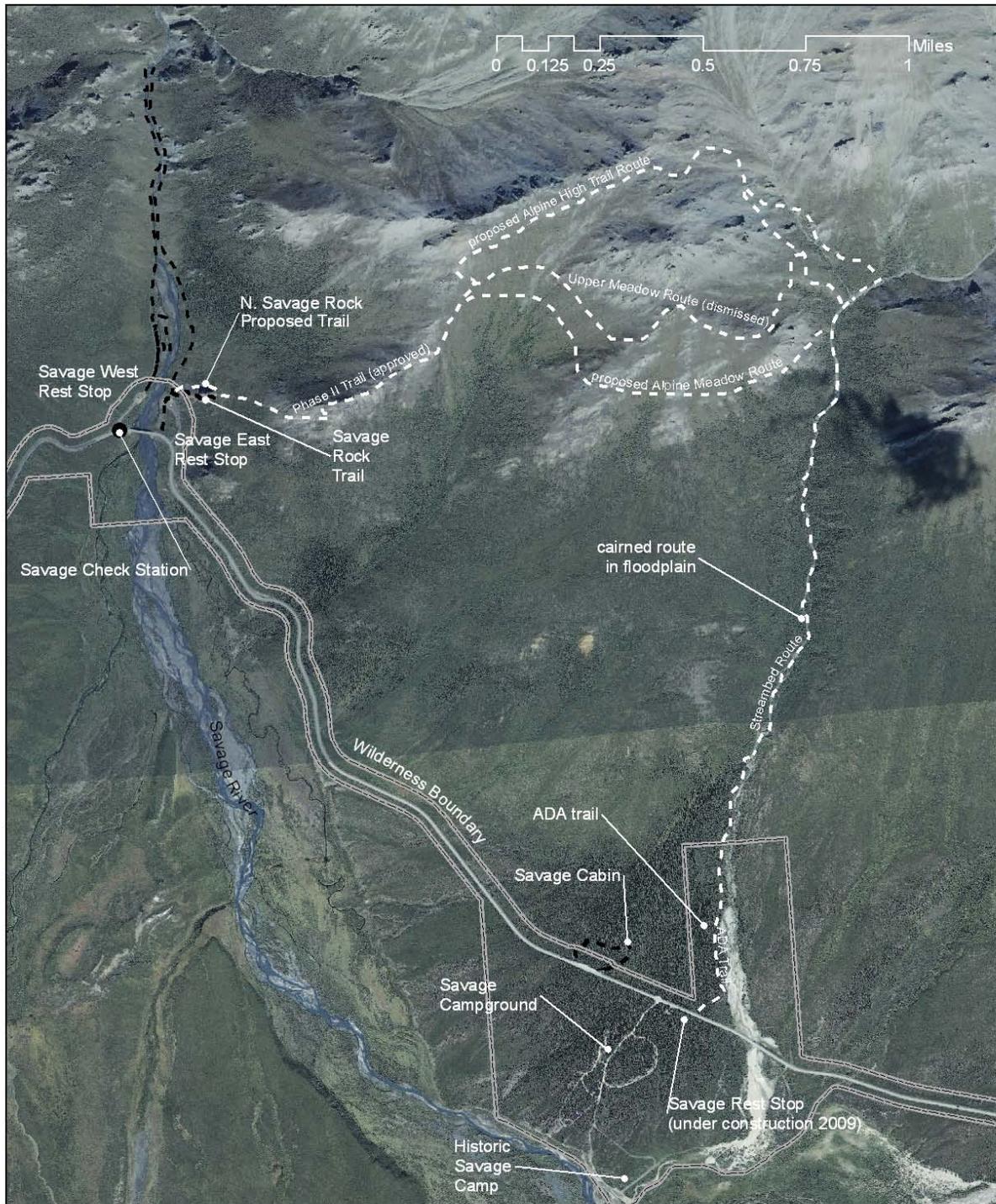


Figure 7 - Proposed Savage Roadside Path

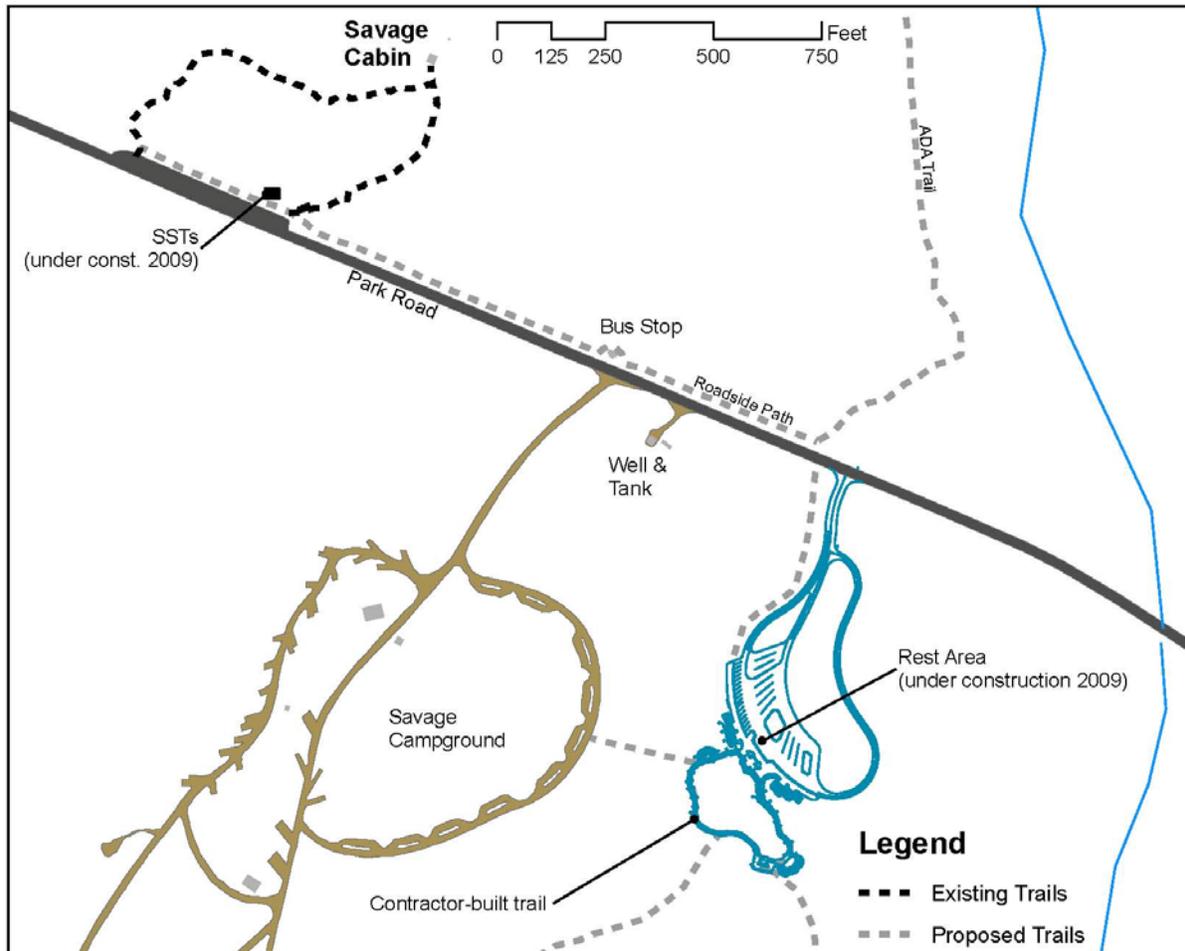
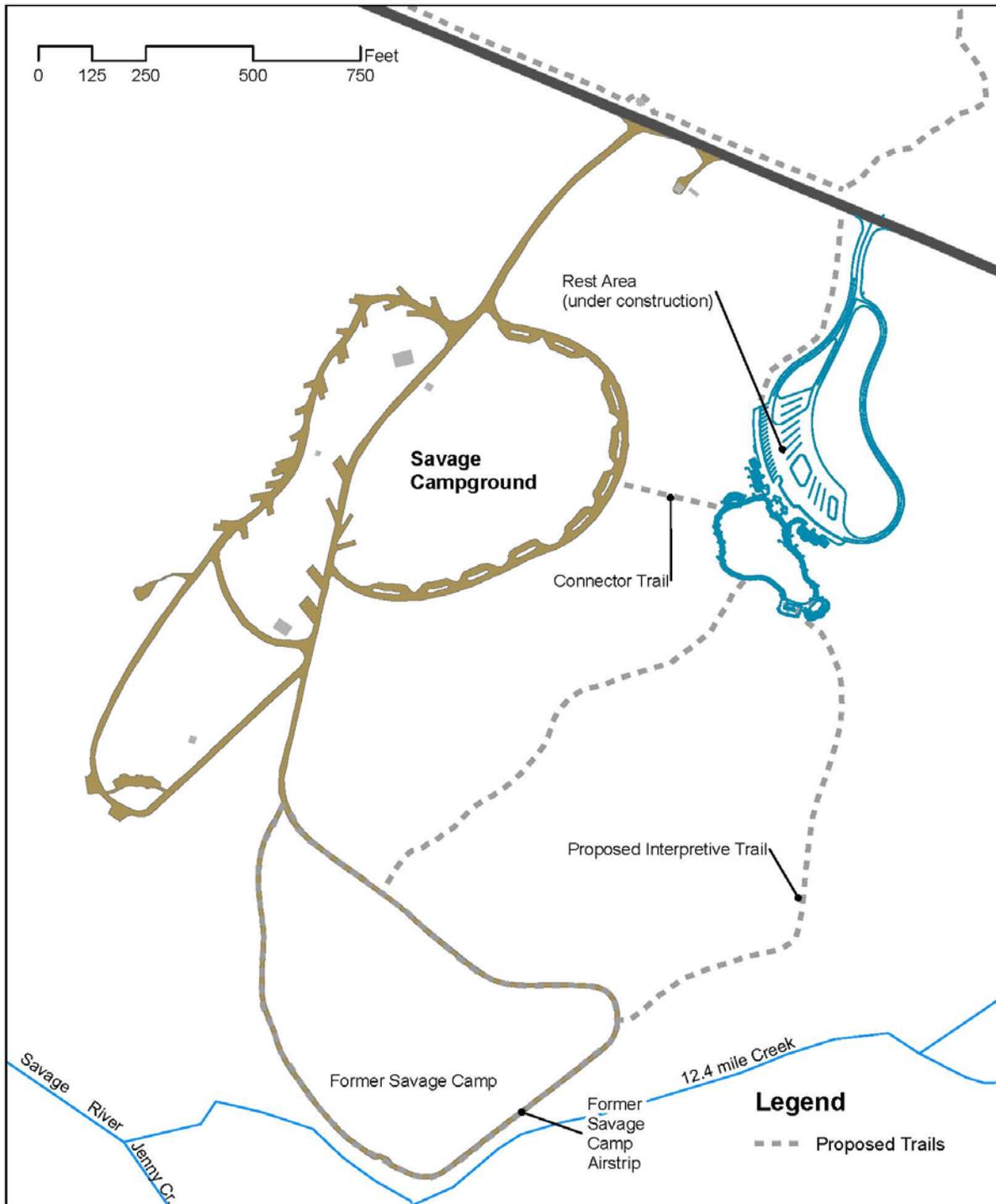


Figure 8 - Proposed Rest Stop Interpretive Trail, and Connector Trail



Alternative 3 – Construction of Savage Area Trails including an Alpine Meadow Trail (NPS Preferred)

In addition to the trails described in the Actions Common section, under this alternative the NPS would construct and maintain a Savage Alpine Meadow Trail (see Figures 4, 5 and 6). Gravel to build the trails would either be produced onsite through cut and fill methods or would be purchased from outside the park.

Approximately 3,000 feet of the Savage Alpine Meadow Trail would be constructed to ADA accessibility standards for width, slope, and compaction.

Savage Alpine Meadow Trail

This 18-30 inch wide trail would be constructed to extend uphill from the approved Phase II Trail that extends above the Savage Rock Trail above the Savage East parking lot. The Savage Rock Trail extends up to an elevation of about 2,800 feet, and the Phase II Trail is slated to extend that trail to about 3,600 feet elevation. Most of this trail would be built in designated wilderness.

