

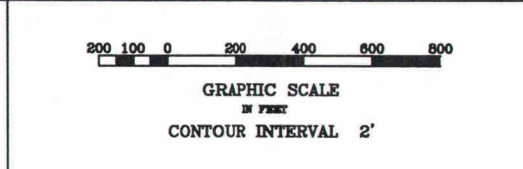
SURVEYED BY: NPS	REVISIONS AND CHECKS:		BY	DATE
	CHECKED / ADDED CLAIM LINES AGREED UPON BY CLAIMANT		J.F.P.	3/95
DATE: 9/86	Inserted Markings Sample Pts from NPS/Stream GPS Autocad File		SV	10/09/01
	NPS Input Markings Sample Pts using Markings hard-copy maps		SV	10/10/01
FLOWN BY: NPAS	Inserted Markings Sample Pts from NPS Autocad File-scanned from hard-copy maps		SV	10/10/01
	NPS Input Stream Sample Pts using Stream hard-copy maps		SV	10/10/01
DATE: 9/86	NPS Input Stream & Markings GPS Sample Pts		SV	10/06/01
	Checked Sample Pt Locations		SV	10/06/01
	Inserted Markings Sample Pts from NPS/Stream Autocad File		SV	10/04/01
	Added streamlines & dimensions per claimant-NPS agreement		SV	04/02/02

**HORIZONTAL AND VERTICAL DATUM:**


BASIS OF BEARING: VABM ELDORADO - VABM BOUND

ALASKA STATE PLANE COORDINATES, ZONE 4,  
NAD 27, US FEET

ELEVATION: VABM ELDORADO



UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE  
ALASKA SUPPORT OFFICE  
GIS TEAM



DENALI NATIONAL PARK AND PRESERVE

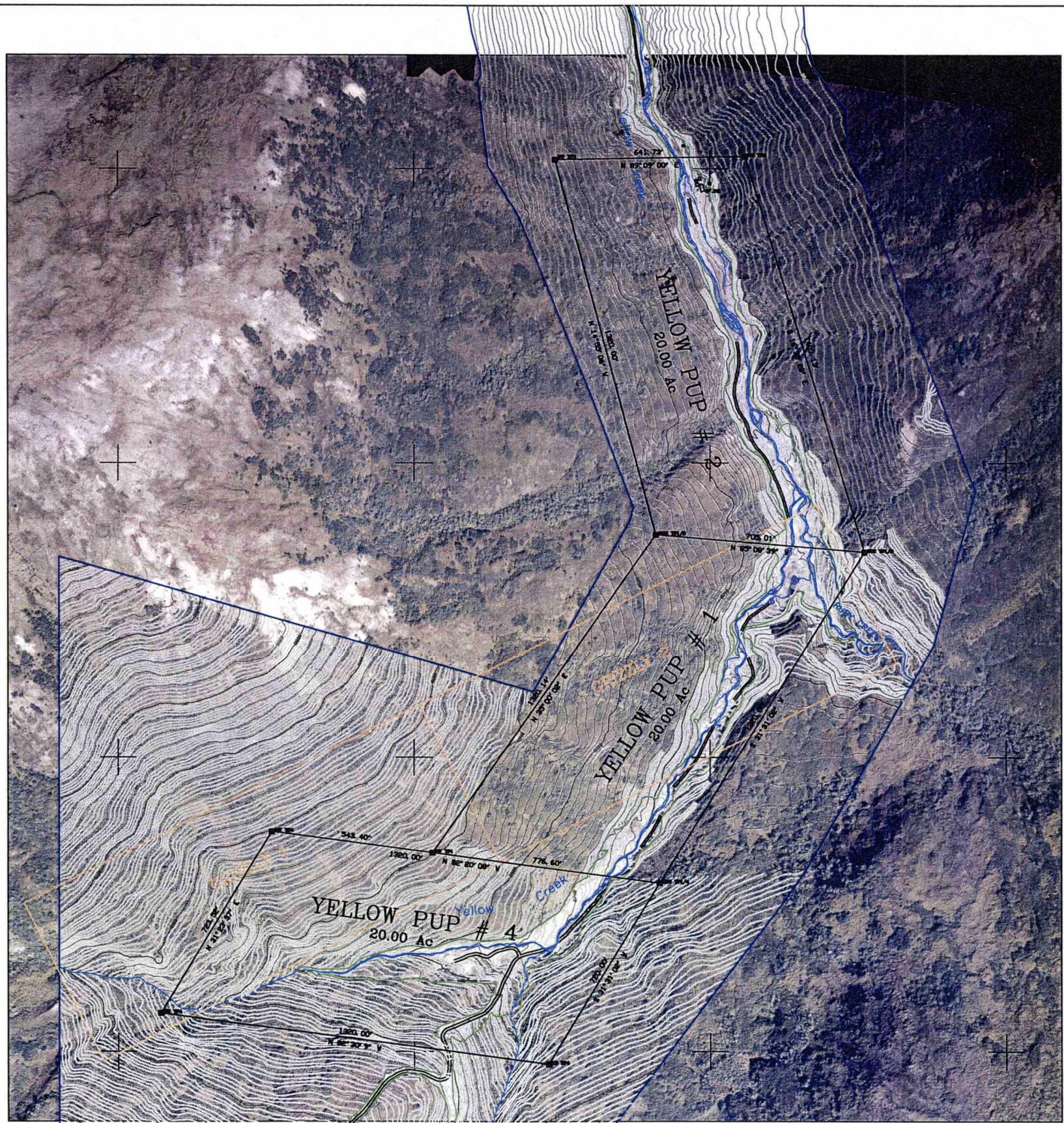
FIGURE D.9-LITTLE AUDREY  
MINING CLAIM RESTORATION AREA

DRAWING NO.  
190  
80,018

AUTOCAD  
FILE NAME

81A-01-000-010-FIGURE D.9





LEGEND	
	Claim Cor- Final position as agreed
	Unpatented Claim line
	Stream, Lake, or other Water
	Unpaved Road
	Trail
	Structure
	Disturbed ground boundary
	Contour line
	Depression contour line

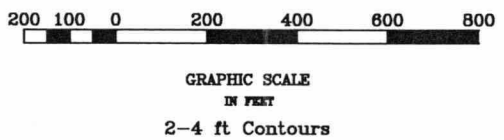
NOTES:  
This map file meets National Map Accuracy Standards for 1"=100'.  
Produced by direct-digital photogrammetric methods.

MAPPER BY: North Pacific Aerial Surveys (Yellow Pup 1, 2, & downstream= 2 ft contours) and Walker-Alaska Aerial Surveys (Yellow Pup 4 & above= 4' contours) from NPS photocontrol and contract or NPS aerial photography.

