



BUREAU OF LAND MANAGEMENT
Glennallen Field Office
P.O. Box 147
Glennallen, Alaska 99588
<http://www.blm.gov/ak>

Swede Lake Trailhead Outhouse
Environmental Assessment, DOI-BLM-AKA-020-2012-0019-EA

DECISION RECORD

Background

Swede Lake Trailhead, located at milepost 16.5 of the Denali Highway, is a major access point for recreational and subsistence users accessing Swede Lake, the Middle Fork of the Gulkana River, and the Alphabet Hills. The trailhead is a heavily used, compacted gravel site with ample parking and ramps for loading of OHVs. With a foot print exceeding 90,000 square feet, or slightly more than two acres, it functions not only as a trailhead but also as a dispersed camping area for trail users and highway travelers. The majority of use occurs in the summer months with concentrated use during the 4th of July holiday and August through September hunting seasons. During these timeframes it is not uncommon to observe 40-60 vehicles staged at or utilizing the trailhead area. For the use period 2001 through 2011, the trail received an average yearly visitation of 2160 users. (BLM Recreation Information Management System 2001-2011). This rate reflects trail users only and does not account for campers, highway travelers, or other people utilizing the trailhead area.

Currently there are no facilities for disposal of human waste at the Swede Lake Trailhead. The landscape around the developed trailhead area is littered with human waste and sanitation products. Unsanitary conditions are present throughout the vegetated area surrounding the trailhead perimeter.

Decision

I have decided to select *Alternative 2 – Proposed Action* for implementation. This decision is based on site specific analysis found within the Swede Lake Trailhead Outhouse Environmental Assessment (DOI-BLM-AKA-020-2012-0019-EA). This decision is further supported by management decisions contained in the Record of Decision for the East Alaska Resource Management Plan and Record of Decision (RMP/ROD) of September 2007.

The Finding of No Significant Impact (FONSI) indicates that the selected alternative has been analyzed in an EA and has been found to have no significant environmental effects. Therefore, an Environmental Impact Statement is not required and will not be prepared.

My decision to authorize construction of a new outhouse is summarized as follows (refer to EA for more detail):

1. Construction will take place in July or August of 2013.
2. Access to or use of the Swede Lake Trailhead will not be impeded during construction.
3. Installation and maintenance of the structure will adhere to Alaska Department of Environmental Conservation standards.

Rationale for the Decision

The No Action Alternative was not selected because it would not meet the BLM's purpose and need nor would it solve the problem of human waste being deposited upon the landscape.

Alternative 2 was selected because it meets BLM's purpose and need and will eliminate the issue of human waste, and associated health and safety problems, currently occurring within the area.

Laws, Authorities, and Land Use Plan Conformance

The EA and supporting documentation have been prepared consistent with the requirements of various statutes and regulations, including but not limited to:

- Alaska National Interest Lands Conservation Act of 1980 (ANILCA)
- Federal Land Policy and Management Act of 1976 (FLPMA)
- National Environmental Policy Act of 1969 (NEPA)
- National Historic Preservation Act, As Amended 1992 (NHPA)

The East Alaska RMP/ROD (2007) provides the overall long-term management direction for lands managed by the Glennallen Field Office. The proposed action and alternatives have been developed consistent with the East Alaska RMP/ROD. Specifically, the proposed action is consistent with the following Goals and Management Actions in the RMP/ROD:

Transportation and Facilities Maintenance, Page 45

S-1 Goal: Manage facilities, including trails and roads to provide for public access or administrative needs, while maintaining or protecting resource values and in coordination with other federal and state agencies and private landowners.

S-2 Management Actions, Number 4: Maintain facilities such as boat ramps, communications facilities, etc. according to Bureau standards and to meet public health and safety requirements.

Public Involvement, Consultation, and Coordination

External scoping was initiated on May 8 2012. Public notices were placed in the Delta Wind and Copper River Record newspapers. Additionally two private businesses near the area and the Swede Lake Homeowners Association were mailed scoping notices.

Appeal Opportunities

This decision may be appealed to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations contained in 43 CFR § 4. To appeal you must file a notice of appeal at the BLM Glennallen Field Office, PO Box 147 Glennallen Alaska 99588, within 30 days from receipt of this decision. The appeal must be in writing and delivered in person, via the United States Postal Service mail system, or other common carrier, to the Glennallen Field Office as noted above. *The BLM does not accept appeals by facsimile or email.* The appellant has the burden of showing that the decision appealed from is in error.

If you wish to file a petition pursuant to regulation 43 CFR § 4.21 (58 FR 4939, January 19, 1993) for a stay of the effectiveness of this decision during the time that your appeal is being reviewed by the Board, the petition for a stay must accompany your notice of appeal. Except as otherwise provided by law or other pertinent regulation, a petition for a stay of decision pending appeal shall show sufficient justification based on the following standards: (a) The relative harm to the parties if the stay is granted or denied, (b) The likelihood of the appellant's success on the merits, (c) The likelihood of immediate and irreparable harm if the stay is not granted, and (d) Whether the public interest favors granting the stay.

Copies of the notice of appeal and petition for a stay must also be submitted to each party named in this decision and to the Interior Board of Land Appeals and to the Office of the Solicitor (see 43 CFR § 4.413); Office of the Regional Solicitor, Alaska Region, U.S. Department of the Interior, 4230 University Drive, Suite 300, Anchorage, Alaska 99508; at the same time the original documents are filed with this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted.

/s/ Elijah Waters, for

12/11/2012

Elizabeth Maclean
Glennallen Field Manager

Date

Attachments

Finding of No Significant Impact, December 2012

References

BLM. 2007. East Alaska Resource Management Plan, Record of Decision and Approved Plan. July 2007.



United States Department of the Interior



BUREAU OF LAND MANAGEMENT
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Swede Lake Trailhead Outhouse, Environmental Assessment
DOI-BLM-AKA-020-2012-0019-EA

FINDING OF NO SIGNIFICANT IMPACT

Background

In November 2012, the Bureau of Land Management (BLM) prepared an Environmental Assessment (EA) (AKA-020-2012-0019-EA) analyzing the effects of constructing a single hole outhouse at the Swede Lake Trailhead. The outhouse will be a prefabricated cement structure manufactured by Romtec Inc. The total foot print occupied by the structure would be 12 feet by 8 feet. The outhouse would meet American with Disabilities Act (ADA) standards.

Finding of No Significant Impact

This action and its effects have been evaluated consistent with the Council on Environmental Quality regulations for determining *significance*. Per 40 CFR § 1508.27, a determination of *significance* requires consideration of both context and intensity. The former refers to the relative context in which the action would occur such as society as a whole, affected region, affected interests, etc. The latter refers to the severity of the impact.

Context

This project will occur entirely upon previously disturbed ground consisting of imported and compacted gravel fill. The outhouse would have a footprint of 12 feet by 8 feet. Excavated materials will not exceed 20 cubic yards. These materials will be utilized on site to fill potholes and low sections within the parking area. Upon completion the outhouse footprint will reduce the improved parking area from 90,000 square feet to 89,900 square feet.

Intensity

1. Impacts that may be both beneficial and adverse.

The EA considered and disclosed potential beneficial and adverse effects of the alternatives. For example, the EA discloses that the Proposed Action could indirectly cause user displacement by altering the setting of the area and creating a more developed environment (EA, P. 6). Conversely the EA also acknowledges that the No Action Alternative would not provide for a

sanitary way of disposing of human waste. Complete direct, indirect, and cumulative effects are summarized in section 3 of the EA.