The Savage Alpine Meadow Trail would have 4 sections:

Section A would traverse east and southeastward to climb from the 3,600 feet elevation to about 4,000 feet elevation within the open high bowl of the drainage that crosses the park road at Mile 14. This meadow section of the Alpine Meadow Trail would be about 3,500 feet long and would be fairly steady at a 10-12% grade. The tread would be benched into the slope and most of the material used to shape the tread would be from the cuts used to create the benched trail. Additional larger rocks would be harvested locally to create a porous but stable downhill shoulder to the trail. Smaller rocks would be selected from the cuts to comprise a porous trail tread in the wetter sections. The trail would be outsloped up to 10% to shed water.

Section B would descend gradually from the top of a rock outcrop at 4,000 feet elevation back down to the 12.4 Mile creekbed at about 3,500 feet elevation. This section of trail would be about 4,500 feet long and would traverse eastward and northeastward along the open hillside. The first 2,500 feet would be a about a 5% grade and the lower 2,000 feet would be at about a steady 20% grade. This lower 2,000 feet would run along the bottom edge of a cliff slope just above most of the alders on this hillside. The tread would be benched into the slope, and most of the material used to shape the tread would be from the cuts used to create the benched trail.

Section C would extend about 7,000 feet within the floodplain of 12.4 Mile Creek. This section would drop from about 3,500 feet elevation to about 2,950 feet elevation. This section would be constructed as a cairned route on the creekbed in year 2010 and would be eventually built on creek bench where it would require heavier constructions methods because of the soft soils.

Section D would extend for about 3,000 feet within the spruce-cottonwood forest on the west side of 12.4 Mile Creek from the 2,950 foot elevation to about 2,800 feet elevation at the park road near the Savage Rest Stop (currently under construction). This section would be built to 6

feet wide and would be built to ADA standards. About 1,000 feet of this trail section would be built in designated wilderness and would be built to minimum ADA standards for width, and about 2,000 feet of this trail would be built in a wilderness exclusion.

Maintenance

Maintenance would be required to keep these new trails functional over time. The Savage Alpine Meadow Trail crosses a dynamic landscape with earthquakes or other earth geomorphological processes such as landslides and solifluction, which would require episodic trail maintenance or reconstruction. Section A of the Alpine Meadow Trail would pass through an area of meadow where the soil is unconsolidated and somewhat plastic, which would require heavier than usual construction techniques as well as more maintenance effort. Brushing vegetation would be a normal maintenance function on the trails passing through shrubs or forests. The accessible part of the Alpine Trail would need maintenance to assure compaction standards are being met.

Work Areas and Materials

The trail crews may set up a spike camp at the upper end of the forest on 12.4 Mile Creek, about 0.6 miles upstream. Use of the camp would shorten the vehicular and pedestrian commute time to work sites on the eastern alpine part of the trail and would increase the amount of hours during the day available for trail construction.

Alternatives Considered and Eliminated from Further Evaluation

An Alpine alternative was evaluated that would have routed the trail into a big climbing curve just under the rubble and buttresses of the large rocky outcrop at 4500 feet elevation, through the upper meadows of the upper drainage above the Phase II Trail. This trail would have brought visitors into closer contact with a greater variety of flowering plant species, including those growing in wet alpine areas. However, the wet ground has numerous springs and frost boils and would be unstable ground for a permanent trail, requiring much heavier construction techniques and intensive maintenance to respond to the movements of the wet ground.

Environmentally Preferred Alternative

Alternative 1 (No Action) is identified as the Environmentally Preferred Alternative because it affects the least wildlife habitat and vegetation acreage.

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 effects.

Vegetation. Vegetation mats removed from the trail alignment would be saved and moved to abandoned trail segments. Periodic surveys would be conducted to determine the presence of exotic plants.

Wildlife and Habitat. The NPS would follow established guidelines in the park's bear-human conflict management plan. The plan requires staff and operators to use bear-proof containers for food and refuse and sets up guidelines for temporary closures.

Cultural Resources. Surveys for cultural resources have taken place in the entrance area over the past two decades. If previously unknown cultural resources were located during construction, the project would be halted in the discovery area until cultural resource staff could determine the significance of the finding. Mitigation standards would be established to limit any damage to the cultural information present at the sites.

Visitor Use and Recreation. Visitors would be advised in park announcements, programs, and publications that there would be temporary inconveniences from construction work on the trails. Trail construction hours would be limited to 7am to 7pm.

Table 1. Comparison of the Alternatives

<u>Trail Components</u>	<u>Alt. 1 (No action)</u>	<u>Alt. 2 Construct Savage Area Trails and Alpine High Trail</u>	<u>Alt. 3 Construct Savage Area Trails and Alpine Meadow Trail (NPS Preferred)</u>
Dimensions of New Campground Area Trails	No new trails built.	1.4 miles of pedestrian trails at 36-72 inches wide. All would be ADA compliant for width, grade, and compaction.	1.4 miles of pedestrian trails at 36-72 inches wide. All would be ADA compliant for width, grade, and compaction.
Dimensions of New Alpine Trail	No new trails built.	4.0 miles long, 18-30 inches wide. 3,000 feet would be ADA and from 36 to 72 inches wide.	3.4 miles long, 18-30 inches wide. 3,000 feet would be ADA and from 36 to 72 inches wide.
Constructability	n/a	Standard cut and fill construction with additional gravel from inside or outside park sources.	Potentially 3,500 feet of rock-filled tread or boardwalk needed for crossing plastic soils of meadow. Standard cut and fill construction for the rest with additional gravel from outside park sources.
Trails in Wilderness	No new trails in wilderness.	3.7 miles of new trails in wilderness.	3.1 miles of new trails in wilderness.
New Accessible Trails	no	2 miles of new accessible trails in forest and shrub habitats.	2 miles of new accessible trails in forest and shrub habitats.
Total Trail Length Constructed or Approved in Savage Area	2.5 miles	8.0 miles	7.4 miles

Table 2. Summary Impacts of the Alternatives

IMPACT TOPIC	Alt. 1 – No Action	Alt. 2 Construct Savage Area Trails and Alpine High Trail	Alt. 3 – Construct Savage Area Trails and Alpine Meadow Trail – NPS Preferred
Vegetation, Soils and Wetlands	Minor continued impact from social trail development.	1.4 acres of spruce forest, 1.0 acres of alpine, and 1.0 acres of shrubby vegetation removed. Soils affected would be used in cut/fill or in reclamation of abandoned segments. Moderate impact. A minor impact from the loss of 1.1 acres of wetlands.	1.4 acres of spruce forest, 0.4 acres of dry alpine, 0.4 acres of alpine meadow, and 1.0 acres of shrubby vegetation removed. Soils affected would be used in cut/fill or in reclamation of abandoned segments. Moderate impact. A minor impact from the loss of 1.1 acres of wetlands.
Wildlife and Habitat	Continued localized avoidance on existing trails.	3.4 acres of habitat removed, with minor effect. Local avoidance during construction and use.	3.2 acres of habitat removed, with minor effect. Local avoidance during construction and use.
Water Quality	No impact	Localized and temporary increase in turbidity in 12.4 Mile Creek from pedestrian use.	Localized and temporary increase in turbidity in 12.4 Mile Creek from pedestrian use.
Cultural Resources	No impact	Minor positive impact from education about cultural resources. Minor adverse impact on the wilderness character of the landscape of the park road corridor from the new trail on the hillside.	Minor positive impact from education about cultural resources. Minor adverse impact on the wilderness character of the landscape of the park road corridor from the new trail on the hillside.
Wilderness	Minor impact from increased social trail formation.	Minor impact from new trail construction and loss of solitude with increased use in alpine area.	Minor impact from new trail construction and loss of solitude with increased use in alpine area.
Visitor Use and Recreation	No new recreational opportunities created.	Minor adverse effect during construction from noise and activity. Moderate benefits to visitors from increased opportunities for trail hiking, access to cultural resources and access to wilderness resources along the eastern road corridor.	Minor adverse effect during construction from noise and activity. Moderate benefits to visitors from increased opportunities for trail hiking, access to cultural resources and access to wilderness resources along the eastern road corridor.

III. AFFECTED ENVIRONMENT

Detailed descriptions of the environment in the Savage River and Savage Campground areas may be found in the 1986 GMP, the 1996 draft DCP/EIS, and the 2006 Savage Rest Stop Environmental Assessment. This section summarizes the natural and human environment that may be affected by the proposal and alternatives under consideration.

The projects are located near the Savage River and Savage Campground adjacent to the Denali Park Road corridor in Denali National Park and Preserve. The Savage Alpine Trail would extend an existing pedestrian trail that starts at the Savage East parking lot. Most of the Savage Alpine Trail would be constructed in designated wilderness. All of the projects are located in areas near the Denali front country, an area with relatively high visitor use during the summer season.

Vegetation, Wetlands and Soils

The area uphill of the Savage River parking lot is steep, with large bedrock promontories on ridges breaking through a thin soil mantle that covers the hillside drainageways between the ridges. The proposed Alpine trail starts at 3,600 feet elevation, where there are taller willows and alders only in the middle of the major drainageways. The majority of the route is covered by dwarf shrubs and forbs such as such as dryas, dwarf willows, saxifrages, pinks, arnicas and a wide variety of other dry alpine plants. There are also a couple of places where talus or rock rubble reaches down from the ridgeline, but even the talus is somewhat cemented in place and vegetated, and poppies are common in the rock rubble. The meadow area has more sedges and rushes, shooting stars, bittercress, *Parrya*, Langsdorff's lousewort, and wetland saxifrages.

The eastern alpine area of the proposed trail goes through similar areas as the western section, but it does not stay under a ridgeline, so that some parts would be more wet where the proposed trail crosses from one side of the drainageway to the other.

The upper section of the creek trail would initially be placed on unvegetated rocky-sandy ground along the creek channels. As needed, the trail would be moved to a vegetated bench above the floodplain occupied by dwarf birch, mosses, cinquefoil, and a mix of upland and wetland shrubs and forbs.

The lower section of the creek trail would be on the thin dry soil within a white spruce/cottonwood forest. Scattered shrub willow and alder form a thin understory, with a thin layer of feathermoss and composites as a groundstory.

The area around the Savage Campground, Savage Cabin and Savage Rest Stop is occupied by a white spruce forest that has grown in the thin soils on top of abandoned rocky channels of the 12.4 Mile Creek. A historically bigger creek moved laterally as it left the topographic restrictions of the mountainous country above, and left braided channels that have now filled in almost level. The soils are generally porous and dry, except where fine-grained material has filled in lower areas. The creek seems to be settled for the time being in its floodplain east of the forest.

Wildlife Values and Habitat

The most common wildlife species in the project area are red fox, snowshoe hares, red squirrels, and various birds such as ptarmigan, chickadees, ravens, magpies, and numerous migratory species. The area also provides moose habitat, including willow browse along the Savage River, Jenny Creek, and 12.4 Mile Creek. Grizzly bears also use the creek valleys to find roots and for movement corridors, and use the higher slopes for blueberries and crowberries. Grizzly bears are also known to come to the Savage area from as far away as Sable Pass to hunt moose calves early in the summer. Dall Sheep are often seen along the upper ridgelines, including at the saddle where the proposed high alpine trail would cross over. Caribou are commonly seen in the open areas. Wolves may also be found traversing the area. Coyotes have been noted in the area in 2009.

Aquatic Resources

12.4 Mile Creek is a 4 mile long non-glacial mountain stream that heads at about 6,000 feet elevation. Streamflow is generally 2-4 cubic feet per second in the spring when snow is melting, but it can increase dramatically during heavy rainstorms. It can also dry up during mid-late summer dry spells. The bed of the stream is sand and gravel, with cobbles and boulders. In winter the ice buildup usually extends vertically and horizontally farther than any flood event, so that much of the existing floodplain is, on average, only affected by the disturbance effects of winter ice and by the water flows that start on top of the ice at the beginning of break-up. Areas of the floodplain that are usually only affected by ice often have a scattered cover of willows, mountain alder and young balsam poplar, with a small number of forbs and little moss growth. The lower streambed was affected in the 1980s and in 2005 by a park road bypass constructed upstream of the road to allow culvert replacement.