PLOTTED 04/02/02

Photo Control Survey: NPS 1986 & 1991	REVISIONS AND CHECKS : COMPILED FROM YELL1-3, QUIG12 ADDED CLAIM LINES AGREED TO BY MARTINEK	BY	DATE
		JFP	06-09-92
Claim Location: As agreed with claimant	Inserted Martinek Sample Pts from NPS/Sevens GPS Autocad Files NPS Input Martinek Sample Pts using Martinek hard-copy maps Inserted Martinek Sample Pts from RSI Autocad File-scanned from hard-copy maps NPS Input Sevens Sample Pts using Sevens hard-copy maps NPS Input Sevens & Martinek GPS Sample Pts, Checked Sample Pt Locations Inserted Martinek Sample Pts from NPS/G-11P/10th & NPS/Meyer FLIR GPS Inserted RSI-produced photomosaic, Rotated drawing & text to North up	RHS GM RHS GM GM, RHS RHS RHS	10/09/01 10/10/01 10/10/01 10/10/01 10/25/01 12/12/01 3/06/02
Aerial Photography: Contracted by NPS 8-88-97 for 1714s Contracted by NPS 8-98-01 for 1714s			
			</

HORIZONTAL AND VERTICAL DATUM :  
Basis of Bearing: VABM ELDORADO - BOUND  
ALASKA STATE PLANE COORDINATES  
ZONE 4, NAD 27, US FEET  
Elevation: VABM ELDORADO  
USGS QUAD MT. MCKINLEY (C-2)



UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE  
ALASKA SUPPORT OFFICE  
GIS TEAM



DENALI NATIONAL PARK AND PRESERVE  
FIGURE D.10-YELLOW PUP  
MINING CLAIM RESTORATION AREA

DRAWING NO.
184
80,148
AUTOCAD FILE NAME
YELL-ALL-FINAL-FOR-PRODUCTION.dwg



## ALTERNATIVES CONSIDERED

The five alternatives are described in detail in the Environmental Assessment for the Denali Gravel Acquisition Plan. They are summarized as follows:

**Alternative 1 - No-Action:** This alternative would result in no new gravel source developments within Denali National Park and Preserve. The existing authorized source sites at Teklanika Pit and Toklat River would continue at extraction rates approved in the 1992 Gravel Acquisition Plan (NPS 1992). The remaining 5,000 to 10,000 cubic yards (cy) of material authorized in the 1999 North Face Corner EA would also be authorized, but this source would be exhausted in summer 2003 and prepared for restoration.

**Alternative 2 – Maximum Flexibility/Short Hauls:** This alternative would authorize the extraction of mineral materials from up to 9 sites within the park boundaries. These sites would be the Teklanika Pit at milepost (MP) 27 of the park road, East Fork River at MP 43, Toklat River at MP 53, Beaver Pond at MP 70, Boundary at MP 88, North Face Corner at MP 89, Camp Ridge at MP 90, Downtown Kantishna at MP 91 and Kantishna Airstrip at MP 93. Material from the East Fork River would be used for emergency road repair of slope failures along Sable or Polychrome passes. Allowable extraction at Toklat River would be increased from 7,500 cy a year to an average of 11,100 cy a year. Material from Downtown Kantishna and Kantishna Airstrip would be used for road repair projects and rehabilitation of the Kantishna Airstrip at the western end of the Denali Park Road.

**Alternative 3 – Minimum Visual Intrusion/Long Hauls:** This alternative would authorize extraction of mineral materials from 3 sites within park boundaries. These sites would be the existing Teklanika Pit and Toklat River sites, and the Moose Creek Terrace site at MP 89. All three sites would support stockpiling and processing activities.

**Alternative 4 – Phased Development with Moderate Number of Sites (*NPS Preferred Alternative*):** This alternative would authorize the extraction of mineral materials from 5 sites at any one time. These sites would be Teklanika Pit, East Fork River, Toklat River, Beaver Pond, and Downtown Kantishna in phase 1 and Moose Creek Terrace in phase 2. The North Face Corner site would be cleaned out and restored as soon as possible. Downtown Kantishna and Beaver Pond might satisfy park needs for gravel at the western end of the park road over the next 10 years, but if they did not the Moose Creek Terrace site would be opened near the end of the planning period.

**Alternative 5 – Economic Alternative with Moderate Hauls (*NPS Preferred Alternative*):** This alternative would be essentially the same as Alternative 4, except phase 2 at the western end of the park road would involve the North Face Corner instead of Moose Creek Terrace.

## SUMMARY OF ENVIRONMENTAL IMPACTS

The potential environmental consequences of the alternatives are described in the Environmental Assessment for the Denali Gravel Acquisition Plan. The impact conclusions with respect to wetlands are summarized below and in Table D.3 for each alternative.

### **Alternative 1: No Action**

The no-action alternative would have a negligible potential impact on wetlands, and the lowest impact of any alternative. Only those wetlands at the Teklanika Pit (PSS1B), Toklat River (R3US/UB), and North Face Corner (PSS1/4B) would be affected. It is assumed that these impacts have been mitigated as part of the previous NEPA process and gravel acquisition planning, and there would be no new impacts from continuing these existing operations.

### **Alternative 2: Maximum Flexibility/Short Hauls**

This alternative would affect the largest amount of wetland area (19.4 acres), the most types of wetlands, and the least common wetland type observed at all of the sites (palustrine emergent wetlands at Boundary and Camp Ridge). Both jurisdictional and apparently nonjurisdictional wetlands would be affected by this alternative, including 7.2 acres of jurisdictional riverine wetlands, 9.8 acres of isolated PSS1/4B wetlands, 0.4 acres of isolated PSS/EM1C wetlands, 1.2 acres of isolated PSS1B wetlands and 0.8 acres of isolated PEM1B (Table D.3). Because loss of wetland functions would be proportional to loss of wetland area, this alternative also would contribute to a major loss of functions compared to other alternatives and require the most compensatory mitigation. Even if tundra type (PEM1B) plants, topsoil and overburden are stockpiled, wetlands with peat (organic) soils are unlikely to be successfully restored or recreated. Organic soils, tussocks, and processes in these systems are not replicable at this time. There might be some risk of subsidence and thermokarst from thawing of permafrost that might also affect the ability to restore or recreate wetlands at the North Face Corner and Camp Ridge sites. This alternative would have the greatest potential losses of wetland acreages and functions of all the action alternatives. Overall wetland impacts would be major compared to the other action alternatives. In addition, this alternative would have the greatest cumulative effects.