2. The degree to which the proposed action affects public health and safety.

The installation of an outhouse at Swede Lake Trailhead would eliminate nearly all human waste issues occurring on the surrounding landscape. Waste would be contained in a sanitary and safe environment. The BLM would ensure that the facility and surrounding area is meeting public health and safety standards.

3. Unique characteristics of the geographic area such as proximity of historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

No unique characteristics will be affected by the Proposed Action. Although the project is located within the Tangle Lakes Archaeological District construction will take place on previously disturbed ground which has already been inventoried for cultural resources. The Delta National Wild and Scenic River is located 6 miles west of the project location and the Gulkana National Wild and Scenic River is located 9 miles south of the project location.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

The likelihood of any controversy regarding the quality of the human environment related to the Proposed Action is extremely minimal. Public notices were placed in the Delta Wind and Copper River Record newspapers. Additionally two private businesses near the area and the Swede Lake Homeowners Association were mailed scoping notices. No substantive comments were generated through external scoping.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

There are no unique or unknown risks associated with the Proposed Action. All work will be performed by a licensed and bonded contractor selected by the BLM procurement and engineering divisions. Installation and operation will be conducted according to Alaska Department of Environment Conservation standards.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

This decision will not set a precedent for future actions with significant effects. No significant effects were revealed in the EA and future projects similar in nature would be individually analyzed in separate NEPA documents.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

No cumulatively significant impacts were identified within the EA. Incremental development along this stretch of the Denali Highway has occurred throughout the last decade in an attempt to

meet the needs of a growing user base. While determined to be insignificant these actions and use patterns have slightly altered the feeling of isolation along this stretch of the highway.

8. *The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historic resources.*

The proposed project would occur in the Tangle Lakes Archaeological District which is a National Register Property. A Section 106 review was conducted in the summer of 2012 and no heritage resources were located. Further the project location is entirely within previously disturbed ground consisting of imported and compacted gravel fill.

9. *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.*

There are no threatened or endangered species within the project area.

10. *Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.*

The Proposed Action does not threaten to violate any law. The East Alaska Resource Management Plan and Record of Decision (RMP/ROD) of September 2007 provide the overall long-term management direction for lands encompassed by the Proposed Action.

Conclusion

Therefore, on the basis of the information contained in the EA, and all other information available to me, it is my determination that:

1. None of the environmental effects identified meet the definition of significance as defined by context and intensity considerations at 40 CFR § 1508.27;
2. The alternatives are in conformance with East Alaska RMP/ROD (2007); and
3. The Proposed Action and alternatives do not constitute a major federal action having a significant effect on the human environment.

Therefore, neither Environmental Impact Statement nor a supplement to the existing EA is necessary and neither will be prepared.

/s/ Elijah Waters, for

12/11/2012

Beth Maclean
Glennallen Field Manager

Date

Attachments

BLM 2012. Environmental Assessment: Swede Lake Trailhead Outhouse, DOI-BLM-AKA020-2012-0019-EA.

**U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**
Glennallen Field Office
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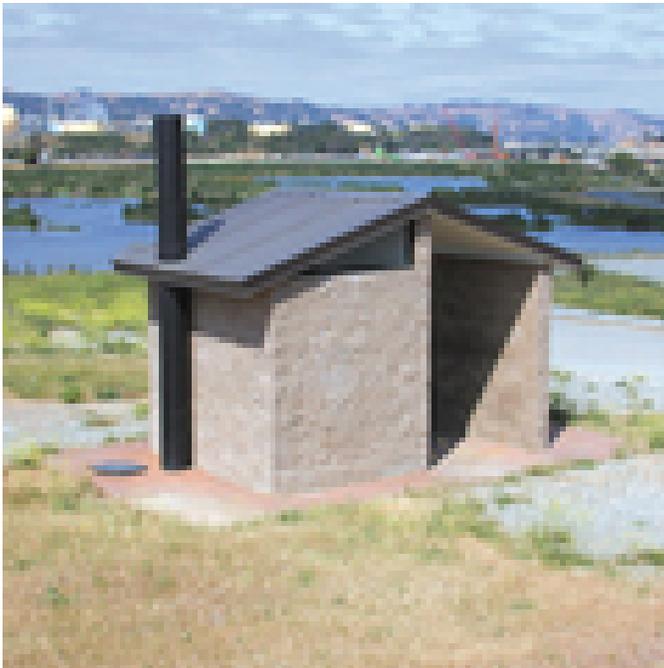
**Swede Lake Trailhead Outhouse
Environmental Assessment**
DOI-BLM-AKA-020-2012-0019-EA

Applicant: N/A, Internal Proposed Action
Case File Number: N/A

1. Introduction

1.1 Summary of Proposed Action

The Bureau of Land Management (BLM) proposes to construct a single hole outhouse at the Swede Lake Trailhead. The outhouse will be a prefabricated cement structure manufactured by Romtec Inc. The total foot print occupied by the structure would be 12 feet by 8 feet. The outhouse would meet Americans with Disabilities Act (ADA) standards.



Romtec SST Aspen

1.2 Project Area Description and Land Status

Swede Lake Trailhead, located at milepost 16.5 of the Denali Highway, is a major access point for recreational and subsistence users accessing Swede Lake, the Middle Fork of the Gulkana River, and the Alphabet Hills. The trailhead is a heavily used, compacted gravel site with ample parking and ramps for loading of OHVs. With a foot print exceeding 90,000 square feet, or slightly more than two acres, it functions not only as a trailhead but also as a dispersed camping area for trail users and highway travelers. The majority of use occurs in the summer months with concentrated use during the 4th of July holiday and August through September hunting seasons.

During these timeframes it is not uncommon to observe 40-60 vehicles staged at or utilizing the trailhead area. For the use period 2001 through 2011, the trail received an average yearly visitation of 2160 users. (BLM Recreation Information Management System 2001-2011). This rate reflects trail users only and does not account for campers, highway travelers, or other people utilizing the trailhead area.



Swede Lake Trailhead and Outhouse Location

The proposed project is located on lands selected by the State of Alaska. State 906 (k) Concurrence was received in April 2012 and is located in the NEPA project file. The legal land description for the project area is the SW $\frac{1}{4}$ of the NE $\frac{1}{4}$, Section 5, T.22S, R.10E, Fairbanks Meridian.

1.3 Purpose and Need

The need for the action is driven by excessive human waste being deposited on the surrounding landscape. The trailhead functions not only as a staging area for trail travel but also as a dispersed camping area. As such, the current method of waste disposal, depositing waste directly on the landscape, does not achieve basic public health and safety standards. The purpose of the proposed action is to provide a permanent sanitary facility for disposal of human waste.

1.3.1 Decision to be Made

The BLM will decide whether to construct a permanent sanitary facility for disposal of human waste at the Swede Lake Trailhead.

1.4 Land Use Plan Conformance

The East Alaska Resource Management Plan and Record of Decision (RMP/ROD) of September 2007 provide the overall long-term management direction for lands encompassed by the proposed project. The proposed action and alternatives are consistent with the RMP/ROD. Specifically, the proposed action is consistent with the following Goals and Management Actions in the RMP/ROD:

Transportation and Facilities Maintenance, Page 45

S-1 Goal: Manage facilities, including trails and roads to provide for public access or administrative needs, while maintaining or protecting resource values and in coordination with other federal and state agencies and private landowners.