Cultural Resources

Cultural resources in the Savage area include archeological sites and historic buildings and structures. Some lithic sites have been found in the area at overlooks. The Savage Cabin was constructed about one mile farther west than its present location in 1925 as the first Alaska Road Commission cook's cabin during the construction of the park road. The cabin originally had two rooms, but only one survived after it was moved in 1940 into the forest north of the park road. The original cabin site had easy access to water, which was a good feature in the summer, but when the NPS took over the cabin for ranger patrol use in the winter, the site was too windy with no close firewood. When the park cabins were nominated for the National Register of Historic Places in 1986, the Savage Cabin had not yet been on site for 50 years so it was not eligible. A new nomination is likely within the next year.

The former Savage Camp was the main visitor facility in the park from 1923 until the park hotel opened in 1939. It included 26 tent frame cabins, cook house, social hall, dining hall, garage, an airstrip, two barns, and a horse corral, all of which have been removed over the years. Visitors took horseback trips down the Savage Canyon, westward toward Igloo, and upstream along a wagon road to a campsite in the upper Savage River drainage.

Wilderness

The Denali Wilderness was designated by Congress in ANILCA to include 99% of the former Mt. McKinley National Park. Designated wilderness is managed under the prescriptions of the 1964 Wilderness Act, which generally prohibits motorized equipment, motor vehicles, roads and permanent improvements such as buildings and installations. Foot trails are allowed. The wilderness boundary is generally 150 feet to either side of centerline of the park road. In the Savage area there are three exclusions that widen the non-wilderness area. Areas were set aside at the Savage River Bridge and at the Savage Campground for expansion and maintenance of visitor facilities. A wilderness exclusion was also delineated north of the road along 12.4 Mile Creek for about 2,000 feet to allow for anticipated gravel extraction from the floodplain. The exclusion also allows for maintenance of the lower channel of 12.4 Mile Creek to train the creek to flow through the road culvert.

Visitor Use and Recreation

The Savage River East parking lot has space for 18 vehicles and the lot is full much of the summer. A free shuttle bus departs the Entrance Area every hour during the summer and turns around at the Savage River. The west side Savage River Trail includes a footbridge 1 mile downstream of the park road. The footbridge connects to a trail on the east side that returns to the park road. The Savage Rock Trail is also popular with visitors to the Savage area. Savage Rock used to be popular for technical climbing practice, but that use seems to have fallen off in recent years.

The Savage River Campground is a 33 site campground that was constructed in 1955 and is located at Mile 13 on the Park Road. It is popular because there are views of Mt. McKinley, the sites are protected in a forest, and private vehicles can be driven there. There are flush and vault toilets available as well as potable water. There are no hook-ups and a maximum of eight persons are allowed per site. The campground also has 3 Group Camping sites for parties of 9 or greater, not to exceed 20 persons.

The Savage Cabin is used for formal interpretive programs by the concessioner as part of the Denali Natural History Tour. The programs are given to about 80-90 thousand visitors each year. The short loop trail to the cabin is also popular with folks staying at the Savage Campground or visitors driving the park road.

The new Savage Rest Stop is under construction in 2009 and is expected to be ready for visitor use in 2010. This rest stop will be screened from the park road, will have space for 18 automobiles and 12 oversize vehicles, including 4 buses, and will include a short loop trail with an open view of Mt. McKinley.

Park Management

The NPS has a contract with a concessionaire to provide public services in the park. This includes reservations and maintenance for the Savage Campground and use of the Savage Cabin in summer for interpretive programs. Trail maintenance in the area is done by the NPS and includes spring snow removal, vegetation brushing, drainage maintenance and repair, and resurfacing and re-compaction as necessary.

IV. ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

Assumptions for Impact Analysis

This section contains an evaluation of the direct and indirect environmental impacts of two action alternatives and the no action alternative. The analysis assumes that the mitigation identified in the *Mitigation and Monitoring* section (page 10) of this environmental assessment would be implemented under any of the action alternatives.

Cumulative impacts were analyzed to add up the incremental impacts to the environment resulting from adding the alternatives to other past, present, and reasonably foreseeable future actions. The cumulative impacts relate primarily to: (1) the construction of the Savage Rest Stop in 2009 and its use by visitors; (2) the construction and use of the Phase II Trail above Savage Rock that was approved in 2006; 3) construction of 4 new SSTs (Sweet-Smelling Toilets) for use by visitors to the Savage Cabin; and (4) continued visitor use of the park road, Savage Cabin, Savage Campground, and Savage River Trails.

Alternative 1 – Existing Conditions (No Action)

Vegetation, Wetlands and Soils

No vegetation, soils or wetlands would be removed or disturbed to preserve the status quo. However, visitor exploration from the Savage Rest Stop, when constructed, would likely create social trails across the open dwarf birch and open spruce forest between the Rest Stop and the Savage River and in the forest between the campground and the Rest Stop. Social trails would also develop in the alpine area above the upper end of the Phase II Trail, once that is completed. Use of these social trails would remove a minor amount of vegetation, result in minor damage to the soil structure, and lead to a minor amount of soil erosion in the alpine areas.

Cumulative Impacts

Visitor facility development in the Savage area has removed approximately 28.5 acres of vegetation. This development includes the park road, Savage Campground, new Savage Rest Stop, parking areas at the Savage River, Savage Cabin site and constructed trails. This development is split about evenly between loss of white spruce forest and loss of shrub and alpine tundra. The only foreseeable future project in the area would be to construct another alpine trail that would descend down to the Savage River footbridge. This would create another half acre of alpine vegetation loss. The incremental impact to vegetation and soils in the entrance area from implementation of this alternative would be less than 1% of the total disturbance in the

Savage River area. These incremental impacts would not result in significant cumulative impacts on vegetation and soils.

About 11 acres of wetlands have been impacted by previous road, rest stop, and campground construction in the Savage area. The Savage area of the park contains hundreds to thousands of acres of similar jurisdictional and non-jurisdictional wetlands. Social trails in the area would further impact less than 1/8 acre of wetlands in the surrounding area, which would be a 1% increase in wetland area affected. Because the area of wetlands adversely impacted would be small there would be only a negligible increase in the loss of wetlands or wetlands function in the Savage area of the park.

Conclusion: The loss of vegetation and the disturbance to soil on less than 1/4 acre would result in a minor adverse impact to vegetation and soil. The creation of additional social trails on wetland areas near the Rest Stop would result in a negligible net loss of wetlands and wetlands functions in the Savage area. These impacts would not result in an impairment of park resources that fulfill specific purposes identified in legislation establishing the park or key to the natural or cultural integrity of the park.

Wildlife Values and Habitat

No additional habitat would be lost for small mammals, birds, and moose. Continued visitor and employee use of the existing trail segments and social trails would result in continued local avoidance of those corridors by moose, lynx, bears and other wary animals.

Cumulative Effects: Visitor facility development in the Savage area has removed approximately 28.5 acres of vegetation. This development includes the park road, Savage Campground, new Savage Rest Stop, parking areas at the Savage River, Savage Cabin site and constructed trails. This development is split about evenly between loss of white spruce forest and loss of shrub and alpine tundra. The only foreseeable future project in the area would be to construct another alpine trail that would descend down to the Savage River footbridge. This would create another half acre of alpine vegetation loss. Daily use of the park road in summer by visitors and vehicles also creates a zone of disturbance along the road. This impact repeats annually and may have permanent consequences. Cumulatively, these actions have had a moderate adverse impact on wildlife habitat. Because thousands of acres of similar habitat exist in the vicinity, there exists a moderate cumulative impact on wildlife and habitat in the park entrance area and this alternative would be a negligible contributor to that impact.

The implementation of Alternative 1 would result in negligible additional adverse impacts on wildlife habitat; therefore, the total cumulative adverse impact on wildlife would continue to be moderate. These impacts would not result in significant cumulative impacts on wildlife.

Conclusion: The creation of new social trails in the area as a result of increased use and lack of additional facilities would result in continued local avoidance of those corridors by moose, lynx, bears and other wary animals. The creation of new social trails would result in a negligible adverse impact to the area wildlife habitat. These impacts would not result in an impairment of park resources that fulfill specific purposes identified in legislation establishing the park or key to the natural or cultural integrity of the park.

Aquatic Resources and Water Quality

Water quality is generally good to pristine in the Savage area and would remain so under this alternative.

Cumulative Impacts

Visitor facility development affecting water quality in the Savage area is restricted to the accessible Inner Savage River Trail and the park road bridges over the Savage River and 12.4 Mile Creek. The Savage River footbridge was constructed above the floodplain. Cumulatively, these actions have had a minor adverse impact on aquatic resources and water quality. Because water quality is generally unaffected by development in almost all of the Savage area, there exists a minor cumulative impact on water quality in the Savage area and this alternative would have a negligible impact. These impacts would not result in significant cumulative impacts on aquatic resources.

Conclusion: This alternative would result in no additional impacts to aquatic resources or water quality in the Savage Area. These impacts would not result in an impairment of park resources that fulfill specific purposes identified in legislation establishing the park or key to the natural or cultural integrity of the park.

Cultural Resources

No known cultural resources would be affected under this alternative.

Cumulative Effects: The Savage Cabin is likely eligible for the National Register, though it was moved from its original 1925 site. The park road is also likely eligible, though the paved section does not have the integrity of feeling of primitiveness that much of the rest of the road retains. The Savage Camp site has a history that can be told on site, though the facilities have been removed over time. All known archeological and historic sites present in the Savage area would remain intact. Cumulatively, the actions in the Savage area have had a moderate adverse impact on cultural resources, but this alternative would contribute no additional impact.

Conclusion: This alternative would not adversely impact known cultural resources. The project would not result in an impairment of park cultural resources that fulfill specific purposes identified in legislation establishing the park and effects would be consistent with the mandates of the NHPA.

Wilderness Resources Values

The continued steady use by hikers would likely expand the social trail network above and on the north side of Savage Rock and in the Phase II Trail area, once built. This would have a minor adverse effect on the resource value of solitude, and on the sense of wilderness as consisting of an unmarred landscape, in that small but popular area.

Cumulative Effects: The wilderness resources along the eastern park road corridor in Denali National Park have been affected by a continuous low level of visitation on most of the landscape, although in some areas, such as on the north side of Savage Rock and above the Phase

II Trail location, there are clear social trails developing from increased and concentrated use. The increasing visitation in the Savage area would increase the level of hiking use that may spill over into off-trail areas and create additional resource damage. Cumulatively, the actions in the Savage area have had a minor adverse impact on wilderness resource values. Because the Savage area retains most of its wilderness character and is itself surrounded by tens of thousands of acres with no development, there exists a minor cumulative impact on wilderness in the Savage area and this alternative would be a minor contributor to that impact.

Conclusion: This alternative would result in a minor adverse impact to the area wilderness resource values. These impacts would not result in an impairment of park resources that fulfill specific purposes identified in legislation establishing the park or key to the natural or cultural integrity of the park.

Visitor Use and Recreation

This alternative would not provide any additional recreational opportunities in the Savage area, even as a new destination parking area is being added. Some visitors would continue to use or create new social trails to return down to the north from the top of Savage Rock or to get higher up the slope above the Phase II Trail. Social trails would develop leading from the new Savage Rest Stop to the former Savage camp area, to Jenny Creek, to the Savage River, and to the Savage Campground. Pedestrian use of the park road shoulder combined with bus loads of visitors to the Savage Cabin walking hundreds of feet within the parking lot to get to the existing trailhead creates a mixing of vehicles and pedestrians that can be unsafe. Visitors would be able to use all three Group Sites at the Campground and this would have a minor beneficial effect on recreation opportunities.

Cumulative Effects: The visitor use and recreation opportunities along the eastern park road corridor in Denali National Park have been emphasized in recent years by the expansion of visitor centers and trails. This alternative would not improve recreational opportunities along the unrestricted section of the park road corridor. Cumulatively, the actions in the Savage River area have had a moderate beneficial impact on visitor use and recreation, and this alternative would be a moderate adverse contributor to that impact.

Conclusion: This alternative would not construct additional trails in the Savage area and would have a moderate adverse impact to park visitor experiences and recreational opportunities. This alternative would not achieve the objectives of maintaining existing trails, providing short loop trails along the road corridor, and concentrating hiker use where experience has shown that dispersed use is leading or would lead to adverse resource impacts.