### **Alternative 3: Minimum Visual Intrusion/Long Hauls**

Potential wetland impacts that would occur from this alternative are estimated at 8.5 acres. Only those wetlands most commonly found at potential extraction sites would be affected and most of these would be jurisdictional riverine wetlands (3.3 acres of R3US/UB) that would result in temporary impacts on wetland functions. In addition, approximately 1.2 acres of isolated and nonjurisdictional PSS1B wetlands and 1.4 acres of isolated and nonjurisdictional PSS1/4B wetlands would be affected. Potential losses of wetland acreages and functions would be the lowest among the action alternatives, but somewhat greater than for Alternative 1. Overall wetland impacts would be minor. This alternative would have the least potential cumulative effects of all the action alternatives.

### **Alternative 4: Phased Development of Moderate Number of Sites (*NPS Preferred*)**

This alternative would affect a combined total of 12.4 acres of both jurisdictional and nonjurisdictional wetlands. Alternative 4 would affect the same amount of jurisdictional riverine wetlands (5.6 acres of R3US/UB) as Alternative 2 or Alternative 5. Approximately 1.2 acres of isolated and nonjurisdictional PSS1B and 4.0 acres of isolated and nonjurisdictional PSS1/4B wetlands also would be affected. This alternative would have greater potential impacts on wetland acreages and functions than Alternative 3, but lower potential impacts of both wetland acreage and functions compared to Alternative 2. All of the wetlands impacted by this alternative are common throughout the park and the surrounding region. Overall wetland impacts would be moderate compared to Alternative 2. Potential impacts are higher than Alternative 3 and slightly higher than Alternative 5. Potential cumulative effects on wetlands from this alternative would

be about the same as Alternative 5, higher than Alternative 1 or 3, and considerably lower than Alternative 2.

**Alternative 5: Economic Alternative with Moderate Hauls (*NPS Preferred*)**

The total affected wetland area for this alternative is estimated at 11.5 acres. Alternative 5 would result in similar impacts to jurisdictional riverine and jurisdictional PSS1/4B wetlands compared to Alternative 2 and Alternative 4, and slightly lower impacts on jurisdictional riverine wetlands compared to Alternative 3. Compared to Alternative 4, total impacts to isolated and nonjurisdictional PSS1/4B wetlands would be approximately 0.9 acres less. Alternative 5 would involve the same amount of impacts (about 1.2 acres) to isolated and nonjurisdictional PSS1B wetlands as all other action alternatives. Overall, potential for wetland losses and associated functions for Alternative 5 are higher than for Alternative 3, but lower than for Alternative 2 or (by a small margin) Alternative 4. Potential cumulative effects are slightly lower than Alternative 4, higher than Alternative 1 or 3 and much lower than Alternative 2.

**CONCLUSION**

There is no practicable alternative that would meet the needs for gravel acquisition and that would completely avoid loss or disturbance of wetlands. Site selection and development of site-specific mining plans have been done to avoid or minimize wetland impacts to the extent practical. Mitigation and monitoring actions included in the project plans include measures intended to protect wetlands within or adjacent to the sites. As required by NPS wetland protection procedures, unavoidable impacts to wetland areas resulting from implementation of the plan will be compensated for, on a minimum 1:1 acreage basis, by restoring previously disturbed riverine and palustrine wetland habitat in appropriate regions of the park. The NPS has identified previously disturbed mining claim areas along Glacier Creek and Yellow Pup Creek as candidate areas for restoration that would provide wetland compensation greater than or equal to the extent of unavoidable wetland impacts under the preferred alternative for the gravel acquisition plan.

Gravel acquisition is proposed for the Downtown Kantishna site under Alternatives 2, 4, and 5. For all three alternatives the overall objective is to recover mineral materials as a by-product of reclaiming this disturbed site during the life of the plan. This area has been substantially disturbed by placer mining activities in the past 50 years, and the NPS considers reclamation of the site to be a priority need for the Kantishna area. Gravel extraction and reclamation activities at this site would disturb 1.6 acres of existing wetland, which appears to be a feature of historic placer mining. All previously undisturbed areas within the mining plan area, including all of the PSS1/4B west of the Eldorado Creek channel near the north end of the site, would be avoided and would be unaffected by the gravel extraction activity. The conceptual reclamation plan for the site (Karle 2003) addresses the restoration of natural floodplain structure and functions; site reclamation would logically include restoration of wetlands associated with the stream. Therefore, it is expected that the wetland impacts would be temporary and would be mitigated on-site upon successful restoration of the site.

The NPS has identified Alternatives 4 and 5 as the environmentally preferred alternative. The NPS believes that either of these alternatives would provide the mineral materials needed to maintain the park road and facilities in a safe and esthetic condition, while minimizing adverse impacts to park natural and cultural resources. Either alternative would preserve non-renewable resources to the extent feasible and minimize, on balance, the direct and indirect impacts to park surface area, vegetation, wetlands, wildlife, air quality, water resources and park visitors.

Both Alternatives 4 and 5 would have unavoidable impacts to wetlands, and would adversely affect more wetland area than would Alternative 3. While Alternative 3 would result in lesser wetland impacts, the NPS believes the analysis of the gravel acquisition plan alternatives indicates that Alternatives 4 and 5 have specific environmental advantages relative to the other alternatives, including Alternative 3. Alternatives 4 and 5 also have economic and park management advantages relative to Alternative 3 that contribute to the identification of the alternatives preferred by the NPS. The reasons for preferring Alternatives 4 and 5 are summarized as follows:

1. Alternatives 4 and 5 are consistent with the planning direction provided by the 1997 Entrance Area and Road Corridor Development Concept Plan. This plan directs the NPS to obtain mineral materials needed for the western end of the park from, in order of priority, (a) private lands, (b) previously disturbed lands in the Kantishna area and, lastly, (c) Moose Creek Terrace, but only after other viable sources are exhausted. Alternative 3 would rely on Moose Creek Terrace from the beginning of the 10-year planning period, and therefore does not support the priorities identified in the Frontcountry Plan.
2. Truck traffic with Alternative 3 would be substantially greater than with Alternative 4 or 5. Thus, Alternative 3 would result in greater impacts to air resources from fugitive dust, greater damage to the road surface (particularly in the more crowded eastern end of the road corridor, and greater disturbance to park visitors and wildlife. These impact relationships must be balanced against the relative wetland impacts of the alternatives.
3. Under Alternative 4 or 5 the NPS would first extract gravel from sites where wetland impacts would be virtually zero (Beaver Pond and Downtown Kantishna), and delay use of the Moose Creek Terrace or North Face Corner sites at which wetland impacts would be unavoidable. Activity at the Downtown Kantishna site would occur only on previously disturbed areas, including some areas now wet, but these are disturbed wetlands and riverine systems whose functions would be improved through gravel extraction and restoration. The acreage of wetlands to be disturbed in the future at Moose Creek Terrace or North Face Corner under Alternative 4 or 5 would be less than the wetland acreage disturbed from the beginning at Moose Creek Terrace under Alternative 3.
4. The cost analysis of the alternatives indicated that Alternative 4 or 5 would be considerably less costly than Alternative 3. Alternative 3 would have a greater reliance on purchases of gravel from external sources and greater average haul distances, which would increase the cost of supplying the same volume of gravel relative to Alternative 4 or 5.