S-2 Management Actions, Number 4: Maintain facilities such as boat ramps, communications facilities, etc. according to Bureau standards and to meet public health and safety requirements.

1.5 Other Applicable Laws, Regulations, Policies, etc.

The proposed action would be subject to an array of laws, regulations, and acts including, but not limited to the following:

1.5.1 National Historic Preservation Act, As Amended 1992

The proposed project would occur in the Tangle Lakes Archaeological District which is a National Register Property. A Section 106 review was conducted in the summer of 2012 and no heritage resources were located. This documentation is found in Appendix 1 of this document.

1.5.2 Alaska National Interest Lands Conservation Act of 1980

The BLM is required by Section 810 of the Alaska National Interest Lands Conservation Act to consider potential impacts to subsistence activities, resources, or access to subsistence activities from project proposals. A complete analysis of Section 810 findings is located in Appendix 2 of this document.

1.5.3 Lands with Wilderness Characteristics

BLM Washington Office IM-2011-154 directs offices to conduct and maintain inventories regarding the presence or absence of wilderness characteristics and to consider identified lands with wilderness characteristics in land use plans and when analyzing projects under NEPA. A complete analysis of Lands with Wilderness Characteristics is located in Appendix 3 of this document.

1.6 Scoping

Internal scoping was conducted in April 2012. A list of specialists involved with the ID team can be found in the NEPA file. External scoping was initiated on May 8 2012. Public notices were placed in the Delta Wind and Copper River Record newspapers. Additionally two private businesses near the area and the Swede Lake Homeowners Association were mailed scoping notices. No substantive comments were generated through external scoping.

1.7 Issues

1.7.1 Issues Identified

- How would the alternatives affect the distribution of human waste at the site?
- How would the alternatives affect the recreation resource and experiences at the site?

1.7.2 Issues Eliminated from Further Analysis

The following table depicts issues identified but eliminated from further analysis.

Issue	Reason for Elimination
Spread of invasive weeds	Addressed through ROPS and Project Design Features
Vegetation clearing and permanent impacts to vegetation	Project site is located on previously disturbed ground void of any vegetation
Impacts to wildlife and wildlife habitat	Due to the developed nature of the trailhead, constant human activity, and proximity to the Denali Highway wildlife occurrences at the project location are extremely rare. Additionally the project site does not offer suitable permanent habitat for local wildlife species
Impacts to visual resources	Addressed through Project Design Features
Impacts to water resources	No flowing or surface water is located in project vicinity. Ground water is addressed within Project Design Features
Impacts to Lands with Wilderness Characteristics	Lands with Wilderness Characteristics are not present within the area (see Appendix 3).
Impacts to the Tangle Lakes Archaeological District National Register Property or other National Register Eligible Properties	NHPA Section 106 review of the project in 2012, including archaeological surveys of the project area, failed to locate any cultural resources.

2. Alternatives

2.1 Alternative 1 - No Action Alternative

Under the No Action Alternative, no permanent sanitary facility for disposal of human waste would be constructed. Trailhead users would continue to utilize the surrounding landscape for disposal of human waste.

2.2 Alternative 2 - Proposed Action Alternative

Under the Proposed Action Alternative, the BLM would construct a single hole outhouse, specifically the model SST Aspen produced by Romtec Inc., at the Swede Lake Trailhead. The outhouse would have a footprint of 12 feet by 8 feet, roof height of 12 feet, and roof pitch of 4/12. An area of 40 feet by 40 feet would be impacted during construction. One 750 gallon concrete holding tank with a diameter of 5 feet and height of 6 feet will be excavated below ground level. Excavated materials will not exceed 20 cubic yards and will be utilized on site to fill potholes and low spots in the surrounding parking area. An excavator will be utilized to perform excavation work. The project location is on previously disturbed ground consisting of compacted native soils and imported crushed rock. All work will be performed by a licensed and bonded contractor selected by the BLM procurement and engineering divisions. Work would occur in the months of July or August and is expected to take up to ten working days. While a small portion of the trailhead area would be closed during project construction ample parking and access to the trail system will remain available throughout the project duration.

The Proposed Action is subject to these additional Project Design Features

- Possible impacts associated with invasive weeds are addressed through the Required Operating Procedures (ROP) found within Appendix A of the Record of Decision for the EARMP. In relation to this project these will include ROP Soils A12, ROP Vegetation A2, and ROP Vegetation A3. Additionally any machinery to be utilized at the work site will be washed and inspected to be free of any seed, vegetation, or weeds prior to being transported to the project location.
- Visual Resources will be protected through the selection of a natural color scheme of the outhouse color. The SST Aspen model outhouse is constructed of tan and brown colored concrete with a brown roof. This color scheme will ensure the unit blends in with the surrounding landscape and vegetation. The placement of the outhouse in the northwest corner of the trailhead will conceal the structure from horizon views along the Denali Highway and the Swede Lake trail system.
- Possible impacts to ground water resources are eliminated through the installation of the 750 gallon concrete vault holding tank. This impermeable layer ensures that liquids and waste within the holding tank cannot transfer or mix with any below ground hydrological features. Additionally the installation will be performed according to Alaska Department of Environmental Conservation standards for wastewater discharge.

2.3 Alternatives Considered but Eliminated from Consideration

Placement of a portable toilet was eliminated due to the fact it does not meet the purpose of the Proposed Action in supplying a permanent sanitation facility. Additionally transportation, maintenance, and pumping costs would be prohibitive.

The installation of a wilderness style outhouse was eliminated because it does not meet BLM engineering standards.

3. Affected Environment and Environmental Effects

The project area is located at Swede Lake Trailhead, sixteen miles west of Paxson, Alaska. Swede Lake Trail was utilized by 2,109 visitors in BLM fiscal year 2011 (BLM RMIS 2011). The trailhead is a heavily used area which provides parking for vehicles, motor homes, trailers, and OHV's. It serves as an access point to the Alphabet Hills and Middle Fork of the Gulkana River.

The developed portion of the trailhead encompasses approximately two acres. The surface area is covered with crushed rock and is void of any vegetation. Two OHV loading ramps are present at the trailhead. The perimeter of the area contains typical vegetation found within the foothills of the Alaska Range, consisting primarily of tundra habitat interspersed with dwarf willow, dwarf birch, and blueberry bushes. Moose, caribou, bears, and various raptors are the primary wildlife within the area. Due to the developed nature of the site wildlife encounters at the project location are extremely rare.

3.1 How would the alternatives affect the distribution of human waste at the site?

3.1.1 Affected Environment

The trailhead site and perimeter is currently being utilized for disposal of human waste. Numerous mounds of human waste and paper are located in the vegetation surrounding the developed area. The nearest public restroom is located 8 miles west at Tangle Lakes Campground.

3.1.2 Direct and Indirect Effects from No Action Alternative

Under the No Action Alternative human waste and paper would continue to be deposited along the trailhead perimeter. Waste products would accumulate over time and continue to contribute to unsanitary conditions at the site. There are no Indirect Effects of the No Action Alternative.