Park Management

Staffing needs would increase because of the need to respond to the resource damage that would occur without a maintained trail leading from the Savage Rest Stop. This response could be in the form of more interpretive hikes leading from the Rest Stop. Park staff would also have to respond to the continuing conflict with vehicles that visitors have when they have to walk the road shoulder to get from one Savage area destination to another.

Cumulative Effects: In addition to facilities already maintained, new facilities approved or under construction would include the new Savage Rest Stop, SSTs at the Savage Cabin, and the Phase II Trail above Savage Rock. Cumulatively, the actions in the Savage area have had a moderate impact on park management and this alternative would contribute a negligible to a minor impact.

Conclusion: This alternative would add more facilities to those already in the Savage area requiring maintenance and would result in a minor impact on park operations.

Alternative 2 – Construction of Savage High Alpine and other Area Trails

Vegetation, Wetlands and Soils

Under this alternative approximately 1.4 acres of white spruce-mixed forest community would be removed for the construction of the western limb of the Interpretive Trail, the Connector Trail, the Roadside Path, the Rest Stop Sidewalk, and the ADA section of the Alpine High Trail along 12.4 Mile Creek. Most of the trail segments would be routed so as to miss as many trees as possible. Approximately 1.0 acres of low to tall shrub scrub would be removed to construct Section C of the Alpine High Trail, 1,500 feet of the Interpretive Trail, and the Savage Rock Loop, and 1.0 acres of dry alpine tundra would be removed to construct the upper sections of the Alpine High Trail. The limited vegetation removal from this alternative would have a minor impact on the thousands of acres of taiga forest, shrub scrub, and alpine vegetation resources near the paved section of the park road corridor.

Approximately 0.65 acres of wetlands would be affected by the construction of Section C of the Alpine Trail on palustrine scrub-shrub, broad-leaved deciduous, saturated soil wetlands adjacent to the 12.4 Mile Creek. These wetlands are jurisdictional wetlands and construction will require a Clean Water Act, Section 404 fill permit from the U.S Army Corps of Engineers. Another 0.12 acres of palustrine scrub-shrub, broad-leaved deciduous, saturated soil wetlands and 0.28 acres of palustrine forested, needle-leaf, saturated soil wetlands would be affected by the construction of 1,500 feet of the Interpretive Trail and 500 feet of the western end of the Roadside Path. These wetlands are not jurisdictional because they are not connected to flowing water. These types of wetland are common locally and regionally and constructing a narrow trail would not affect the flood retention, habitat or other values received from these wetlands.

A few inches of organic soil attached to the vegetation would be removed from the trail paths. The soil types are common under white spruce-mixed forests, scrub shrub and in alpine areas. The soils would be saved for use in the reclamation of areas around the new SSTs at the Savage Cabin and at the new Rest Stop, or for filling in low spots during the cut-and fill method for the Savage Alpine Trail.

Cumulative Effects: Visitor facility development in the Savage area has removed approximately 28.5 acres of vegetation and soils. Past, present and reasonably foreseeable future actions and their impacts are described under Alternative 1 (No Action-Alternative). Cumulatively, these actions have had a moderate adverse impact on vegetation and soils.

About 11 acres of wetlands have been impacted by previous road, rest stop, and campground construction in the Savage area. The Savage area of the park contains hundreds to thousands of

acres of similar jurisdictional and non-jurisdictional wetlands. This project would further impact 1.1 acre of wetlands in the surrounding area, which would be a 9% increase in wetland area affected. Because the area of wetlands adversely impacted would be small and the trails would be constructed so as to not block water flow, there would be only a minor increase in the loss of wetlands or wetlands function in the Savage area of the park.

The implementation of Alternative 2 would result in additional moderate adverse impacts on vegetation and wetland resources; therefore, the total cumulative adverse impact on vegetation, wetland resources and soils would continue to be moderate. These impacts would not result in significant cumulative impacts on vegetation wetlands and soils.

Conclusion: The clearing of trees, shrubs, other vegetation, and the disturbance to soil on about 3.4 acres would result in a moderate adverse impact to vegetation and soil. The development of trails on about 1.1 acres of palustrine scrub-shrub, broad-leaved deciduous, saturated soil wetlands and palustrine forested, needle-leaf, saturated soil wetlands would result in a minor net loss of wetlands and wetlands functions in the Savage area. These impacts would not result in an impairment of park resources that fulfill specific purposes identified in legislation establishing the park or key to the natural or cultural integrity of the park.

Wildlife and Habitat

Wildlife habitat for large mammals, small mammals, and birds would be reduced by approximately 1.4 acres of white spruce-mixed forest community for the construction of sections of the Interpretive Trail, the Connector Trail, the Roadside Path, the Rest Stop Sidewalk, and the ADA section of the Alpine High Trail along 12.4 Mile Creek. Approximately 1.0 acres of low to tall shrub scrub, would be removed to construct Section C of the Alpine Trail, 1,500 feet of the Interpretive Trail and 600 feet of the Savage Rock Loop, and 1.0 acres of dry alpine tundra would be removed to construct the upper sections of the Alpine High Trail. During the construction period noise and human activity would disturb wildlife and cause them to be temporarily displaced from the affected and adjacent areas. There are no known raptor nests along the proposed alignments. Both small mammals and birds would find extensive acreage of similar habitat adjacent to the trail acreage lost.

Cumulative Effects: Visitor facility development in the Savage area has removed approximately 28.5 acres of vegetation and soils. Past, present and reasonably foreseeable future actions and their impacts are described under Alternative 1 (No Action-Alternative). Cumulatively, these actions have had a moderate adverse impact on wildlife habitat. Because thousands of acres of similar habitat exist in the vicinity, there exists a moderate cumulative impact on wildlife and habitat in the park entrance area and this alternative would be a minor contributor to that impact.

The implementation of Alternative 2 would result in additional minor adverse impacts on wildlife habitat; therefore, the total cumulative adverse impact on wildlife would continue to be moderate. These impacts would not result in significant cumulative impacts on wildlife.

Conclusion: The clearing of trees, shrubs, and other vegetation on about 3.4 acres would result in a minor adverse impact to the area wildlife habitat. These impacts would not result in an impairment of park resources that fulfill specific purposes identified in legislation establishing the park or key to the natural or cultural integrity of the park.

Aquatic Resources and Water Quality

Section C of the Alpine Trail would initially be constructed in 2010 as a cairned route within the unvegetated active areas of the floodplain of 12.4 Mile Creek. The trail would eventually be built on the bench above the floodplain. The stones for the cairns would be locally gathered and would not block water flow or change erosional patterns. The floods during spring snow-melt or during intense rainstorms would likely scatter some of the cairns, so that they would have to be maintained at least annually. The pedestrian use of the floodplain section of the trail would loosen some muds and sands along the water's edge, adding a small amount of turbidity to the stream. This use of the floodplain would end about a mile upstream of where it enters Jenny Creek and the larger particles would have settled out by then. The stream is subject to wide variations in discharge, and the larger discharges regularly mobilize the loose floodplain sand and muds. This trail section would have a negligible to minor adverse impact on water quality in the stream and a negligible impact on floodwater retention and aquatic resources.

Cumulative Effects: Visitor facility development affecting water quality in the Savage area is restricted to the accessible Inner Savage River Trail and the park road bridges over the Savage River and 12.4 Mile Creek. The Savage River footbridge was constructed above the floodplain. Cumulatively, these actions have had a minor adverse impact on aquatic resources and water quality. Because water quality is generally unaffected by development in almost all of the Savage area, there exists a minor cumulative impact on water quality in the Savage area and this alternative would be a minor contributor to that impact.

The implementation of Alternative 2 would result in additional minor adverse impacts on aquatic resources and water quality; therefore, the total cumulative adverse impact on aquatic resources would continue to be minor. These impacts would not result in significant cumulative impacts on aquatic resources.

Conclusion: The use of 7,000 feet of the 12.4 Mile Creek floodplain as a trail until a bench trail can be constructed would result in a minor adverse impact to the area's aquatic resources and water quality. These impacts would not result in an impairment of park resources that fulfill specific purposes identified in legislation establishing the park or key to the natural or cultural integrity of the park.

Wilderness Resource Values

Most of the Savage Alpine High Trail and Savage Rock Loop would be constructed in designated wilderness. There would be temporary impacts to the visitor's expectation of solitude over the course of two to three summers during construction, which would be especially noticeable where most of the trail is out of sight and sound of roadside activities. There would also be an impact on the opportunity for the expectation of primitive recreation when the trail is constructed and maintained. The existence of popular backcountry entry areas at the Savage Bridge and Campground have encouraged visitors for decades to visit this high alpine area and the use is likely going to increase with the completion of the Savage Rest Stop. The formalizing of a Savage Alpine High Trail and Savage Rock Loop would be beneficial by providing a maintained route that will keep most of the traffic on one path and partially eliminating the

accelerating advance of a network of social trails and inherent resource damage, especially on the slopes above the bridge.

Cumulative Effects: The wilderness resources along the eastern park road corridor in Denali National Park have been affected by a continuous low level of visitation on most of the landscape, although in some areas, such as on the north side of Savage Rock and above the Phase II Trail, there are clear social trails developing from increased and concentrated use. The proposed projects would improve access into wilderness and reduce anticipated future resource damage, but would also invite an increased level of use that may spill over into off-trail areas and create additional resource damage. Cumulatively, the actions in the Savage area have had a minor adverse impact on wilderness resource values. Because the Savage area retains most of its wilderness character and is itself surrounded by tens of thousands of acres with no developments, there exists a minor cumulative impact on wilderness in the Savage area and this alternative would be a minor contributor to that impact.

Conclusion: The construction of about 3.7 miles of pedestrian trail in wilderness would result in a minor adverse impact to the area wilderness resource values. These impacts would not result in an impairment of park resources that fulfill specific purposes identified in legislation establishing the park or key to the natural or cultural integrity of the park.

Cultural Resources

The Interpretive Trail would provide a maintained route to the known cultural resource sites at the former concessioner Savage Camp, dating from 1922 to 1939. The Roadside Path could expand visitation to the Savage Cabin by creating a safer pedestrian path from the Savage Campground and from the new Savage Rest Stop. These facilities would expand opportunities to highlight the human history of the area. This would have a beneficial effect on cultural resources. Monitoring and mitigation standards would be established to limit any damage to the cultural information present at the sites. No cultural resources are known from the Savage Alpine High Trail alignment.

Most of the Alpine High Trail would be either not visible from the park road or distant enough from the park road to be only marginally visible. The top end of the Eielson Alpine Trail is about 0.5 miles from the Eielson Visitor Center. The first visible part of the Savage Alpine High Trail would be about 0.75 miles from the park road and the high point would be 1.5 miles from the park road.

Should presently unidentified cultural resources be discovered during the project, the superintendent and cultural resources manager would be notified immediately.

Cumulative Effects: The Savage Cabin is likely eligible for the National Register, though it was moved from its original 1925 site. The park road is also likely eligible, though the paved section does not have the integrity of feeling of primitiveness that much of the rest of the road retains. The Savage Camp site has a history that can be told on site, though the facilities have been removed over time. All known archeological and historic sites present in the Savage area would remain intact. Cumulatively, the actions in the Savage area have had a moderate adverse impact on cultural resources and this alternative would contribute a minor beneficial impact.

Conclusion: The proposed projects would not adversely impact known cultural resources. The hillside scar of the trail itself and visible use of the trail would have a minor impact on the wilderness character of the landscape around the park road corridor. There would be a minor positive impact from education about cultural resources. The project would not result in an impairment of park cultural resources that fulfill specific purposes identified in legislation establishing the park and effects would be consistent with the mandates of the NHPA.

Visitor Use and Recreation

There would be a temporary impact to recreational opportunities for Savage area visitors from the noise and displacement from construction activities along the trails proposed in this alternative. The impact would last for one full summer for construction in the Campground/Rest Stop area and could last for three full summers for the Savage Alpine High Trail construction. The visitor experience would be affected by construction of the Savage Alpine High Trail depending on where the work is being done at that time. Although the road corridor has some level of constant activity from vehicles and pedestrians, the alpine area above is relatively quiet. The eastern limb of the Interpretive Trail would be completed first so that visitors to the new Rest Stop would have an opportunity to stretch out from their vehicle and visit the former Savage Camp and the confluence of Jenny Creek with the Savage River. During construction of the Roadside Path visitors would still be able to use the park road shoulder. Noise and visual impacts in the construction areas would also temporarily inconvenience park visitors at the Rest Stop, Campground, and at the Savage Cabin during the first summer, though trail construction hours would be limited to 7am to 7pm. Visitors would not be able to use two of the three Group Sites at the Campground for two years because they would be occupied by the Trails crews. On average this would displace one or two visitor groups on 4 nights per summer month, although they could split up and use standard campsites. This action would have a temporary minor adverse effect on recreation opportunities.