Based on the lack of a practicable alternative with less impact on wetlands and the inclusion of measures to avoid, minimize or compensate for wetland impacts, the NPS finds the proposal to be consistent with Executive Order 11990 and NPS Director's Order 77-1: Wetland Protection, including the NPS no-net-loss of wetlands policy.

**REFERENCES:**

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**APPENDIX E**

**Statement of Findings for  
Executive Order 11988 Floodplain Management**

Gravel Acquisition Plan  
Denali National Park and Preserve

**May 2003**

Recommended:

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Superintendent, Denali National Park and Preserve

Date

Certified For Technical Accuracy and Servicewide Consistency:

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Chief, Water Resources Division, Washington Office

Date

Approved:

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Regional Director, Alaska Region

Date



## INTRODUCTION

The National Park Service (NPS) has prepared and made available for public review, an environmental assessment (EA) to evaluate the impacts of implementing a 10-year gravel acquisition plan (GAP) in Denali National Park and Preserve.

In 1992, a gravel excavation site was established in the Toklat River floodplain, following the approval of a previous Denali Gravel Acquisition Plan. The 1996 Entrance Area and Road Corridor Development Concept Plan and Environmental Impact Statement (DCP/EIS) directed the park to relocate its rock/gravel processing site to the Toklat River floodplain excavation site because the current site, at the Toklat River bridges, created a visual intrusion for visitors. A 1999 EA was developed to complete the process of establishing a gravel-processing site in the Toklat River floodplain, which would not affect the existing and proposed visitor rest area. The current Gravel Acquisition Plan proposes five alternatives to acquire sufficient gravel over a 10-year period to maintain and repair the park road. Within the alternatives there are 10 total sites considered. Three of them lie within a floodplain. East Fork River and Downtown Kantishna are new proposed sites and Toklat River is currently operating.

Executive Order 11988 (Floodplain Management) requires the NPS, and other federal agencies, to evaluate the impacts its actions are likely to have on floodplains. This executive order requires that short and long-term adverse impacts associated with occupancy, modification or destruction of floodplains 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: 93-4: Floodplain Management Guideline. The Floodplain Management Guideline provides guidance for managing activities which result in the modification or occupation of floodplains, or which result in impacts to floodplain values.

The purpose of this Statement of Findings (SOF) is to present the NPS rationale for its proposed Denali Gravel Acquisition Plan that includes operating borrow extraction and processing sites in the floodplain areas at the Toklat River, East Fork River and Downtown Kantishna sites.

## FLOODPLAINS WITHIN THE PROJECT AREA

### Toklat River

The Toklat River drains a 100-square-mile watershed located on the north side of the Alaska Range. The Toklat River gravel extraction site is 19 miles upstream from the nearest park boundary. The Toklat River has a braided channel in the project area, typical of streams that are transport limited (Ritter 1978). Multiple anastomosing channels are present, and the location of active channels changes seasonally and annually. Streambanks are irregular and poorly defined. The active floodplain is approximately 1,200 to 1,800 feet wide. It is composed predominantly of gravel-sized material with occasional cobbles and boulders. Notably, the floodplain is at its narrowest where the proposed extraction site is located. The riverbed has a gradient of 1.5 percent in the reach where gravel extraction is proposed.

Abandoned channels are interlaced throughout the active floodplain, with gravels bars present at various heights between the channels. Typical of glacially fed braided streams, the Toklat carries a large amount of suspended sediment and bed load (coarse sediment carried along the channel to bottom, rather than in suspension). The high concentration of suspended sediment during the summer makes the water milky in appearance. The estimated average discharge for the Toklat River is 344 cubic feet per second (cfs). The 1.5-year flood was estimated at 1,324 cfs. The average annual bed load discharge at the proposed gravel removal site was estimated at 222,000 cubic yards (cy) per year (Emmett 2000).



### **East Fork River**

The East Fork River drains a 77-square-mile watershed on the north side of the Alaska Range. The basin is similar to the Toklat River basin, with several peaks over 7,000 feet high. The East Fork is a tributary of the Toklat River; their confluence is about 20 miles north of the park access road. Like the Toklat River, the East Fork River is a braided stream. The East Fork River occupies a bed that is up to 2,000 feet wide; this gravel drainage course contains the active channels carrying the streamflow. The streambed is composed of gravel-sized material with occasional cobbles and boulders. Abandoned channels criss-cross the drainage course with intervening gravel bars (interfluvies). Typical of glacier-fed streams in mountainous terrain, the East Fork River carries a large amount of suspended sediment and bed load. The river has a gradient of 1.2 percent in the reach where gravel extraction is proposed.

Estimations of the bankfull discharge and the annual sediment bed load of the East Fork River were conducted by a research hydrologist contracted by the National Park Service (NPS; Emmett 2000). The estimated bankfull discharge is 1,000 cfs. The average annual bed load discharge of the East Fork River is approximately 108,000 cy. Based on expert advice from research hydrologists and years of excavation experience at the Toklat River site, the National Park Service has decided to limit annual excavation of gravel from active alluvial gravel sites to five percent of the annual bed load discharge. For the East Fork River, the 5 percent limit is 5,410 cy (Emmett 2002)

### **Downtown Kantishna Site**

The proposed extraction and reclamation site is on the west bank and floodplain of Moose Creek, beginning just downstream from the Kantishna Roadhouse, and extending downriver almost to the Denali Backcountry Lodge. Laterally, it extends west across the floodplain, from ordinary high water at the Moose Creek channel to a parallel drainage roughly 700 to 800 feet away. The length of the site is approximately 1,600 feet and it is approximately 55 acres in size. Eldorado Creek drains a portion of the Kantishna Hills, a low range west of the site. Moose Creek drains a large area east of the proposed gravel extraction site. Although the majority of the basin is of relatively low relief, Moose Creek does drain portions of the eastern Kantishna Hills, which range up to 4,700 feet, and Mt. Galen, at 5,000 feet. No glaciers are present in either drainage basin; hence, Moose Creek is quite different from the Toklat and East Fork rivers, and generally runs clear except during floods.

This area has been substantially disturbed by mining activities in the past 50 years. In addition to numerous tailing piles scattered about, an airstrip that was recently lengthened and upgraded is located on this site. Access roads and trails are present across the site. Additionally, the mouth of Eldorado Creek and the lowermost 1,000 feet of its channel have been moved from their original locations. Though much of the original vegetation was stripped or disturbed, natural revegetation has resulted in a thick cover of alder, cottonwood and willow regrowth on much of this site.