3.1.3 Direct and Indirect Effects from Proposed Action Alternative

The installation of an outhouse at Swede Lake Trailhead would eliminate nearly all human waste deposits upon the surrounding landscape. Waste would be contained in a sanitary and safe environment. The BLM would ensure that the facility and surrounding area is meeting public health and safety standards.

3.1.4 Cumulative Effects

There are no known cumulative effects in relation to this issue.

3.2 How would the alternatives affect the recreation resource and experiences at the site?

3.2.1 Affected Environment

The Swede Lake Trailhead serves over 2000 visitors each year. It is a highly developed site capable of handling up to 60 vehicles with trailers at any given time. The site is predominately used for parking and changing modes of transportation from highway vehicles to OHV's. An increasing amount of dispersed camping occurs at the site. Recreation experiences at the site consist primarily of camping and trip preparation.

3.2.2 Direct and Indirect effects from No Action Alternative

While recreation experiences at the site may be somewhat limited in scope the installation of an outhouse would serve to improve them. Encounters of human waste and paper refuse in the surrounding vegetation would be nearly eliminated. User experience would be further enhanced with the availability of a facility to dispose of human waste. Indirect Effects would consist of a small percentage of user displacement. While the area is considered developed by BLM standards increased infrastructure could negatively affect a small portion of users and their desired experience.

3.2.3 Cumulative Effects

The east end of the Denali Highway (Paxson to Tangle Lakes) has experienced incremental development in regards to recreation facilities over the past decade. These developments include a wayside and outhouse development at mile 7, reconstruction of Tangle Lakes Campground, improvements to trailheads and parking areas, and the construction of 3 new hiking trails. Increased use, primarily attributed to additional moose and caribou hunting opportunities, is also occurring. These actions and use patterns have slightly altered the feeling of isolation along this stretch of the highway while attempting to meet the needs and demands of an increasing user base.

4. Consultation and Coordination

Darrin Mcleod, Project Engineer, Bureau of Land Management
Interdisciplinary Team meeting conducted May 5, 2012

5. List of Preparers

Cory Larson, Outdoor Recreation Planner

6. References Cited

Appendix 1, Section 106 Review
Appendix 2, ANILCA Section 810 Findings
Appendix 3, BLM Lands with Wilderness Characteristics Analysis

WILDERNESS CHARACTERISTICS ASSESSMENT

DOI-BLM-AK-A020-2012-0019-EA

Swede Lake Trailhead Outhouse

The basis for this evaluation is WO IM 2011-154 which directs offices to continue to conduct and maintain inventories regarding the presence or absence of wilderness characteristics, and to consider identified lands with wilderness characteristics in land use plans and when analyzing projects under the National Environmental Policy Act (NEPA).

This proposed action requires a review of those lands affected by the application within the Glennallen Field Office with wilderness characteristics under the WO IM 2011-154. This action is being analyzed as a project level decision.

Proposed Action

The Bureau of Land Management (BLM) proposes to construct a single hole outhouse at the Swede Lake Trailhead. The outhouse will be a prefabricated cement structure manufactured by Romtec Inc. The total foot print occupied by the structure would be 12 feet by 8 feet. The outhouse would meet Americans with Disabilities Act (ADA) standards

Finding

An inventory for lands with wilderness characteristics has been completed for this area. Of the 25,000 acre inventory area most lands have been found to possess wilderness characteristics. The lands in proximity to Denali Highway, Swede Lake Trail, and private properties within the area are excluded from this finding. These lands are highly developed, contain routes identified as wilderness roads, and do not possess outstanding opportunities for solitude and recreation.

The Swede Lake Trailhead Outhouse project is located within lands not possessing wilderness characteristics. The project will not affect nor interfere with surrounding lands that were found to possess wilderness characteristics.

Current Conditions: Presence or Absence of Wilderness Characteristics

Area Unique Identifier: Swede Lake Trail Western Block Lands

Acreage: 25,218

(If the inventory area consists of subunits, list the acreage of each and evaluate each separately).

In completing steps 1-5, use additional space as necessary.

1. **Is the area of sufficient size?** (If the area meets one of the exceptions to the size criterion, check Yes and describe the exception in the space provided below), Note: If “No” is checked the area does not have wilderness characteristics; check NA for the remaining questions below.

Yes X No _____

Description (describe the boundaries of the area--wilderness inventory roads, property lines, etc.): This block of land is bordered by Swede Lake Trail on the east, Middle Fork Gulkana River on the south, Gulkana/Delta Wild and Scenic corridor on the west, and the Denali Highway on the north. Swede Lake Trail is a wilderness inventory road. There are numerous developments along Swede Lake and the Denali Highway. The project location is 300 feet from the highway in a developed trailhead and parking area that is 2 acres in size. This 2 acre block is excluded from the overall inventory area.

Does the area appear to be natural? Note: If “No” is checked the area does not have wilderness characteristics; check NA for the remaining questions below.

Yes X No _____ N/A _____

Description (include land ownership, location, topography, vegetation, and summary of major human uses/activities): Areas not associated with developments, private lands, and trails systems appear to be natural. The project area is not natural and is a highly developed 2 acre site containing parking for 60 + vehicles and OHV loading ramps

2. **Does the area (or the remainder of the area if a portion has been excluded due to unnaturalness and the remainder is of sufficient size) have outstanding opportunities for solitude?**

Yes X No _____ N/A _____

Description (describe the area’s outstanding opportunities for solitude): Solitude can be attained when recreating away from the highway corridor, Swede Trail corridor, and private properties.

3. **Does the area (or the remainder of the area if a portion has been excluded due to unnaturalness and the remainder is of sufficient size) have outstanding opportunities for primitive and unconfined recreation?** Note: If “No” is checked for both 3 and 4 the area does not have wilderness characteristics; check “N/A” for question 5.

Yes X No _____ N/A _____

Description (describe the area’s outstanding opportunities for primitive and unconfined recreation): Expansive views of mountains and glaciers, alpine and tundra hiking and camping opportunities, easily accessible area from the Denali Highway, trail systems, and Tangle Lakes.

4. Does the area have supplemental values (ecological, geological, or other features of scientific, educational, scenic or historical value)?

Yes X No N/A

Description: Within Tangle Lakes Archaeological District

Summary of Analysis*

Area Unique Identifier: Swede Lake Trail Western Block Lands

SUMMARY

Results of analysis: (Note: explain the inventory findings for the entirety of the inventory unit. When wilderness characteristics have been identified in an area that is smaller than the size of the total inventory unit, explain why certain portions of the inventory unit are not included within the lands with wilderness characteristics (e.g. the inventory found that certain parts lacked naturalness).

Segments of the unit were found to lack wilderness characteristics. These areas include: Lands in proximity to Swede Lake Trail, a motorized OHV route. Lands associated with private developments along Swede Lake and the Denali Highway. Lands associated with the Swede Lake Trailhead.

- | | | | | | | |
|---|-----|--------------|----|---------------|-----|---------------|
| 1. Does the area meet any of the size requirements? | Yes | <u> X </u> | No | <u> </u> | | <u> </u> |
| 2. Does the area appear to be natural? | Yes | <u> X </u> | No | <u> </u> | N/A | <u> </u> |
| 3. Does the area offer outstanding opportunities for solitude or a primitive and unconfined type of recreation? | Yes | <u> X </u> | No | <u> </u> | N/A | <u> </u> |
| 4. Does the area have supplemental values? | Yes | <u> X </u> | No | <u> </u> | N/A | <u> </u> |

Check one:

- X The area, or a portion of the area, has wilderness characteristics and is identified as lands with wilderness characteristics.
- The area does not have wilderness characteristics.