The finished trails would provide many connections to new recreational opportunities in the Savage area, both for the 6,000-10,000 campers annually staying at the Savage Campground, as well as for the 50,000 visitors per year expected to use the Savage Rest Stop and Interpretive Trail and Savage Alpine High Trail system. Most of the new trail segments in this alternative have views of Mt. McKinley, when the clouds permit. The Interpretive Trail brings visitors to the Savage Camp for the first time since 1939 and also to the varied birdlife of the Jenny Creek and Savage River riparian areas. The Alpine High Trail would lead visitors into a variety of habitats, including an open spruce forest along the creek edge, a rocky floodplain, and a lengthy alpine trail into Dall Sheep habitat with open views and a profusion of wildflowers. In a way similar to the Alpine Trail above the Eielson Visitor Center, the full Alpine Trail length of 4.5 miles from the Savage East parking lot to the Savage Rest Stop would provide a significant time and space immersion into the Denali landscape and would be an important link in the recreational opportunity matrix along the unrestricted section of the park road. The Roadside Path and Connector Trail would improve visitor safety by providing pedestrian connections between the facilities in the Campground area without pedestrians having to use the shoulder of the park road.

The terrain would prevent most of the Savage Alpine High Trail from being built to ADA accessible standards. The other trails proposed in this alternative and the lower 0.7 miles of the

Savage Alpine High Trail would, however, be made to ADA standards and would make a significant expansion in the park's accessible trail network.

Cumulative Effects: The visitor use and recreation opportunities along the eastern park road corridor in Denali National Park have been emphasized in recent years by the expansion of visitor centers and trails. The proposed projects would continue to improved recreational opportunities along the unrestricted section of the park road corridor. Cumulatively, the actions in the Savage area have had a moderate beneficial impact on visitor use and recreation, and this alternative would be a moderate beneficial contributor to that impact.

Conclusion: The construction of additional trails in the Savage area would have a temporary minor adverse impact to visitor use and the recreational opportunities during construction, but all of these trail projects are considered to result in a moderate beneficial long term impact to park visitor experiences and recreational opportunities. These impacts would not result in an impairment of park resources that fulfill specific purposes identified in legislation establishing the park or key to the natural or cultural integrity of the park.

Park Management

Staffing needs will increase with the additional 5.5 miles of trails to maintain. The Savage Campground was contracted to the park's major concessioner to manage in an effort to save money and each additional facility would cost money to maintain.

Cumulative Effects: Past, present and reasonably foreseeable future actions and their impacts are described under Alternative 1 (No Action-Alternative). In addition to facilities already maintained, new facilities approved or under construction would include the new Savage Rest Stop, SSTs at the Savage Cabin, and the Phase II Trail above Savage Rock. Cumulatively, the actions in the Savage area have had a moderate impact on park management and this alternative would contribute a moderate impact.

Conclusion: This alternative would add more facilities to those already in the Savage area requiring maintenance and would have a moderate impact on park operations.

Alternative 3 – Construction of Savage Alpine Meadow Trail and other Area Trails – NPS Preferred

Vegetation, Wetlands and Soils

Under this alternative approximately 1.4 acres of white spruce-mixed forest community would be removed for the construction of the western limb of the Interpretive Trail, the Connector Trail, the Roadside Path, the Rest Stop Sidewalk, and the ADA section of the Alpine Meadow Trail along 12.4 Mile Creek. Most of the trail segments would be routed so as to miss as many trees as possible. Approximately 1.0 acres of low to tall shrub scrub would be removed to construct Section C of the Alpine High Trail, 1,500 feet of the Interpretive Trail and 600 feet of the Savage Rock Loop, and 0.4 acres of dry alpine tundra and 0.4 acres of alpine meadow tundra would be removed to construct the upper sections of the Alpine High Trail. The limited vegetation removal from this alternative would have a minor impact on the thousands of acres of

taiga forest, shrub scrub, and alpine vegetation resources near the paved section of the park road corridor.

Approximately 0.65 acres of wetlands would be affected by the construction of Section C of the Alpine Trail on palustrine scrub-shrub, broad-leaved deciduous, saturated soil wetlands adjacent to the 12.4 Mile Creek. These wetlands are jurisdictional wetlands and construction will require a Clean Water Act, Section 404 fill permit from the U.S Army Corps of Engineers. Another 0.12 acres of palustrine scrub-shrub, broad-leaved deciduous, saturated soil wetlands and 0.28 acres of palustrine forested, needle-leaf, saturated soil wetlands would be affected by the construction of 1,500 feet of the Interpretive Trail and 500 feet of the western end of the Roadside Path. These wetlands are not jurisdictional because they are not connected to flowing water. These types of wetlands are common locally and regionally and constructing a narrow trail would not affect the flood retention, habitat, or other values received from wetlands.

A few inches of organic soil attached to the vegetation would be removed from the trail paths. The soil types are common under white spruce-mixed forests, scrub shrub and in alpine areas. The soils would be saved for use in the reclamation of areas around the new SSTs at the Savage Cabin and at the new Rest Stop, or for filling in low spots during the cut-and fill method for the Savage Alpine Trail. The soils in the alpine meadow section are often wet and plastic and the trail must be reinforced with a stabilizing rock structure to keep the trail in place. The soils removed in the alpine meadow during construction may not be useful for trail building and will have to be removed offsite to a previously disturbed area.

Cumulative Effects: Visitor facility development in the Savage area has removed approximately 28.5 acres of vegetation and soils. Past, present and reasonably foreseeable future actions and their impacts are described under Alternative 1 (No Action-Alternative). Cumulatively, these actions have had a moderate adverse impact on vegetation and soils. The impacts from this alternative would destroy about 3.1 acres of vegetation and soils, increasing the impacts by about 11 % in the project area.

About 11 acres of wetlands have been impacted by previous road, rest stop, and campground construction in the Savage area. The Savage area of the park contains hundreds to thousands of acres of similar jurisdictional and non-jurisdictional wetlands. This project would further impact 1.1 acre of wetlands in the surrounding area, which would be a 9% increase in wetland area affected. Because the area of wetlands adversely impacted would be small and the trails would be constructed so as to not block water flow, there would be only a minor increase in the loss of wetlands or wetlands function in the Savage area of the park.

The implementation of Alternative 3 would result in additional moderate adverse impacts on vegetation and wetland resources; therefore, the total cumulative adverse impact on vegetation, wetland resources and soils would continue to be moderate. These impacts would not result in significant cumulative impacts on vegetation wetlands and soils.

Conclusion: The clearing of trees, shrubs, other vegetation, and the disturbance to soil on about 3.2 acres would result in a moderate adverse impact to vegetation and soil. The development of trails on about 1.1 acres of palustrine scrub-shrub, broad-leaved deciduous, saturated soil wetlands and

palustrine forested, needle-leaf, saturated soil wetlands would result in a minor net loss of wetlands and wetlands functions in the Savage area. These impacts would not result in an impairment of park resources that fulfill specific purposes identified in legislation establishing the park or key to the natural or cultural integrity of the park.

Wildlife and Habitat

Wildlife habitat for large mammals, small mammals, and birds would be reduced by approximately 1.4 acres of white spruce-mixed forest community for the construction of sections of the Interpretive Trail, the Connector Trail, the Roadside Path, the Rest Stop Sidewalk, and the ADA section of the Alpine High Trail along 12.4 Mile Creek. Approximately 1.0 acres of low to tall shrub scrub would be removed to construct Section C of the Alpine Trail, 1,500 feet of the Interpretive Trail and 600 feet of the Savage Rock Loop, and 0.4 acres of dry alpine tundra and 0.4 acres of alpine meadow tundra would be removed to construct the upper sections of the Alpine Meadow Trail. During the construction period noise and human activity would disturb wildlife and cause them to be temporarily displaced from the affected and adjacent areas. There are no known raptor nests along the proposed alignments. Both small mammals and birds would find thousands of acres of similar habitat adjacent to the trail acreage lost.

Cumulative Effects: Visitor facility development in the Savage area has removed approximately 28.5 acres of vegetation and soils. Past, present and reasonably foreseeable future actions and their impacts are described under Alternative 1 (No Action-Alternative). Cumulatively, these actions have had a moderate adverse impact on wildlife habitat. Because thousands of acres of similar habitat exist in the vicinity, there exists a moderate cumulative impact on wildlife and habitat in the park entrance area and this alternative would be a minor contributor to that impact.

The implementation of Alternative 3 would result in additional minor adverse impacts on wildlife habitat; therefore, the total cumulative adverse impact on wildlife would continue to be moderate. These impacts would not result in significant cumulative impacts on wildlife.

Conclusion: The clearing of trees, shrubs, and other vegetation on about 3.2 acres would result in a minor adverse impact to the area wildlife habitat. These impacts would not result in an impairment of park resources that fulfill specific purposes identified in legislation establishing the park or key to the natural or cultural integrity of the park.

Aquatic Resources and Water Quality

Section C of the Alpine Trail would initially be constructed in 2010 as a route marked with cairns within the unvegetated active areas of the floodplain of 12.4 Mile Creek. The trail would eventually be built on the bench above the floodplain. The stones for the cairns would be locally gathered and would not block water flow or change erosional patterns. The floods during spring snow-melt or during intense rainstorms would likely scatter some of the cairns, so that they would have to be maintained at least annually. The pedestrian use of the floodplain section of the trail would loosen some muds and sands along the water's edge, adding a small amount of turbidity to the stream. This use of the floodplain would end about a mile upstream of where it enters Jenny Creek and the larger particles would have settled out by then. The stream is subject to wide variations in discharge, and the larger discharges regularly mobilize the loose floodplain sand and muds. This trail section would have a negligible to minor adverse impact on water quality in the stream floodplain values, and a

negligible impact on floodwater retention and aquatic resources, and would have a minor beneficial impact on recreational use of floodplains.

Cumulative Effects: Visitor facility development affecting water quality in the Savage area is restricted to the accessible Inner Savage River Trail and the park road bridges over the Savage River and 12.4 Mile Creek. The Savage River footbridge was constructed above the floodplain. Cumulatively, these actions have had a minor adverse impact on aquatic resources and water quality. Because water quality is generally unaffected by development in almost all of the Savage area, there exists a minor cumulative impact on water quality in the Savage area and this alternative would be a minor contributor to that impact.

The implementation of Alternative 3 would result in additional minor adverse impacts on aquatic resources and water quality; therefore, the total cumulative adverse impact on aquatic resources would continue to be minor. These impacts would not result in significant cumulative impacts on aquatic resources.

Conclusion: The use of 7,000 feet of the 12.4 Mile Creek floodplain as a trail until a bench trail can be constructed would result in a minor adverse impact to the area's aquatic resources and water quality. These impacts would not result in an impairment of park resources that fulfill specific purposes identified in legislation establishing the park or key to the natural or cultural integrity of the park.

Wilderness Resource Values

Most of the Savage Rock Loop and Savage Alpine Meadow Trail would be constructed in designated wilderness. There would be temporary impacts to the visitor's expectation of solitude over the course of two to three summers during construction, which would be especially noticeable where most of the trail is out of sight and sound of roadside activities. There would also be an impact on the opportunity for the expectation of primitive recreation when the trail is constructed and maintained. The existence of popular backcountry entry areas at the Savage Bridge and Campground have encouraged visitors for decades to visit this high alpine area and the use is likely going to increase with the completion of the Savage Rest Stop. The formalizing of a Savage Alpine Meadow Trail and the Savage Rock Loop would be beneficial by providing a maintained route that will keep most of the traffic on one path and partially eliminating the accelerating advance of a network of social trails and inherent resource damage, especially on the slopes above the bridge.