## **THE PROPOSALS IN RELATION TO FLOODPLAINS**

The proposed action, three alternative actions, and a no-action alternative are described in detail in the Environmental Assessment for the Denali National Park Gravel Acquisition Plan.

All five of the alternatives would impact floodplains in Denali National Park. Alternative 1: No-Action and Alternative 3: Minimum Visual Intrusion/Long Hauls would continue to extract and process borrow material from the Toklat River site. Alternative 2: Maximum Flexibility/Short Hauls would utilize material from the Toklat River, East Fork River and Downtown Kantishna sites. Alternative 4: Phased Development with a Moderate Number of Sites and Alternative 5: Economic Alternative with Moderate Hauls also call for material extraction from the Toklat River, East Fork River and Downtown Kantishna sites. No significant risk to human health or safety would occur as a result of this project. The gravel extraction and processing work would take place during periods of low park visitation. No downstream activities would be affected.



### **Toklat River Site**

The Toklat River Site is positioned in the floodplain of the Toklat River about 0.75 miles north of mile 53.4 of the Denali Park Road. A 14 to 20 foot wide 0.75 mile gravel spur road from the park road to the Toklat Camp provides access to the edge of the floodplain and processing area. Studies of bed-load transport (Karle 1989 and Emmet 2000) indicate that up to 11,100 cy per year, or 5 % of the estimated annual bed load of 222,000 cy per year, could be safely removed from the floodplain without adversely affecting river process.

Heavy equipment would drive out onto the floodplain from a ramp at the end of the Toklat Camp access road. Extraction and processing activities would occur mostly before or after the bulk of the summer visitation because this site is visible from the park road.

### **East Fork River Site**

This site is positioned in the floodplain of the East Fork of the Toklat River south of mile 43.6 of the Denali Park Road. A 10 to 12 foot wide 0.25 mile gravel spur road from the park road to the East Fork Cabin provides access to the edge of the flood plain. Studies of bed-load transport (Emmet 2002) indicate up to 5,400 cy/yr could safely be removed from the flood plain without adversely affecting river processes.

As with the Toklat River site, heavy equipment would drive out onto the floodplain from a ramp at the end of the East Fork Road during September or emergencies. Extraction and processing would occur mostly before or after the bulk of the summer visitation because this site is highly visible from the park road. The east fork river would be utilized under alternatives 2, 4, and 5. In all three the site would be reserved for emergency road repairs between the Teklanika Pit and the Toklat River site.

### **Downtown Kantishna**

This large area lies on the western side of Moose Creek, immediately north the Kantishna Roadhouse, and across Moose Creek beginning at Mile 91 of the Denali Park Road in the Denali National Park additions. Access to the site is currently available by gravel road through Moose Creek, but a bridge would be needed in the future to facilitate heavy equipment. The site dimensions are about 3,700 feet long by 650 to 1,300 feet wide with an estimated deposit thickness of 5-10 feet. The site covers about 2,405,000 sq ft (55.2 acres.). The site is estimated to produce a maximum of 59,000 cy of material. Though most of the area was previously disturbed, much of the area has already been recolonized with alders, willows, cottonwood, and white spruce trees. Very little overburden occurs on the site.

This site would be operated throughout the summer season as needed. The process and storage area would be in the middle of the extraction area to minimize visibility from the park road, Kantishna Roadhouse and Denali Backcountry Lodge.

## **MITIGATION POPOSED**

### **Toklat River**

As during the last decade, mirror channels would be excavated with a front-end loader from a downstream position to an upstream position beside an active river channel and loaded into dump trucks. Each mirror channel would be reclaimed within five years by natural stream flow processes. Because no vegetation survives in the active floodplain, vegetative recovery is not needed. The NPS would make annual level surveys across, above, and below the extraction area to assure natural river processes are not adversely affected.

### **East Fork River**

Reclamation at the east Fork site will be essentially the same as at the Toklat River site. Each mirror channel would be reclaimed within five years by natural stream flow processes. Because no vegetation survives in the active floodplain, vegetative recovery is not needed. The NPS would make level surveys across, above, and below the extraction area to assure natural river processes are not adversely affected.

### **Downtown Kantishna**

The site would be contoured to match surrounding grades and to produce adequate meandering channels in Eldorado and Moose Creeks to facilitate fish passage. The final site contours would also provide for floodplain development on the site rather than define narrow channels for the creeks. The NPS may employ similar re-vegetation techniques to this area as was used on Glen Creek to restore mining claims.

## **STATE AND LOCAL FLOODPLAIN STANDARDS**

The project conforms to applicable state floodplain protection standards. No local standards have been identified which apply to this type of project.

## **NFIP CRITERIA**

Methods to minimize damage from a 100-year flood as described in the National Flood Insurance Program (NFIP) "Floodplain Management Criteria for Flood Prone Areas" (44 CFR 60.3) do not apply to this project.

## **ALTERNATIVES CONSIDERED**

The five alternatives are described in detail in the Environmental Assessment for the Denali Gravel Acquisition Plan. They are summarized as follows:

**Alternative 1 - No-Action:** This alternative would result in no new gravel source developments within Denali National Park and Preserve. The existing authorized source sites at Teklanika Pit and Toklat River would continue at extraction rates approved in the 1992 Gravel Acquisition Plan (NPS 1992). The remaining 5,000 to 10,000 cubic yards (cy) of material authorized in the 1999 North Face Corner EA would also be authorized, but this source would be exhausted in summer 2003 and prepared for restoration.

**Alternative 2 – Maximum Flexibility/Short Hauls:** This alternative would authorize the extraction of mineral materials from up to 9 sites within the park boundaries. These sites would be the Teklanika Pit at milepost (MP) 27 of the park road, East Fork River at MP 43, Toklat River at MP 53, Beaver Pond at MP 70, Boundary at MP 88, North Face Corner at MP 89, Camp Ridge at MP 90, Downtown Kantishna at MP 91 and Kantishna Airstrip at MP 93. Material from the East Fork River would be used for emergency road repair of slope failures along Sable or Polychrome passes. Extraction at Toklat River would be increased from 7,500 cy a year to 11,100 cy a year. Material from Downtown Kantishna and Kantishna Airstrip would be used for road repair projects and rehabilitation of the Kantishna Airstrip at the western end of the Denali Park Road.

**Alternative 3 – Minimum Visual Intrusion/Long Hauls:** This alternative would authorize extraction of mineral materials from three sites within park boundaries. These sites would be Teklanika Pit, Toklat River, and Moose Creek Terrace at MP 89. All three sites would support stockpiling and processing activities.