Prepared by (team members): (Name, Title, Date)

Name: Cory Larson

Title: Outdoor Recreation Planner

Date: 12/11/2012

Reviewed by: (District or Field Manager):

Name: Beth Maclean

Title: Field Manager

Date: 12/11/2012

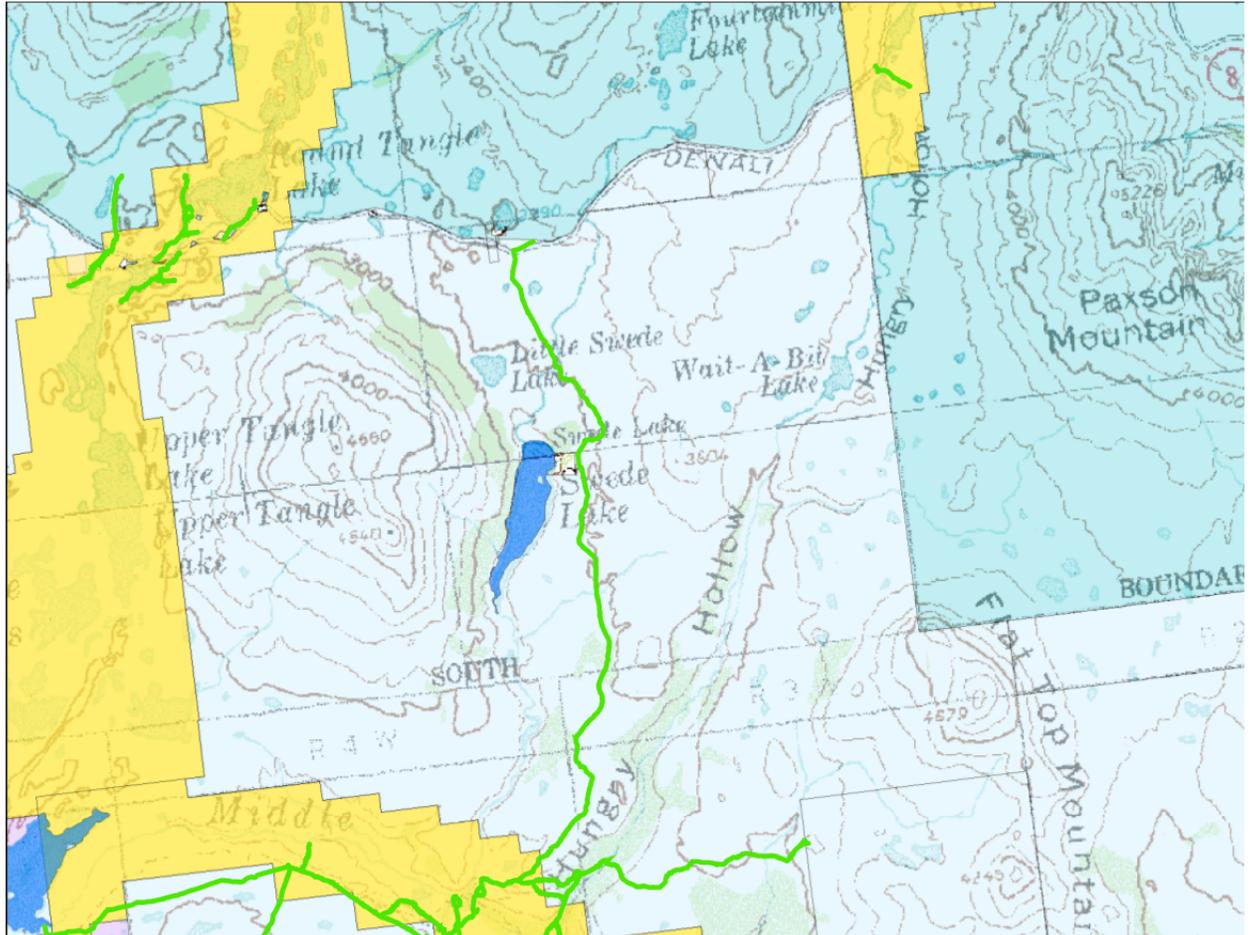
Wilderness Characteristics Inventory Appendix C – Route Analysis¹

(Factors to consider when determining whether a route is a road² for wilderness characteristics inventory purposes.)

Wilderness Characteristics Inventory Area Unique Identifier: Swede Lake Trail Western Block Lands

Route or Route Segment³ Name and/or Identifier: (Include Transportation Plan Identifier, if known, and include route number supplied by citizen information, when available.) Swede Lake Trail

- I. **LOCATION:** Refer to attached map and BLM corporate data (GIS). List photo point references (where applicable) or reference attached photo log:



Describe:

II. ROUTE CONTEXT

- A. Current Purpose⁴ (if any) of Route: (Examples: Rangeland/Livestock Improvements (stock tank, developed spring, reservoir, fence, corral), Inholdings (ranch, farmhouse), Mine Site, Concentrated Use Site (camp site), Recreation, Utilities (transmission line, telephone, pipeline), Administrative (project maintenance, communication site, vegetation treatment)).

Describe: Route is utilized by OHV's, 4x4, and at times street vehicles to gain access to public lands as well as private inholdings on Swede Lake. Route serves over 2000 motorized users per year.

- B. Right-of-Way (ROW):

1. Is there a ROW associated with this route? Yes _____ No X Unknown _____

2. If yes, what is the stated purpose of the ROW?

Yes _____ No _____ Unknown _____

3. Is the ROW still being used for this purpose?

Explain:

III. WILDERNESS INVENTORY ROAD CRITERIA

- A. Evidence of construction or improvement using mechanical means:

Yes X (if either A.1 or A.2 is checked "yes" below)

No _____ (if both A.1 and A.2 are checked "no" below)

1. Construction: (Is there evidence that the route or route segment was originally constructed using mechanical means?) Yes X No x Unknown _____

Examples: The route was built by the US Army in the 1940's and 1950's to serve as a corridor for overland training missions. Old military equipment and landing strip mats have been found on and near the trail

Paved _____ Bladed X Graveled _____ Roadside _____ Cut/Fill _____ Other _____
Berms _____

Describe: Sections of trail have visual berms and cuts from heavy equipment

2. Improvements: (Is there evidence of improvements using mechanical means to facilitate access?)

Yes X No _____

If yes, By handtool _____ By machine X

Examples:

Culverts _____ Hardened Stream Crossings _____ Bridges _____ Drainage X Barriers _____
Other _____

Describe: Swede Lake Trails has been maintained with dozers and excavators since 2004 by the Bureau of Land Management. Significant infrastructure including rolling dips, water drainage features, and trail hardening methods are present along the trail.

B. **Maintenance:** (Is there evidence of maintenance that would ensure relatively regular and continuous use?):

Yes X (if either B.1 or B.2 is checked "yes" below)
No _____ (if both B.1 and B.2 are checked "no" below)

1. Is there Evidence or Documentation of Maintenance using hand tools or machinery?

Yes X No _____
If yes, By handtool _____ By machine X

Explain: Swede Lake Trails has been maintained with dozers and excavators since 2004 by the Bureau of Land Management. Significant infrastructure including rolling dips, water drainage features, and trail hardening methods are present along the trail.

