


APPENDIX E

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

**Gravel Acquisition Plan
Denali National Park and Preserve**

May 2003

Recommended:



Superintendent, Denali National Park and Preserve



Date

Certified For Technical Accuracy and Servicewide Consistency:



Chief, Water Resources Division, Washington Office



Date

Approved:



Regional Director, Alaska Region

Joel Hard, Acting



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 floodplains 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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