**Alternative 4 – Phased Development with Moderate Number of Sites (*NPS Preferred Alternative*):**

This alternative would authorize the extraction of mineral materials from 5 sites at any one time. These sites would be Teklanika Pit, East Fork River, Toklat River, Beaver Pond, and Downtown Kantishna in phase 1 and Moose Creek Terrace in phase 2. The North Face Corner would be cleaned out and restored as soon as possible. Downtown Kantishna and Beaver Pond might satisfy park needs for gravel at the western end of the park road over the next 10 years, but if they did not the Moose Creek Terrace site would be opened near the end of the planning period.

**Alternative 5 – Economic Alternative with Moderate Hauls (*NPS Preferred Alternative*):** This alternative would be essentially the same as Alternative 4, except phase 2 at the western end of the park road would involve the North Face Corner instead of Moose Creek Terrace.

## **SUMMARY OF ENVIRONMENTAL IMPACTS**

The potential environmental consequences of the alternatives are described in the Environmental Assessment for the Denali Gravel Acquisition Plan.

## **CONCLUSION**

There would be no significant adverse impacts on floodplain values associated with any of the alternatives considered for this project. Use of the Toklat site is common to all five alternatives proposed in the Denali Gravel Acquisition EA. A 1992 Gravel acquisition plan and a 1999 EA for the Toklat Borrow Material Processing Site found that operations taking place in the Toklat River floodplain would not have significant effects on the floodplain values.

Impact on the East Fork River from gravel acquisition operations would be essentially the same as those at Toklat. The average annual bed load discharge of the East Fork River is approximately 108,000 cy. Alternatives 2, 4, and 5 propose use of the East Fork River floodplain. All three alternatives propose to remove only 5% (~54,000 cy) of the average annual bed load discharge. Removing material at this rate would allow the site to be reclaimed within 5 years by natural stream flow processes.

Gravel acquisition is proposed for the Downtown Kantishna site under Alternatives 2, 4, and 5. In all three alternatives the overall objective is to mine material and reclaim the site during the life of the plan. This area has been substantially disturbed by mining activities in the past 50 years, and the NPS considers reclamation of the site to be a priority need for the Kantishna area. All three alternatives that include Downtown Kantishna call for gravel extraction operations as a by-product of reclamation at the site. The conceptual reclamation plan for the site (Karle 2003) addresses the restoration of natural floodplain structure and functions. Removal of gravel for maintenance purposes would support the restoration objective.

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## **APPENDIX F**

### **ANILCA Section 810(a) Summary of Evaluations and Findings**

#### **INTRODUCTION**

This evaluation and finding was prepared to comply with Title VIII, Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA). It evaluates the potential restrictions to subsistence activities that could result from plans to obtain gravel for road maintenance and other projects in Denali National Park and Preserve. The National Park Service (NPS) has evaluated in an environmental assessment (EA) the impacts of the preferred alternative and four alternatives to supply gravel for projected park needs over the next 10 years. The NPS estimates a need for up to 375,000 cubic yards (cy) of mineral materials along the Denali Park Road over the next 10 years, but existing authorized sources in the park could only supply up to 200,000 cy. Much of the future need is at the western end of the park road near Kantishna.

#### **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 affected until the head of such Federal agency:

- 1) gives notice to the appropriate State agency and the appropriate local committees and regional councils established pursuant to section 805;
- 2) gives notice of, and holds, a hearing in the vicinity of the area involved and;
- 3) determines that (A) such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands, (B) the proposed activity would involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition, (C) and reasonable steps would 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 additions were created by ANILCA section 202(3)(a) for the purposes of:

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

The 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."



## PROPOSED ACTION ON FEDERAL LANDS

The National Park Service (NPS) is evaluating five alternatives to supply mineral materials (mostly gravel) for park operations and projects over the next 10 years. The primary need is for material to maintain and rehabilitate the Denali Park Road. Other needs include gravel for construction projects near park headquarters and at other development nodes along the park road. All of the alternatives consider obtaining a portion of the gravel needs from private sources outside the park boundary.

### Alternative 1 - No-Action

This alternative would result in no new gravel source developments within Denali National Park and Preserve. The existing authorized source sites at Teklanika Pit and Toklat River would continue at extraction rates approved in the 1992 Gravel Acquisition Plan (NPS 1992). The remaining 5,000 to 10,000 cubic yards (cy) of material authorized in the 1999 North Face Corner EA would also be authorized, but this source would be exhausted in summer 2003 and prepared for restoration. No new gravel extraction would be authorized near the western end of the park road. Gravel needs that could not be met with in-park sources would need to be addressed with sources outside the park. Average haul distances and gravel costs would be greatest with this alternative.

### Alternative 2 – Maximum Flexibility/Short Hauls

This alternative would authorize the extraction of mineral materials from up to 9 sites within the park boundaries. These sites would be the Teklanika Pit at milepost (MP) 27 of the park road, East Fork River at MP 43, Toklat River at MP 53, Beaver Pond at MP 70, Boundary at MP 88, North Face Corner at MP 89, Camp Ridge at MP 90, Downtown Kantishna at MP 91, and Kantishna Airstrip at MP 93. Material from the East Fork River would be used for emergency road repair of slope failures along Sable or Polychrome passes. Extraction at Toklat River would be increased from 7,500 cy a year to 11,100 cy a year. Beaver Pond and Boundary source sites would supply material for road maintenance and repairs between Eielson Bluffs and Wonder Lake. The North Face Corner would be a stockpile and processing site for material from Camp Ridge until that site could be enlarged enough for processing and stockpiling. Material from Downtown Kantishna and Kantishna Airstrip would be used for road repair projects and rehabilitation of the Kantishna Airstrip at the western end of the Denali Park Road. This alternative provides the maximum flexibility for gravel production along the Denali Park Road.

### Alternative 3 – Minimum Visual Intrusion/Long Hauls

This alternative would authorize extraction of mineral materials from three sites within park boundaries. These sites would be Teklanika Pit, Toklat River, and Moose Creek Terrace at MP 89. The Moose Creek Terrace would be about one mile up the Moose Creek Road from the junction with the Denali Park Road. This access spur would need to be reinforced with a few thousand cubic yards of gravel to support heavy trucks. All three sites would support stockpiling and processing activities, and they are essentially out of site from the Denali Park Road. This alternative would have the second longest average haul distances because it would authorize the fewest in-park sources other than the no-action alternative.

### Alternative 4 – Phased Development of Moderate Number of Sites (*NPS Preferred Alternative*)

This alternative would authorize the extraction of mineral materials from 5 sites at any one time. These sites would be Teklanika Pit, East Fork River, Toklat River, Beaver Pond, and Downtown Kantishna in phase 1 and Moose Creek Terrace in phase 2. The North Face Corner would be cleaned out and restored as soon as possible. Downtown Kantishna and Beaver Pond might satisfy park needs for gravel at the western end of the park road over the next 10 years, but if they do not the Moose Creek Terrace site would be opened near the end of the 10- year planning period. Because of the strategic location of source sites along the park road, this alternative would require moderate average haul distances to satisfy gravel needs along the park road.