2. If the route or route segment is in good⁵ condition, but there is no evidence of maintenance, would mechanical maintenance with hand tools or machines be approved by BLM to meet the purpose(s) of the route in the event this route became impassable?

Yes _____ No _____

Explain:

C. **Relatively regular and continuous use:** (Does the route or route segment ensure relatively regular and continuous use?)

Yes X No _____

Describe evidence: OHV's, tracked vehicles, monster trucks, and street vehicles utilize Swede Lake Trail throughout the months of May-October. Snowmachine traffic is present in the winter months. Tracks are visible whenever there isn't any snow cover.

IV. CONCLUSION

Does the route or route segment⁷ meet the definition of a wilderness inventory road (i.e., are items III.A and III.B and III.C all checked yes)?

Yes X = Wilderness Inventory Road
No = Not a road for wilderness inventory purposes

Explanation⁸:

Evaluator(s): Cory Larson

Date: 12/11/2012

¹This form documents information that constitutes and inventory finding on wilderness characteristics. It does not represent a formal land use allocation or a final agency decision subject to administrative remedies under either 43 CFR parts 4 or 1610.5-3.

²Road: An access route which has been improved and maintained by mechanical means to insure relatively regular and continuous use. A way maintained solely by the passage of vehicles does not constitute a road.

a. Improved and maintained – Actions taken physically by people to keep the road open to vehicle traffic. “Improved” does not necessarily mean formal construction. “Maintained” does not necessarily mean annual maintenance.

b. Mechanical means – Use of hand or power machinery or tools.

c. Relatively regular and continuous use – Vehicular use that has occurred and will continue to occur on a relatively regular basis. Examples are: access roads for equipment to maintain a stock water tank or other established water sources, access roads to maintained recreation sites or facilities, or access roads to mining claims.

³If a portion of a route is found to meet the wilderness inventory road criteria (see Part III) and the remainder does not meet these criteria (e.g., a cherrystem road with a primitive route continuing beyond a certain point), identify each segment and explain the rationale for the separate findings under pertinent criteria. ¹ The purpose of a route is not a deciding factor in determining whether a route is a road for wilderness characteristics inventory purposes. The purpose of a route does provide context for factors on which such a determination may be based, particularly the question of whether maintenance of the route ensures relatively regular and continuous use.

⁴The purpose also helps to determine whether maintenance that may so far have been unnecessary to ensure such use would be approved by BLM when the need arises.

⁵Good condition would be a condition that ensures regular and continuous use relative to the purposes of the route. Consider whether the route can be clearly followed in the field over its entire course and whether all or any portion of the route contains any impediments to travel

⁶ Include estimate of travel rates for the stated purposes, e.g., trips/day or week or month or season or year or even multiple years in some facility maintenance cases.

⁷.If part of the route meets the wilderness inventory road definition and the remainder does not, describe the segment meeting the definition and any remaining portion not meeting the definition and why.

⁸Describe and explain rationale for any discrepancies with citizen proposals.

Appendix 2.

COMPLIANCE WITH ANILCA SECTION 810 EVALUATION AND FINDING

E.A. No.: DOI-BLM-AKA-020-2012-0019-EA

Applicant: Bureau of Land Management, Glennallen Field Office

EVALUATION:

1. Effect of Proposed Action on Subsistence Uses and Needs

Fisheries: The proposed action would not significantly reduce harvestable fisheries resources that are available for subsistence use. The construction area has no fish resources in the immediate vicinity due to the absence of flowing or surface water. The Delta River, the nearest fish bearing river, is closed to the harvest of fish by federal subsistence users.

Wildlife: The proposed action of constructing an 8 x 12 ft outhouse at the Swede Lake Trailhead would not appreciably reduce harvestable wildlife resources that are available for subsistence taking on BLM administered lands. The proposed action would utilize an already existing disturbed site, highly developed compacted gravel site, therefore containing additional degradation to wildlife subsistence resources in the area. The proposed action area also occurs in state-selected BLM managed lands and is closed to the subsistence taking of wildlife resources. Therefore, the proposed action has no significant restriction on subsistence uses and needs for wildlife resources.

Other Resources: The proposed action would not appreciably restrict any other harvestable resources such as wood, water, berries or vegetation. The proposed action would utilize a site that is an existing disturbed site, highly developed compacted gravel, and devoid of vegetation, therefore containing additional degradation to other subsistence resources in the area.

2. Availability of other lands, if any, for the purposes sought to be achieved:

The proposed action is in response to the increasingly unsanitary conditions at the Swede Lake Trailhead parking area due to the deposition of human waste around the parameter. The land is state-selected BLM managed lands. Due to the proposed action addressing the specific issue of human waste deposition, it was determined that the best site for the issue to be resolved is within the compacted gravel site; therefore, no other lands were considered.

3. Other alternatives, if any, which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes:

The no action alternative would require BLM to reject the construction of an outhouse and unsanitary conditions to continue; however, there is no substantial evidence that would indicate a significant

restriction to use, occupancy, or disposition of public lands needed for subsistence purposes as a result of the proposed action. No other alternatives were evaluated.

FINDINGS:

The proposed action of constructing an outhouse within the Swede Lake Trailhead compacted gravel site would not significantly restrict subsistence use in or near the proposed activity area. The impacts to subsistence resources and access discussed above would be minimal. There is no reasonably foreseeable significant decrease in the abundance of harvestable resources, and in the distribution of harvestable resources.

/s/ Sarah L. Bullock

Sarah L. Bullock
Wildlife Biologist
BLM, Glennallen Field Office

11/29/2012

Date

**Assessment of Heritage and Paleontological Resources
Glennallen Field Office**

GFO Document No. GFO-12-29

BLM Serial No. **Environmental Assessment No.** DOI-BLM-AK-A020-2009-0006

Applicant: Bureau of Land Management, Recreation Trails Management

Date: 09/27/12 **Map:** Mt Hayes A-5

Class of Inventory: III

Dates of Inspection: 07/18/2012 **Inspector (s):** John Jangala

Abstract: The Bureau of Land Management proposes to install a vault toilet at the Swede Lake Trailhead in the Tangle Lakes Archaeological District. There are five known archaeological sites, XMH-435 and XMH-1007, within a mile of the proposed project area. However, the nearest of these is over one half mile from the proposed project and will not be affected by the proposed project. Additionally, a survey of the proposed work area revealed that the area is largely disturbed and failed to locate any additional cultural resources. It is therefore recommended that the project be allowed to proceed as described with no additional archaeological work required.

Location: The project is located alongside the Denali Highway at the Swede Lake trailhead at milepost 16 of the Denali highway. The trailhead is located within the Tangle Lakes Archaeological District south of the Denali Highway. Specifically, the project area is located at the west end of the trailhead at milepost 16 of the Denali Highway in the NE ¼ of the SW ¼ of Sect. 5, T22S, R10E, FM. See Figure 1, below for the project vicinity.