Cumulative Effects: The wilderness resources along the eastern park road corridor in Denali National Park have been affected by a continuous low level of visitation on most of the landscape, although in some areas, such as above the Phase II Trail, there are clear social trails developing from increased and concentrated use. The proposed projects would improve access into wilderness and reduce anticipated future resource damage, but would also invite an increased level of use that may spill over into off-trail areas and create additional resource damage. Cumulatively, the actions in the Savage area have had a minor adverse impact on wilderness resource values. Because the Savage area retains most of its wilderness character and is itself surrounded by tens of thousands of acres with no developments, there exists a minor

cumulative impact on wilderness in the Savage area and this alternative would be a minor contributor to that impact.

Conclusion: The construction of about 3.2 miles of pedestrian trail in wilderness would result in a minor adverse impact to the area wilderness resource values. These impacts would not result in an impairment of park resources that fulfill specific purposes identified in legislation establishing the park or key to the natural or cultural integrity of the park.

Cultural Resources

The Interpretive Trail would provide a maintained route to the known cultural resource sites at the former concessioner Savage Camp, dating from 1922 to 1939. The Roadside Path could expand visitation to the Savage Cabin by creating a safer pedestrian path from the Savage Campground and from the new Savage Rest Stop. These facilities will expand opportunities to highlight the human history of the area. This would have a beneficial effect on cultural resources. Monitoring and mitigation standards would be established to limit any damage to the cultural information present at the sites. No cultural resources are known from the Savage Alpine Meadow Trail alignment.

Most of the Alpine Meadow Trail would be either not visible from the park road or distant enough from the park road to be only marginally visible. The top end of the Eielson Alpine Trail is about 0.5 mile from the Eielson Visitor Center. The first visible part of the Savage Alpine Meadow Trail would be about 0.75 miles from the park road and the high point would be 0.9 miles from the park road.

Should presently unidentified cultural resources be discovered during the project, the superintendent and cultural resources manager would be notified immediately.

Cumulative Effects: The Savage Cabin is likely eligible for the National Register, though it was moved from its original 1925 site. The park road is also likely eligible, though the paved section does not have the integrity of feeling of primitiveness that much of the rest of the road retains. The Savage Camp site has a history that can be told on site, though the facilities have been removed over time. All known archeological and historic sites present in the Savage area would remain intact. Cumulatively, the actions in the Savage area have had a moderate adverse impact on cultural resources and this alternative would contribute a minor beneficial impact.

Conclusion: The proposed projects would not adversely impact known cultural resources. The hillside scar of the trail itself and visible use of the trail would have a minor impact on the wilderness character of the landscape of the park road corridor. There would be a minor positive impact from education about cultural resources. The project would not result in an impairment of park cultural resources that fulfill specific purposes identified in legislation establishing the park and effects would be consistent with the mandates of the NHPA.

Visitor Use and Recreation

There would be a temporary impact to recreational opportunities for Savage area visitors from the noise and displacement from construction activities along the trails proposed in this alternative. The impact would last for one full summer for construction in the Campground/Rest Stop area and could last for three full summers for the Savage Alpine Meadow Trail construction. The visitor experience would be affected by construction of the Savage Alpine

Meadow Trail depending on where the work is being done at that time. Although the road corridor has some level of constant activity from vehicles and pedestrians, the alpine area above is relatively quiet. The eastern limb of the Interpretive Trail would be completed first so that visitors to the new Rest Stop would have an opportunity to stretch out from their vehicle and visit the former Savage Camp and the confluence of Jenny Creek with the Savage River. During construction of the Roadside Path visitors would still be able to use the park road shoulder. Noise and visual impacts in the construction areas would also temporarily inconvenience park visitors at the Rest Stop, Campground, and at the Savage Cabin during the first summer, though trail construction hours would be limited to 7am to 7pm. Visitors would not be able to use two of the three Group Sites at the Campground for two years because they would be occupied by the Trails crews. On average this would displace one or two visitor groups on 4 nights per summer month, although they could split up and use standard campsites. This action would have a temporary minor adverse effect on recreation opportunities.

The finished trails would provide many connections to new recreational opportunities in the Savage area, both for the 6,000-10,000 campers annually staying at the Savage Campground, as well as for the 50,000 visitors per year expected to use the Savage Rest Stop and Interpretive Trail and Savage Alpine Meadow Trail system. Most of the new trail segments in this alternative have views of Mt. McKinley, when the clouds permit. The Interpretive Trail brings visitors to the Savage Camp for the first time since 1939 and also to the varied birdlife of the Jenny Creek and Savage River riparian areas. The Alpine Meadow Trail will take visitors into a variety of habitats, including an open spruce forest along the creek edge, a rocky floodplain, an alpine trail with open views, and a profusion of wildflowers, both in dry and moist habitats. In a way similar to the Alpine Trail above the Eielson Visitor Center, the full Alpine Trail length of 3.9 miles from the Savage East parking lot to the Savage Rest Stop would provide a significant time and space immersion into the Denali landscape and would be an important link in the recreational opportunity matrix along the unrestricted section of the park road. The Roadside Path and Connector Trail would improve visitor safety by providing pedestrian connections between the facilities in the Campground area without pedestrians having to use the shoulder of the park road.

The terrain would prevent most of the Savage Alpine Meadow Trail from being built to accessible standards. The other trails proposed in this alternative and the lower 0.7 miles of the Savage Alpine Meadow Trail would, however, be made to ADA standards and would make a significant expansion in the park's accessible trail network.

Cumulative Effects: The visitor use and recreation opportunities along the eastern park road corridor in Denali National Park have been emphasized in recent years by the expansion of visitor centers and trails. The proposed projects would continue to improved recreational opportunities along the unrestricted section of the park road corridor. Cumulatively, the actions in the Savage area have had a moderate beneficial impact on visitor use and recreation, and this alternative would be a moderate beneficial contributor to that impact.

Conclusion: The construction of additional trails in the Savage area would have a temporary minor adverse impact to visitor use and the recreational opportunities during construction, but all of these trail projects are considered to result in a moderate beneficial long term impact to park visitor

experiences and recreational opportunities. These impacts would not result in an impairment of park resources or values that fulfill specific purposes identified in legislation establishing the park or key to the natural or cultural integrity of the park.

Park Management

Staffing needs would increase with the additional 4.9 miles of trails to maintain. The Savage Campground was contracted to the park's major concessioner to manage in an effort to save money and each additional facility would cost money to maintain.

Cumulative Effects: Past, present and reasonably foreseeable future actions and their impacts are described under Alternative 1 (No Action-Alternative). In addition to facilities already maintained, new facilities approved or under construction would include the new Savage Rest Stop, SSTs at the Savage Cabin, and the Phase II Trail above Savage Rock. Cumulatively, the actions in the Savage area have had a moderate impact on park management and this alternative would contribute a moderate impact.

Conclusion: This alternative would add more facilities to those already in the Savage area requiring maintenance and would have a moderate impact on park operations.

CONSULTATION AND COORDINATION

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APPENDIX A
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). It summarizes the evaluation of potential restrictions to subsistence activities that could result from the construction of new trails in the Savage River/Savage Campground area of Denali National Park and Preserve.

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."

“Subsistence uses by local residents shall be permitted in the additions to the park where such uses are traditional in accordance with the provisions in title VIII.”

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

The NPS proposes to construct 5 ½ miles of new trails in the area near the park road corridor between the new Savage Rest Stop and the Savage River. Alternatives 1, 2 and 3 are described in detail in the environmental assessment.

IV. AFFECTED ENVIRONMENT

Denali National Park and Preserve is located in the interior and south-central regions of Alaska. Federal subsistence uses within Denali National Park and Preserve are permitted in accordance with ANILCA. Section 202(3)(a) of ANILCA allows local residents to engage in subsistence uses in the ANILCA additions to the park where such uses are traditional in accordance with the provisions in Title VIII. Lands within former Mount McKinley National Park are closed to subsistence uses.

Section 803 of ANILCA defines subsistence uses as: “the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of

non-edible by-products of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade.”

In accordance with regulations in 36 CFR Part 13, residents of the NPS designated resident zone communities of Telida, Nikolai, Lake Minchumina, Cantwell, and people who maintain their primary permanent residence inside the boundaries of the park are qualified to engage in Federal subsistence activities in Denali National Park. Local rural residents who do not live in these communities or in the park, but who have customarily and traditionally engaged in subsistence activities within the park may continue to do so with a subsistence use permit issued by the park superintendent. NPS qualified local rural residents are allowed to engage in Federal subsistence activities in Denali National Preserve pursuant to ANILCA Section 203. A regional population of approximately 300 eligible local rural residents qualifies for subsistence use of park resources.

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) has a resident population that actively engages in subsistence activities such as moose and caribou hunting, trapping, and harvest firewood in the ANILCA additions of the park.

Resources utilized by NPS qualified subsistence users in Denali National Park and Preserve include caribou, moose, brown and black bears, beaver, snowshoe hare, fox, lynx, mink, wolf, wolverine, ptarmigan, waterfowl, salmon, trout, grayling, pike, berries, wild edible plants, plant materials and wood.

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 are important subsistence species.

The NPS recognizes that patterns of subsistence use vary from time to time and from place to place depending on the availability of wildlife and other renewable natural resources. A subsistence harvest in any given year may vary considerably from previous years because of such factors as weather, migration patterns and natural population cycles.

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:

Provisions of ANILCA, and Federal and State regulations provide protection for fish and wildlife populations within Denali National Park and Preserve.

Alternative 1 (No Action) – No new trails would be constructed to connect facilities in the Savage Campground area and no new Savage Alpine High Trail would be constructed.

Maintaining the status quo would not significantly reduce or redistribute populations of fish and wildlife used for subsistence or result in a significant loss of habitat.

Alternative 2 – About 5.5 miles of new trails would be constructed in the Savage area, including the Savage Camp Interpretive Trail, the Savage Campground to Rest Stop Connector Trail, the Savage Rest Stop to Park Road Sidewalk, the Savage Roadside Path, the Savage Rock Loop and the Savage Alpine High Trail. Expanding the trail system in the Savage area would have a minor impact on wildlife habitat and would have a negligible impact on subsistence resources.

The proposed action should not significantly affect wildlife populations. The proposed action is not expected to result in any measurable reduction in or redistribution of wildlife or other subsistence resources. No change in the availability of subsistence resources is anticipated as a result of the implementation of this proposed action. The Savage area is within the former Mount McKinley National Park which is closed to subsistence uses.

Alternative 3 (Proposed Action) – About 4.9 miles of new trails would be constructed in the Savage area, including the Savage Camp Interpretive Trail, the Savage Campground to Rest Stop Connector Trail, the Savage Rest Stop to Park Road Sidewalk, the Savage Roadside Path, the Savage Rock Loop and the Savage Alpine Meadow Trail. Expanding the trail system in the Savage area would have a minor impact on wildlife habitat and would have a negligible impact on subsistence resources.

The proposed action should not significantly affect wildlife populations. The proposed action is not expected to result in any measurable reduction in or redistribution of wildlife or other subsistence resources. No change in the availability of subsistence resources is anticipated as a result of the implementation of this proposed action. The Savage area is within the former Mount McKinley National Park which is closed to subsistence uses.

Restriction of Access:

Alternative 1 (No Action) - Maintaining the status quo would not significantly limit or restrict access to subsistence resources in Denali National Park and Preserve.

Alternative 2 - The alternative will not change any aspect of access by subsistence users to natural resources within the park or preserve. The Savage area is within the former Mount McKinley National Park which is closed to subsistence uses.

Alternative 3 (Proposed Action) - The proposed action will not change any aspect of access by subsistence users to natural resources within the park or preserve. The Savage area is within the former Mount McKinley National Park which is closed to subsistence uses.

Increase in Competition:

Alternative 1 (No Action Alternative) - This alternative would not produce any increase in competition for resources to subsistence users. Maintaining the status quo would not result in increased competition for fish, wildlife or other resources that would significantly impact subsistence users in Denali National Park and Preserve.

Alternative 2 - This alternative would not produce any increase in competition for resources to subsistence users. The proposed action would occur on lands within the former Mount McKinley National Park which is closed to subsistence uses.

Alternative 3 (Proposed Action) - This alternative would not produce any increase in competition for resources to subsistence users. The proposed action would occur on lands within the former Mount McKinley National Park which is closed to subsistence uses.