### Alternative 5 – Economic Alternative with Moderate Hauls (*NPS Preferred Alternative*)

This alternative would be similar to Alternative 4, except phase 2 at the western end of the park road would involve the North Face Corner instead of Moose Creek Terrace. Haul distances would be 1 mile less in both directions from

North Face Corner and no road upgrade would be needed along the Moose Creek Road. For these reasons this alternative is expected to be more economical than Alternative 4. Because double hauls for stockpiling and processing between North Face Corner and Camp Ridge would be avoided, this alternative might be less costly than Alternative 2 as well. Average haul distances for Alternatives 1 and 3 would be much longer than for Alternative 5, making them much more costly than Alternative 5.

## **AFFECTED ENVIRONMENT**

### **Introduction**

The Gravel Acquisition Plan (GAP) study area is located near the Denali Park Road corridor, except for the Moose Creek Terrace site and the Toklat River site. The elevation varies between 800 to 4,000 feet in the Alaska Range. Because of the wide variety of topographic relief in the area, most plant communities typical of the Alaska taiga and tundra are represented. Below the ridges and peaks alpine tundra gives way to low shrubs on lower slopes and tall shrubs in ravines. Tall shrubs predominate along drainages and steep slopes on hills. At lower elevations, upland forests occur on shallow slopes. Flood plain forests are found along most of the river valleys. Some material source sites such as the East Fork River and Toklat River are unvegetated braided river bars. The Downtown Kantishna site is a former gold placer mining area in a floodplain near the junction of Moose and Eldorado creeks. This area has recovered with alder, willow, and cottonwood among other vegetation, but some mining tailings remain unvegetated. Many of the potential gravel source sites such as Beaver Pond, North Face Corner, Camp Ridge, and Kantishna Airstrip have wetland vegetation and characteristics. Because the area of the former Mount McKinley National Park is not open to subsistence hunting and gathering, the primary area of concern for the GAP is the Kantishna area in the new park additions.

### **Park Environment**

The original Mount McKinley National Park, which was established in 1917, is located in the interior of Alaska and is dominated by an east to west line of towering glaciated mountains known as the Alaska Range. The range rises abruptly from lowlands 500 to 2,000 feet in elevation to the pinnacle of Mount McKinley, North America's highest mountain, at 20,320 feet. In 1980, ANILCA enlarged the original park to more than 6 million acres and redesignated the area as Denali National Park and Preserve.

The protected subarctic ecosystem of Denali National Park and Preserve provides habitat for 30 species of mammals, at least 102 species of breeding birds, 16 species of fish (twelve resident species and four anadromous pacific salmon species), and 1 amphibian. The American peregrine falcon is the only endangered species known to occur in the park and preserve. No known threatened aquatic or plant species are known to exist in the park and preserve.

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

About 100 archeological sites have been recorded within Denali National Park and Preserve with seven sites identified along the north bench of the Moose Creek drainage within the project area. Archeological investigations conducted within and immediately adjacent to the park strongly suggests that sites dating from the Paleoarctic tradition (10,000 years before present) through the Protohistoric period (200 years before present) exist within the park.

Several Athabaskan Indian groups used the Denali area historically. The Ahtna people of Cantwell arrived from the east; the Tanana people came into the area from the north traveling up the Nenana and Toklat Rivers; the Koyukon



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people who lived at Lake Minchumina ascended the McKinley-Foraker-Heron Rivers; the Upper Kuskokwim people who still live in Nikolai and Telida approached the park from the west; and the Dena'ina people approached the park from the south.

Subsistence activities included large mammal hunting, fishing, trapping, and gathering of plants and berries. The Kantishna Hills, including Moose Creek, has a long history of subsistence use.

More comprehensive descriptions of the Affected Environment within Denali National Park and Preserve can be found in the following recent park documents.

*EIS on the Entrance Area and Road Corridor Development Concept Plan for Denali National Park and Preserve, 1996.*

*EIS on the Cumulative Impacts of Mining in Denali National Park and Preserve, 1990.*

*An Overview and Assessment of Archeological Resources, Denali National Park and Preserve, Alaska, Research/Resources Management Report AR-16, Kristen Griffen, 1990.*

*Final Environmental Impact Statement, Wilderness Recommendation, Alaska Planning Group, 1988.*

*Denali National Park and Preserve, Final General Management Plan, Land Protection Plan, 1985.*

*Land Use in the North Additions of Denali National Park and Preserve: A Historical Perspective, Research/Resources Management Report AR-9, William Schneider, Dianne Gudgel-Holmes and John Dalle-Molle, 1984.*

*Subsistence Resource Use in the Proposed North Additions to Mt. McKinley National Park, Paper No. 17, Richard H. Bishop, 1978.*

## SUBSISTENCE USES AND NEEDS EVALUATION

### Background Information

The area within the former boundaries of Mount McKinley National Park is not open to subsistence uses. It is however surrounded by additions to the new park and preserve created under ANILCA, which are open to subsistence uses. The Kantishna Hills area was added as new park lands and is open to subsistence use.

Denali National Park and Preserve has a total of about 320 eligible local rural residents who qualify for subsistence use of park and preserve resources. Subsistence users for the ANILCA park additions primarily reside in the communities of Cantwell, Lake Minchumina, Nikolai, and Telida. Other local rural residents who do not live in these designated resident zone communities, but who have customarily and traditionally engaged in subsistence activities within the park, may continue to do so pursuant to a subsistence permit issued by the park superintendent. Individuals from McKinley Village, Nenana, Healy, and Tanana have received subsistence use permits.

In the past, subsistence users of the Kantishna Hills region included two families permanently residing in the Kantishna area, approximately twelve households from the McKinley Village area, and several households from Cantwell. Approximately 147 people live in Cantwell. Residents from the communities of Lake Minchumina, Telida and Nikoali are eligible to utilize subsistence resources from the Kantishna Hills area but have not done so because their distance from and difficulty in accessing the Kantishna area. Currently, no subsistence users permanently reside in the Kantishna community and only one family resides and traps in the lower Moose Creek/Bearpaw drainage to the north of Kantishna. His trapline does not extend into the upper Moose Creek project area.

Subsistence use of the Kantishna Hills has decreased in recent years for various reasons including, park road restrictions and access permit requirements because of increasing vehicle traffic, ATV use restrictions off existing

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roads, the closure of caribou hunting season since 1977, a negative customary and traditional use determination for McKinley Village area residents for use of moose in 1987, significantly increasing recreational use activity, initiation of a public safety firearms discharge restriction along the Kantishna Road during the first two weeks of September, increased posting of private property and restrictions on access, and increasing cost for making the 180 mile round trip into the Kantishna area. The cumulative effect has been diminishing subsistence use in the Kantishna Hills area.