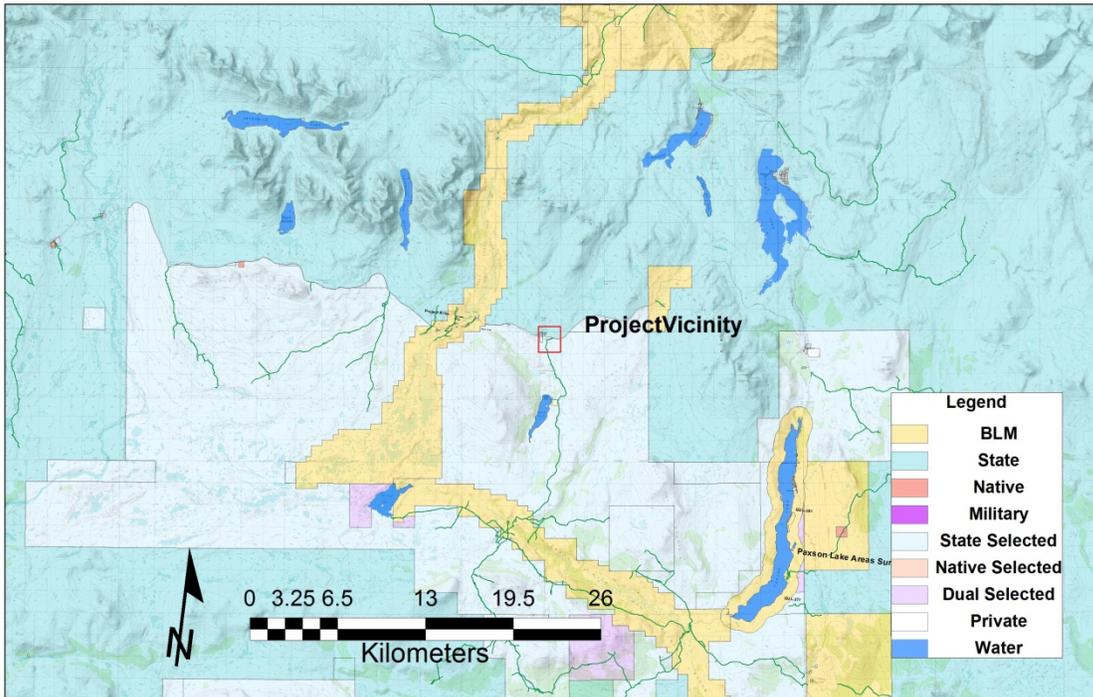


Figure 1. Project Vicinity Map

Project Description: The Bureau of Land Management proposes to install a public vault toilet at the Swede Lake Trailhead in the Tangle Lakes Archaeological District. The trailhead is used by thousands of off highway vehicle users through-out the year to access designated trails in the area. The project will involve the excavation of a toilet vault, using heavy excavation equipment working in the trailhead's existing parking lot. A prefabricated toilet structure will then be installed over the vault. See Figure 2 below for the project's proposed location.

Acreeage: Approximately less than 1 acre will be affected by construction activity



Figure 2. Project Location

Environment: The geology of the area is dominated by Wisconsin aged ice stagnation deposits, including the esker ridges northwest and south of the Delta Wayside (Pewe and Reger 1983:117-119). The site of the Delta Wayside is in the vicinity of an ice cored esker that held the proglacial/postglacial waters of Upper Tangle Lake, whose waters reached approximately 16m above current lake levels (Pewe and Reger 1983; Campbell 1990). A portion of this esker lies immediately north of the wayside and the Denali Highway. The lake was drained in a catastrophic event after about 7,700 B.P., which formed the delta upon which the modern Tangle Lakes campground was built (Bowers 1989). Pleistocene glacial and lacustrine deposits overlay basement Mesozoic sedimentary rock with igneous intrusions (Moffit 1912).

The Tangle Lakes vegetation is composed primarily of moist tundra, alpine tundra and sparse spruce woodland. There is a large variety of mammals, birds and fish. The area is within the wintering grounds of the Nelchina caribou herd, *Rangifer terrandus*, and seasonally supports several thousand of these animals. Wolves, *Canis lupus*, are present through the summer but are most populous when caribou are present. Moose, *Alces alces*, are present in smaller numbers through out most of the year, but are generally not present during the winter. A variety of other mammals are present during most of the year. Grizzly, *Ursus arctos*, black bear, *Ursus americanus*, and arctic ground squirrel, *Spermophilus parryii* are present in the area through out spring, summer and fall, hibernating through the winter. A large variety of birds are seasonal inhabitants of the area including a number of ducks as well as Trumpeter swans, *Olor buccinator*.

Literature Review: The literature search conducted for this project focused on Bureau of Land Management records in Glennallen. These records include atlases of known sites, atlases of historic sites located by The Bureau of Indian Affairs, previous cultural resource investigations, previous cultural resource survey reports, Master Title Plats, 1966 aerial photographs and data from the Alaska Land Information System. Reports include Survey of Archaeological

Sites, Tangle Lakes Archaeological District Near Paxson, Alaska 1976 by B. Zinck and T. Zinck. The numerous works of Frederick West that were also consulted include: The Archaeology of Beringia, written in 1981; American Beginnings, written in 1996; and Archaeological and Paleocological Research in The Tangle Lakes, Central Alaska, 1966-1972, written in 1972. Other sources include: "Ahtna," Handbook of North American Indians: Subarctic, Vol.6, written by Frederica de Laguna and Catharine McClellan in 1981; Paleontological Inventory and Assessment of Public Lands Administered by Bureau of Land Management State of Alaska written in 1986 by K. Don Lindsey; Guidebook to Permafrost and Quaternary Geology Along the Richardson and Glenn Highways Between Fairbanks and Anchorage, Alaska, edited by T.L. Pewe and R.D. Reger in 1983; Roadside Geology of Alaska written in 1988 by Cathy Connor and Daniel O'Haire and The Alaska Heritage Resource Survey Records.

Cultural Resource Review: The surrounding project area contains cultural resources that are both prehistoric and historic in nature. The retreat of the Broxson Gulch ice stream and the widespread stagnation of ice in the Tangle Lakes around the end of the Pleistocene, around 11,800 B.P. (Schweger 1981) opened the area to colonization by pioneering plants like willow, birch, lichens and various herbs that currently support populations of moose and caribou. There is also ample evidence in the district for the human use of an ancient proglacial Tangle Lake's shores from around 10,500 to 8,000 years B.P. (West 1996:379-403). These lake side occupations have largely been identified as containing Denali Complex assemblages (West 1996). Microblade components of these tool kits seem to indicate a heavy reliance upon large game early in time that focused along the shores of the proglacial lake (West 1996). There is evidence to suggest that Denali occupations of the area do not post date the dramatic draining of the lake between 8000 and 3500 B.P. (Campbell 1990), and possibly around 7700 B.P. (Bowers 1989).

There is debate between Bowers (Gillispie 1990) and West (1975) regarding later prehistoric use of the Tangle Lakes. West suggests a period of abandonment between the Denali Tradition and the later Northern Archaic Tradition, spanning from approximately 8000-5000 B.P. (1975: 78). Whereas, Bowers chronology (Gillispie 1990:II-33) suggests a more continuous occupation through the Holocene.

Prior to European contact the Ahtna, who lived primarily along the Gulkana River in seasonal villages (De Laguna 1981). The Ahtna used a number distinctly named locations within the Tangle Lakes for spring and fall caribou hunting (Reckord 1983). The Ahtna used long caribou fences to drive caribou into the Tangle Lakes, where they were speared from skin boats (Reckord 1983:167-168). Hunters usually camped in areas near hunting ground like the habitation site located on the shores of Dickey Lake in the southern part of the Archaeological District.