VI. AVAILABILITY OF OTHER LANDS

Local residents have access to other Federal, public lands within the region, and the proposed action would not prevent any known current or future subsistence use. The preferred alternative is consistent with the mandates of ANILCA, including Title VIII, and the NPS Organic Act.

VII. ALTERNATIVES CONSIDERED

Alternatives considered during this analysis focused on lands within Denali National Park and Preserve. Subsistence users utilize other Federal public lands within the region.

VIII. FINDINGS

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

APPENDIX B

DENALI NATIONAL PARK AND PRESERVE

MINIMUM REQUIREMENTS DECISION GUIDE

WORKSHEETS

“. . . except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act...”

– the Wilderness Act, 1964

Project Information:

Title:

Proposed by/Principle Investigator:

Step 1: Determine if any administrative action is necessary.

Description: Briefly describe the situation that may prompt action.

Explain: The National Park Service (NPS) is proposing to construct and maintain the Savage Alpine Trail, Savage Camp Interpretive Trail and other short trails improving the connections between the Savage River, Savage Campground, Savage Cabin and the new Savage Rest Stop along the mile 12 to mile 15 section of the park road in the entrance area of Denali National Park and Preserve (Denali). The purpose of the new trails would be to provide additional recreational and interpretive opportunities near the non-restricted part of the road corridor of Denali, to provide connections between heavily used activity areas within the Savage Campground area, to mitigate resource damage from past and present hiker use in the area, and to lessen safety concerns from pedestrian use of the park road shoulder. An additional objective is to provide additional trail mileage that is compliant with ADA (Americans with Disabilities Act), where those trails do not conflict with other park resources values.

A. Valid Existing Rights or Special Provisions of Wilderness Legislation

Are there valid existing rights or is there a special provision in wilderness legislation (the Wilderness Act of 1964 or subsequent wilderness laws) that allows consideration of action involving Section 4(c) uses? Cite law and section.

Explain: N/A

B. Describe Requirements of Other Legislation

Do other laws require action?

Explain: N/A

C. Describe Other Guidance

Does taking action conform to and implement relevant standards and guidelines and direction contained in agency policy, unit and wilderness management plans, species recovery plans, tribal government agreements, state and local government and interagency

Explain: A trail and route system from the Savage River area to the Savage Campground was identified in the 1997 Entrance Area and Road Corridor Development Concept Plan/Environmental Impact Statement (DCP/EIS). Phase I of this project has been constructed to the top of Savage Rock. Phase II would continue the trail further uphill to the top of the next ridge system. Phase III of the alignment was envisioned as simply a route to provide increased recreational opportunities in the high alpine areas east of Savage River and as a connection to the Savage Campground. It was also proposed as an alternative to trail development on Primrose Ridge due to difficult environmental conditions in that area for trail construction and that the Primrose area was adjacent to the portion of the park road corridor where there are summer vehicle restrictions. The hiking opportunity was proposed as a marked route with minimal vegetation and soil impacts that would take visitors into alpine terrain and out of sight and sound of the park road on an extended day hike. Subsequent analysis has shown that simply marking a route may cause greater resource impacts and create a less sustainable travel way than providing some basic trail tread construction. A constructed trail rather than simply marking a route is now proposed in lieu of the route suggested in the 1997 plan.

D. Describe Options Outside of Wilderness

Can the necessary information be obtained or the situation resolved by an activity outside of wilderness?

Explain: Park planning documents have established a management objective to provide access into the alpine environment away from the park road in the area of Savage River. There are not any high alpine areas in the park and outside of designated wilderness within the area.

Step 1 Decision: Is any administrative action necessary?

Describe How Resolving the Situation is related to the Purpose of the Act

Yes: x **No:** **More information needed:**

The proposed action is appropriate within wilderness and is necessary to meet the objectives of a previously approved park planning document.

Step 2: Determine the minimum activity.

Description of Alternatives

For each alternative, describe what methods and techniques will be used, when the activity will take place, where the activity will take place, what mitigation measures are necessary, and the general effects to the wilderness resource and character.

Alternative # 1

Description:

Alternative 1 - Existing Conditions (No Action Alternative)

Phase III of the Savage Alpine Trail would not be built beyond the Phase II Trail planned above Savage Rock. Visitors hiking above that point or over toward the Savage Campground would find their own path to ascend or descend. No roadside path would be built from the Savage Cabin to the new Rest Stop. Pedestrians would continue to walk along the road shoulder. No connector trail would be built between the Savage Campground and the new Rest Stop and no pedestrian path would be built alongside the Rest Stop entrance road.

(See Environmental Assessment for further details of this alternative)

Effects:

Wilderness Character

The Phase III portion of the route would generally continue to exhibit a high quality level of wilderness character due to the lack of formal trail construction. Visitors would find their own opportunities for solitude and discovery and be required to demonstrate a high level of

personal responsibility for route finding. Characteristics such as naturalness or lack of development could be degraded by the likely development of informal trails beyond the end of the Phase II work over time. Given the openness of the landscape, these trails could also affect the wilderness viewshed that other visitors enjoy from the park road.

Alternative # <u> 2 </u>

Description:

Alternative 2 – Construction of Savage Area Trails including a High Alpine Trail

In addition to the trails described in the Actions Common section of the Environmental Assessment, under this alternative the NPS would construct and maintain a Savage High Alpine Trail. Gravel to build the trails will either be found onsite through cut or fill methods or will be purchased from outside the park sources.

Approximately 1000 feet of the Savage High Alpine Trail would be constructed to accessible ADA standards for width, slope and compaction inside of designated wilderness, with approximately 2000 feet to the same standard outside of wilderness.

(See Environmental Assessment for further details of this alternative)

Effects:

Wilderness Character

The impact will result primarily from increased use of the area, concentration of that use, the visibility of the trail and hikers across open slopes, the wide construction standards of the accessible trail section, the presence of motorized equipment required to initially construct the ADA section, and the long term impacts of motorized equipment required to maintain the ADA portion of the trail.

In the context of wilderness in Denali NP & P, Phase III trail construction along this alignment could have minor impacts on aspects of wilderness character such as “undeveloped” and “outstanding opportunities for solitude” if done in a minimal manner. Visitors would clearly be walking on a constructed surface in wilderness, particularly in the accessible section of the trail, but the impact of the structure could be minimized. Impacts to solitude will occur because the presence of a formal trail will attract use to an area of formerly low visitation and the trail corridor will concentrate that use while increasing contacts between hiking parties. However, this alignment does present many opportunities for avoiding the sight and sounds of the park road. Minor negative impacts to other character aspects such as “untrammled” would result from the direct effect of trail construction and the visibility and longterm presence of a significant trail facility, particularly in the ADA section of trail. Minor impacts to naturalness of the area are likely to occur due to increased disturbance of sheep from additional hikers, and vegetation impacts from construction or introduction of exotics in the future.

Even though this trail alignment is the longest one proposed, it does provide some mitigation to these minor impacts because it reduces the visibility of the overall route by avoiding a midslope crossing of the open meadow. It also utilizes the upper basin of the eastern creek drainage for the majority of the trail which is not in the viewshed of the park road. This alignment will be the most effective at containing future informal trail development along the high ridge lines east of Savage River, and it reduces the amount of new trail that would need to be constructed to develop the Phase IV connecting trail down to the footbridge over the Savage River.

Visitor Experience

This alternative provides visitors with an opportunity to get out of sight and sound of the park road and experience the high alpine ridge systems in the area. This was one of the goals for the route when it was proposed in the 1997 DCP/EIS. The visitor opportunity objectives stated in that document could be fully met by this alternative.

Alternative # <u> 3 </u>

Description:

Alternative 3 – Construction of Savage Area Trails including an Alpine Meadow Trail

In addition to the trails described in the Actions Common section, under this alternative the NPS would construct and maintain a Savage Alpine Meadow Trail. This alignment would cross the alpine meadow (see Environmental Assessment for details) and then continue on a high contour into the eastern drainage. The trail would then follow the drainage downstream to the park road as described in Alternative 2. The Gravel to build the trails will either be found onsite through cut and fill methods or will be purchased from outside the park sources.

Approximately 1000 feet of the Savage Alpine Meadow Trail would be constructed to accessible ADA standards for width, slope and compaction inside of designated wilderness, with approximately 2000 feet to the same standard outside of wilderness.

(See Environmental Assessment for further details of this alternative)

Effects:

Wilderness Character

The impact will result primarily from increased use of the area, concentration of that use, the visibility of the trail and hikers across open slopes, the wide construction standards of the accessible trail section, the presence of motorized equipment required to initially construct the ADA section, and the long term impacts of motorized equipment required to maintain the ADA portion of the trail.

In the context of wilderness in Denali NP & P, Phase III trail construction along this alignment could have minor impacts on aspects of wilderness character such as “undeveloped” and “outstanding opportunities for solitude” if done in a minimal manner. Visitors would clearly be walking on a constructed surface in wilderness, particularly in the

accessible section of the trail, but the impact of the structure could be minimized. Impacts to solitude will occur because the presence of a formal trail will attract use to an area of formerly low visitation and the trail corridor will concentrate that use while increasing contacts between hiking parties. Minor negative impacts to other character aspects such as “untrammled” would result from the direct effect of trail construction and the visibility and longterm presence of a significant trail facility, particularly in the ADA section of trail. Minor impacts to naturalness of the area are likely to occur due to increased disturbance of sheep from additional hikers, and vegetation impacts from construction or introduction of exotics in the future.

The proposed alignment will create a trail that is visible from the park road across the open meadow and hillsides that faces the park road. This meadow alignment will not be as effective at containing future informal trail development along the upper ridgelines east of Savage River as Alternative 2. Some visitors will continue to seek the high ridges and cause informal trail impacts away from the maintained trail. This trail routing does not provide any of the trail tread that might eventually be needed to implement the Phase IV connecting trail down to the footbridge over the Savage River.

Visitor Experience

Visitors would be out of sight and sound of the park road for a short distance along this trail while it is in the headwaters of the eastern drainage. They would be able to see some of the drier alpine ridge environment as the trail continues on a high contour into the eastern drainage. It will minimally achieve the visitor opportunity objectives of the 1997 DCP/EIS.

Step 2 Decision: What is the Minimum Activity and how is it justified relative to the Purpose of the Act?

The selected alternative is:

Either Alternative 2 or Alternative 3 with the mitigations and modifications described below represents the minimum requirement for meeting the stated objectives of providing trail based visitor access into alpine terrain as well as additional ADA compliant trail mileage within the park.

These alternatives are consistent with the long range plans, visitor experience vision, and impact levels described in the 1997 Entrance Area and Road Corridor Development Concept Plan/Environmental Impact Statement (DCP/EIS). The Alternative 2 routing provides the most effective alignment for containing emerging social trail development along the upper ridgelines east of Savage River. It establishes some of the trail necessary to construct the Phase IV trail connection north to the Savage River footbridge. It minimizes the amount of trail visible to the park road by maximizing the amount of trail mileage that is in the headwaters of the eastern stream drainage of the proposed trail corridor. The Alternative 2 alignment has the potential to provide a higher quality wilderness experience for visitors because it takes them out of view of

the park road for the majority of the trip and it traverses more distance in real alpine terrain. The total trail mileage is greater, but the visitor benefits are higher and visibility is lower than the other alternatives.

Alternative 3 has some of the same advantages of Alternative 2. However, it may not be as effective at containing informal trail development and it does not establish as much trail that could be used for Phase IV of the trail system in the Savage River area. The visitor experience meets only the minimum goals of previous planning documents.

Describe any mitigation, monitoring, or reporting requirements:

Trail Width: Regardless of the alternative selection, trail width must be kept to a minimum whenever possible to reduce the visibility of the trail alignment and its associated impacts to the wilderness viewshed of the park road and the surrounding wilderness. The alpine and non ADA sections of the trail should be designed for single file hiking. Trail widths greater than 18” are simply not necessary for single file travel and only create unnecessary impacts. This standard was used effectively on the Eielson Alpine Trail, another trail closely associated with frontcountry activity, to minimize the viewshed impacts from what could have been a very visible trail. This trail provides a good “minimum tool” design model for the Savage Alpine Trail. Wider width will create larger and steeper backslopes that will be more visible initially and are unlikely to ever realistically revegetate in the alpine environment. Minimum widths are also consistent with the original vision of a low impact, wilderness trail. Width greater than 18” should only be used in areas of extreme side hill steepness or very exposed slopes where the height of the backslope could force users to feel unstable.