Prior to ANILCA local rural subsistence users would drive the Park Road to access Kantishna, then use either motor vehicles, ATVs, horses, hiking, or a combination of the above to access the area for hunting and fishing. Ten of the twelve subsistence use permittees have documented that they utilized the upper Moose Creek drainage prior to ANILCA. Four of the households indicated they accessed the upper Clearwater River drainage by traveling up the North Fork of Moose Creek to Spruce Creek, then into the headwaters of the Clearwater River for hunting moose and caribou. Two of the four households accessed the Clearwater River by this route using ATVs, and the other two used horses.

The primary subsistence use of the Kantishna Hills has been for hunting moose and caribou during the fall hunting seasons. Subsistence use of caribou in wildlife management unit 20(C), which includes the Kantishna Hills region, has been closed since 1977 due to the declining population of the Denali Caribou Herd. Moose are now the main subsistence use species for the Kantishna Hills area. Incidental to moose and caribou hunting, subsistence users have harvested black bear, brown bear, ptarmigan, spruce grouse, and snowshoe hare, fished for grayling and salmon, and picked berries. The Moose Creek drainage up stream from the Park Road has been, and continues to be, the most significant subsistence use area within the Kantishna Hills due to its diversity of resources and reasonable access via the existing mining roads.

Subsistence moose hunting seasons are September 1<sup>st</sup> through September 30<sup>th</sup>, and November 15<sup>th</sup> through December 15<sup>th</sup> for antlered bull moose. Most moose hunting occurs during the early to mid part of September due to more reliable weather and better road conditions, better quality of meat before the rut, cooler temperatures, and falling of leaves which makes locating moose and processing of meat easier. During the later part of September, weather can be a significant factor resulting in closure of the Denali Park Road to Kantishna. Also, during the later part of September (typically by the middle of the month) mature bull moose are well into the rutting period which affects the quality of the moose meat.

Recreational use has increased significantly in the Kantishna Hills areas since the park was expanded by ANILCA. Four private recreational facilities now operate in Kantishna area from early June until the middle of September. During the summer months the developed areas of Kantishna, (along Kantishna Road and Moose Creek near the recreational facilities to the Kantishna airstrip) have a high level of human use activity. These activities include: hiking, horseback riding, bicycling, gold panning, fishing, kayaking, vehicular traffic, aircraft arrival and departures, lodge operations and related human activity, which cause a temporary redistribution of wildlife away from this area.

Due to concerns for public health and safety near visitor service and transportation facilities, a temporary prohibition on the discharge of firearms is imposed along the Kantishna Road from the former Mt. McKinley Park boundary to the Kantishna airport. The closure extends one mile on each side of the Kantishna Road for a distance of approximately 5 miles, for a total closure area of about 10 square miles. The temporary firearms discharge closure is in effect from September 1 to September 15 each year while the commercial lodge facilities are operating and the fall moose hunting season is open. Other adjacent, less heavily used federal public lands in the Kantishna Hills are not affected by this firearms discharge closure.

Access for subsistence uses on the ANILCA park and preserve additions is granted pursuant to sections 811(a)(b) and 1110(a). The park and preserve are managed according to legislative mandates, NPS management policies, and guidelines in the approved Denali General Management Plan. Eligible subsistence users access the Kantishna Hills area by driving the Park Road to Kantishna under an access permit. Mining roads and trails in the Kantishna Hills provide further access routes for subsistence users beyond the Park Road and beyond the temporary Kantishna Firearms Discharge closure area. The Kantishna Firearms Discharge Closure is not in effect during the last half of the September season.

The NPS recognizes that patterns of subsistence use vary from time to time and from place to place depending on the availability of wildlife, other renewable natural resources, and regulatory openings and closings of areas. A

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subsistence harvest in a given year may vary considerably from previous years because of such factors as weather, surface snow conditions for traveling, wildlife migration patterns, natural population cycles, wildlife conservation practices such as leaving a trapline fallow periodically, and regulatory changes.

### Evaluation Criteria

To determine the potential impacts on existing subsistence activities, three evaluation criteria were analyzed relative to existing subsistence resources.

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

#### 1. The Potential to Reduce Populations:

##### (a) Reduction in Numbers:

##### *Alternative 4, Phased Development of Moderate Number of Sites (NPS Preferred Alternative):*

This GAP alternative would result in the development of up to 6 gravel extraction sites and restoration of numerous abandoned borrow sites. Before the Downtown Kantishna site could be developed for gravel extraction, a bridge would need to be constructed over Moose Creek. The restoration plan for this site would return Eldorado Creek to near its original location before mining activities during the previous century. The Downtown Kantishna area and North Face Corner would be restored within 10 years under this alternative. At the end of this period the Moose Creek Terrace would likely be developed for gravel extraction, stockpiling, and processing. Numerous other smaller abandoned borrow sites to be restored are all within the old park boundaries. The NPS estimates up to 65 acres of area would be restored in the next 10 years along the park road corridor, including Downtown Kantishna.

-Wildlife: The upper Moose Creek valley is the most significant subsistence use area of the Kantishna Hills. This drainage provides the greatest diversity and highest potential for subsistence activities in Kantishna Hills due to the abundance of riparian and floodplain forest areas and the existing mining trails providing access into the valley. Contemporary use is primarily for hunting moose and bear and for grayling fishing. This alternative could affect about 3.7 acres of wildlife habitat from vegetative clearing and gravel placement for road construction in the upper Moose Creek valley (upstream of the Moose Creek Bridge) at the Moose Creek terrace site. Due to the broad use of habitats and large size of range covered by most subsistence use species, and minimal loss or modification of wildlife habitat along this route, this alternative is not expected to result in significant impact to wildlife populations or result in population declines. Seasonal vehicle traffic and human activity along the first mile of the Moose Creek Road may cause the temporary disturbance and displacement of some wildlife resources along this corridor. But the seasonal redistribution and abundance of species from this corridor would not result in wildlife population declines.

-Fishery: The Moose Creek drainage provides important habitat for grayling, round white fish and chum salmon. For the Denali area, Eldorado Creek and Moose Creek are considered as high quality fisheries. Because a bridge is proposed for access to the Downtown Kantishna site, there is no potential to impact fish populations by interrupting periods of spring migration, spawning, and fall migration. This alternative is not expected to cause a significant impact to fishery populations or result in population declines. Furthermore, restoration of Eldorado Creek where it intersects Moose Creek may improve grayling and salmonid habitat for fish migration and spawning.

##### *Alternative 1 - No-Action Alternative:*

This alternative would continue the extraction of mineral materials at Teklanika Pit and Toklat River. Extraction of gravel from the North Face Corner would be completed in 2003 and that site would be converted into a bus