Eliminate ADA trail within Wilderness: Construction of 1000’ up to 6’ wide of highly compacted, ADA compliant trail within designated wilderness will require extensive use of motorized equipment for initial construction and long term maintenance. The additional trail distance within wilderness does not significantly increase visitor opportunities in the case of this trail, so the justification for the added impact as compared to the benefits provided is weak in the context of wilderness requirements. There is no unique or special resource that will be reached with the additional distance unlike other ADA trails that have been constructed in wilderness at Denali NP & P such as the northern end of the Triple Lake which accessed an important historical site. The proposed 6’ width is twice as wide as any ADA trail that has been constructed to date in wilderness at Denali NP & P and is much wider than necessary to comply with ADA standards. When an ADA trail is to be constructed in wilderness, trail width should be held to 36” which is the standard used on other ADA wilderness trail sections within the park. Use of a narrower but still adequate standard at the point the trail crosses into wilderness helps communicate fundamental principles of wilderness management such as restraint and the use of the minimum amount of impact required to accomplish a goal. There are a variety of ways to accommodate passing without construction to a full 6’ throughout the trail.

Please check any Wilderness Act Section 4(c) uses approved in this alternative:

mechanical transport

landing of aircraft

motorized equipment

temporary road

motor vehicles

structure or installation

motorboats

<u>Approvals</u>	Signature	Name	Position	Date
Prepared by:	/s/ Joe Van Horn	Joe Van Horn	Wilderness Program Coordinator	
Approved:		Paul Anderson	Superintendent	

Appendix C – Wetlands Statement of Findings

**STATEMENT OF FINDINGS FOR EXECUTIVE ORDER 11990
*PROTECTION OF WETLANDS***

New Trails in the Savage River Area

Denali National Park and Preserve, Alaska

September 2009

Recommended: _____ Date
Superintendent, Denali National Park and Preserve

Certified for Technical Accuracy and Servicewide Consistency:

Chief, Water Resources Division, Washington Office Date

Approved: _____ Date
Regional Director, Alaska Region

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 constructing new trails in the Savage River area of Denali National Park and Preserve.

The Savage Alpine Trail was identified in the 1997 Entrance Area and Road Corridor Development Concept Plan/Environmental Impact Statement (DCP/EIS) as a new trail for increased recreational opportunities. The Savage Alpine Trail would extend the existing trail starting at Savage Rock, would follow the route of the Upper Savage Trail approved in 2006 and continue along a high contour over to the drainage (12.4 Mile Creek) that flows southward east of the Savage Campground and would then connect to the Campground and new Rest Area. The trail would be 18-30 inches wide and would be up to 2.7 miles in length. Due to the challenging terrain, only 0.7 miles of the southern end of the Savage Alpine Trail would be constructed to be wheelchair accessible and would be built to Americans with Disabilities Act accessible standards. The project would begin during the summer of 2010.

The Savage Camp Interpretive Trail would leave from the short paved trail being constructed as part of the new Savage Rest Stop and would connect to the internal road system of the former concessioner-operated Savage Camp. Other short trails would connect the historic Savage Cabin, Savage Campground, Campground bus stop and the new Rest Stop. The trails would range from 36-72 inches wide and would total 1.5 miles in length. All of these trails would be constructed to be wheelchair accessible and would be built to Americans with Disabilities Act accessible standards. The trail to the top of Savage Rock would be extended by finishing a loop on the north side of the rock back down to the Savage River Trail. The projects would begin during the summer of 2010.

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 portions of the Savage area trails 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 in the field by NPS personnel (Carwile) in May 2007. Of the 3.1 acres that would be newly disturbed by the proposed action, 1.1 acres (Figure A-1) were 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. Of the 3.1 acres that would be newly disturbed, 2.0 acres are upland, as evidenced by the white spruce associations or alpine environments and steep slopes, the lack of hydrologic indicators, and the presence of well-draining soils.

The 0.4 acres of forested and scrub shrub wetlands under the proposed campground area trails are characterized by marginally hydric soils over river alluvium, with poor drainage in the flattest areas near the park road, covered by either punky or gnarled white spruce or dwarf birch, a moderate feather moss cover, and patches of blueberry and other ericaceous shrubs. Vegetation in the forested wetlands is typically dominated by white spruce stunted by the nutrient conditions related to the cold soils (Vioreck et al. 1992). The understory shrub layer consists of dwarf birch (*Betula nana*), both low and tall shrubs of willow (*Salix* spp.), 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. The scrub shrub areas have similar vegetation, but without the spruce and with more birch. The soils and alluvium have built up on the outwash of 12.4 Mile Creek 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 0.7 acres of scrub shrub wetlands located upstream of the forest along the terraces above 12.4 mile creek, where the proposed Savage Alpine Trail will eventually be moved to get it out of the floodplain, are characterized by hydric soils over mountain slope colluvium, with poor drainage, covered by dwarf birch and ericaceous shrubs, a thick feather moss cover, and patches of sphagnum mosses. The soils and colluvium have built up on the piedmont that 12.4 Mile Creek cuts through 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 0.3 acres of palustrine forested, needle-leaved evergreen, saturated wetlands – PF04B, and 0.8 acres of palustrine scrub-shrub broad-leaved deciduous saturated wetlands – PSS1B. 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. 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.

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. A ground water well that supplies water for the Savage Campground is located immediately south of the park road west of the campground entrance and across from the proposed Roadside Path. The wetland section of the Roadside Path, however, ends about 850 feet west of the well. 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.

The wetland types 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 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 new trails, including a creekside section of the Savage Alpine Trail, part of the western end of the Roadside Path connecting the Savage Cabin parking lot with the new Rest Stop and Alpine Trail, and part of the proposed Interpretive Trail that will take people from the new Rest Stop to the Savage River and former Savage Camp. The construction of these new trails would impact a maximum of 1.1 acres of wetlands.

Wetland areas would be used for trail routing because in the case of the Alpine Trail and the Roadside Path there are no feasible upland alternatives within the area of the need for the trails. In the case of the Interpretive Trail, wetland areas would be used because other alignments would put significant amounts of Rest Stop pedestrian traffic either on a long (upland) route to an otherwise close visitor destination or into close quarters with campers in the Campground.

The wetland soils include up to three feet of colluvium over gravelly river alluvium. The construction of the trails would be accomplished by removing the organic layer, adding sheet fabric where necessary, and replacing the organics with clean fill on top of the soils to the depth necessary to construct either a trail that meets ADA specification for the campground area trails or a backcountry trail in the case of the Alpine Trail.

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 Campground area trails would not affect wetlands under the jurisdiction of the Corps (Don Rice, pers. comm.). The wetlands segment of the Alpine Trail, when constructed, would need a Section 404 permit.

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.

Of the 3.1 acres affected by the proposed action, 1.1 acres are classified as wetlands. This SOF commits to 2:1 compensation for the 1.1 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.

It is not clear that any wetlands could be replaced on site.

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 1.1 acres of palustrine forested and scrub shrub wetlands. 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. By restoring a riverine and palustrine wetland 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 PSS1B and PF04B types. The wetlands to be restored at the compensation site are described below as a PSS1Bs/x:R3US1/5 type.

An ONPS-funded project to restore former placer mined areas in Kantishna is scheduled for 2010-2011. A 2.2 acre portion within the park's Slate Creek floodplain has been selected for restoration (Figure C-1) within the scope of this mitigation, for compensation for this Savage Area Trails project. This disturbed site is going to be 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.

Preliminary work has included water and soil sampling and an engineering survey of the existing stream channel, floodplain and upland topography. Discharge measurements will continue to be collected to aid in stream channel design. Soil sampling will assess the geo-chemistry of the upper watershed, and determine the soil's potential for revegetation efforts. Surveys, both cross-

sectional and topographical, have been conducted to supplement site data on the NPS topographic maps. This information will be used to locate and estimate material amounts for use in re-contouring the site and reconstructing the stream channel and floodplain.

The 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. Restoration plans at the upper Slate Creek site include improving aquatic, riparian and upslope habitat conditions in this area of the Slate Creek watershed by reducing bank erosion, stabilizing channel conditions, and restoring a functional floodplain. 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. Tailings from mining (alluvial and slope gravels) will be discharged into the existing channel. Approximately 2,000 cubic yards will be discharged into these areas to close old channels, create a new functional floodplain, and force flow into the new reclaimed channels. Three hundred cubic yards of selected fill, including topsoil and gravel 1" to 3" will be used in fabric encapsulated soil lifts, to be constructed along each bank of the new channel. The mining bypass channel at upper North Fork will be filled with mine tailings. 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 the site will be a functional wetland within 3-5 years after treatment, and will be fully-functioning within 15 years.

ALTERNATIVES CONSIDERED

Alternative 1 describes the existing conditions, No Action, in the Savage area. No additional trails would be constructed in the Savage area but existing trails would be maintained and an already approved trail would be constructed.

Actions Common to Action Alternatives - Under both action alternatives the NPS would construct and maintain the following trails: the Savage Camp Interpretive Trail, the Savage Campground to Rest Stop Connector Trail, the Savage Rest Stop to Park Road Sidewalk, and the Savage Roadside Path. Gravel to build the trails will either be found onsite through cut and fill methods, will come from the Mile 27 Teklanika Pit, or will be purchased from outside the park sources. Most of the trails common to both action alternatives would be constructed to be accessible to ADA standards for width, slope, and compaction.

Alternative 2 - In addition to the trails described in the Actions Common section, under this alternative the NPS would construct and maintain a Savage High Alpine Trail. This 18-30 inch wide trail would be constructed to extend uphill from the approved Phase II Trail that extends above the Savage Rock Trail above the Savage East parking lot. Most of this trail would be built in designated wilderness. The Phase II Trail is slated to extend the Savage Rock Trail to about 3,600 feet elevation, and the Savage High Alpine Trail would follow under a high ridgeline and reach 4,600 feet elevation. Approximately 0.7 miles of the Savage High Alpine Trail would be constructed to ADA standards for accessibility with appropriate widths, slopes, and compaction. This alternative would impact 1.1 acres of wetlands.

Alternative 3 describes the NPS preferred alternative. In addition to the trails described in the Actions Common section, under this alternative the NPS would construct and maintain a Savage Alpine Meadow Trail. This 18-30 inch wide trail would be constructed to extend uphill from the approved Phase II Trail that extends above the Savage Rock Trail above the Savage East parking lot. The Meadow Trail would traverse east and southeastward to climb from the 3,600 feet elevation to about 4,000 feet elevation within the open high bowl of the drainage that crosses the park road at Mile 14. This meadow section of the Alpine Meadow Trail would be about 3,500 feet long and would be fairly steady at a 10-12% grade. The tread would be benched into the slope and most of the material used to shape the tread would be from the cuts used to create the benched trail. Additional larger rocks would be harvested locally to create a porous but stable downhill shoulder to the trail. The trail would be outsloped up to 10% to shed water. Most of this trail would be built in designated wilderness. Approximately 0.7 miles of the Savage Alpine Meadow Trail would be constructed to ADA accessibility standards for width, slope, and compaction. This alternative would impact 1.1 acres of wetlands.

The NPS preferred alternative is **Alternative 3**, which impacts the same wetland acreage as the other action alternative. This alternative better accomplishes the purposes of the project with no additional wetland disturbance. The most important purpose is to provide a variety of expanded recreational and interpretive opportunities for visitors in the entrance area and along the road corridor of the park over the next 15-20 years, while mitigating resource damage and reducing safety concerns from pedestrian use of the road shoulder. None of the impacted wetlands are high value, with either standing water or aquatic resources.

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 1.1 acres of wetlands for the purposes of constructing new trails in the Savage River Area that will provide additional recreational and interpretive opportunities, provide connections between heavily used activity areas within the Savage Campground area, mitigate resource damage from past and present hiker

use in the area, and lessen safety concerns from pedestrian use of the park road shoulder. These trails are needed because of the increased visitation to Denali. 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 Savage Area Trails project. Impacts on the 1.1 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 valley 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*.