Previous Investigations:

The BLM has conducted three archaeological surveys around the Swede Lake trailhead. The first survey of the State of Alaska material site M.S. 52-1-009-5 to the west of the trailhead was conducted by Brian and Teresa Zinck (Zinck and Zinck 1976:10) who surveyed exposures near the material source near mile 16, locating XMH-435, or BLM 29, a prehistoric lithic scatter on a ridge overlooking the material source. Additional surveys within proposed expansion areas of the material source were conducted by Pete Bowers (1986:4-5); however, no additional archaeological sites were found during his surveys. Lastly, additional surveys were conducted in the summer of 2000 by Jangala (2001:34-35), who surveyed a short branch trail that starts from M.S. 52-1-009-5 and follows the two ridges to the south. These surveys relocated XMH-435 as well as another prehistoric lithic scatter, XMH-1007, on the ridges south of the material source.

Known and Reported Cultural Resources:

There are five archaeological sites located to the west of the trailhead in the vicinity of M.S. 52-1-009-5. XMH-435, XMH-1007, XMH-1027, XMH-1029, and XMH-1030 are prehistoric lithic scatters on a nearby series of esker ridges overlooking the site approximately one half mile west of the Swede Lake trailhead. These sites are shown in Table 1 and in Figure 3 below.

Figure 3. Survey Area and Known Archaeological Sites

Table 1. Reported Site Locations

AHRS#	Period	Type	Aliquot
XMH-01007	Prehistoric	Lithic Scatter	NE/NW/SE Sec. 6, T22S, R10E, FM
XMH-01027	Prehistoric	Lithic Scatter	SE/SE/NE Sec. 6, T22S, R10E, FM
XMH-01029	Prehistoric	Lithic Scatter	SW/SW/NE Sec. 7, T22S, R10E, FM
XMH-01030	Prehistoric	Lithic Scatter	SE/NW/NE Sec. 7, T22S, R10E, FM
XMH-00435	Prehistoric	Lithic Scatter	SE/SE/NE Sec. 6, T22S, R10E, FM

Paleontological Resource Review: The closest known fossil remains are located at XMH-387 which is located approximately 1 mile to the southwest of the Delta Wayside. This site is known as the “Fossil Beaver Dam Locality” and contains the remains of Spruce cones dated to the early Holocene. The closest known bedrock out cropping of fossiliferous material is approximately 12 miles to the north in the vicinity of Rainy Creek (Lindsey 1986).

Fieldwork (Description of Area Surveyed / Survey Methodology):

A pedestrian survey of the project area was completed on July 18, 2012, by John Jangala, the Glennallen Field Office archaeologist. A survey of the project area revealed that the majority of the area to be disturbed has been previously disturbed by gravel extraction activity and the creation of the trailhead several decades ago. Only a small area remains on the margins of the project area, where native but heavily disturbed soil exists. An examination of this area revealed no cultural resources.

Eligible National Register Cultural Resource: The Tangle Lakes Archaeological District was accepted into the National Register in 1971. Many of the archaeological sites in the vicinity of the trailheads are listed as sites contributing to the significance of the Archaeological District. XMH-435 is listed as TLAD contributing site; while no formal determination has been made for XMH-1007.

Conclusions: There are five known archaeological sites, XMH-435 and XMH-1007, within a mile of the proposed project area. However, the nearest of these is over one half mile from the proposed project and will not be affected by the proposed project. Additionally, a survey of the proposed work area revealed that the area is largely disturbed and failed to locate any additional cultural resources. It is therefore recommended that the project be allowed to proceed as described with no additional archaeological work required.

As long as the applicants adhere to these stipulations, it is recommended that clearance for the projects be approved, following concurrence of the State Historic Preservation Office. The following stipulation should be attached to the permit: “There shall be no disturbance of any archaeological or historical sites, including graves and remains of cabins, and no collection of any artifacts whatsoever. Also, the collection of vertebrate fossils, including mammoths and mastodon bones, tusks etc., is strictly prohibited. If historic resources are encountered then all artifacts will be respectfully left in place and the Glennallen Field Office’s cultural resources staff will be notified immediately. ”

Recommendations: It is recommended that the project be allowed to proceed as described with no additional archaeological work required.

Signed:

John W. Jangala
Glennallen Field Office Archaeologist (AKA-020)

References Cited

- Alaska State of
1989 Alaska Heritage Resource Survey Cards, Bureau of Land Management Glennallen Field Office, Glennallen, Alaska.
- Bowers, Peter M.
1986 The Tangle Lakes Archaeological District: Preliminary Report on 1986 Fieldwork. Bureau of Land Management, Alaska State Office, Anchorage, Alaska.
- Buzzell, Rolfe G. and J. David McMahan
1995 McCarthy Road Cultural Resources Reconnaissance Survey, 1994-1995, Office of History and Archaeology Report Number 50. Division of Parks and Outdoor Recreation, Alaska Department of Natural Resources: Anchorage.
- Campbell, Kathy
1990 Tangle Lakes, Alaska: A Progress Report. Ms. on file, Bureau of Land Management Glennallen Field Office, Glennallen, Alaska.
- Chase, James
1982 The 1982 Cultural Resource Investigations, BLM Glennallen Resource Area, Glennallen, Alaska. Ms. on file, Bureau of Land Management, Glennallen Field Office, Glennallen, Alaska.
- Connor, Cathy and Daniel O'Haire
1988 Roadside Geology of Alaska. Mountain Press Publishing Company, Missoula, Montana. Fifth Printing, April 1996.
- Jangala, John
2001 Report of Fieldwork in The Tangle Lakes Archaeological District: Summer 2000. Ms. on file, Bureau of Land Management, Glennallen Field Office, Glennallen, Alaska.
- de Laguna, Frederica, and Catherine McClellan
1981 "Ahtna," in Handbook of North American Indians: Subarctic. Vol. 6. Smithsonian Institution, Washington, D.C., pp. 641-663.
- Lindsey, Don K.
1986 Paleontological Inventory and Assessment of Public Lands Administered by Bureau of Land Management State of Alaska. Bureau of Land Management Contract #AK-950DT5-15. Ms. on file, Bureau of Land Management Glennallen Field Office, Glennallen, Alaska.
- Moffit, F. H.
1912 Headwaters Regions of The Gulkana and Susitna Rivers, Alaska. U.S. Geological Survey Bulletin 498. U.S. Government Printing Office, Washington D.C.
- Pewe, T.L., R.D. Reger
1983 Guidebook to Permafrost and Quaternary Geology Along the Richardson and Glenn Highways Between Fairbanks and Anchorage, Alaska. University of Alaska, Fairbanks, Alaska.
- Reckord, Holly
1983 Where Raven Stood Cultural Resources of the Ahtna Region. Anthropology and Historic Preservation Cooperative Park Studies Unit, University of Alaska, Fairbanks, Alaska.
- Schweger, Charles E.
1981 Chronology of Late Glacial Events From The Tangle Lakes, Alaska Range, Alaska, Arctic Anthropology 18(1): pp. 97-101.

Skarland, Ivar and Charles Keim

1958 Archaeological Discoveries On The Denali Highway, Alaska. Anthropolpological Papers of the University of Alaska. 6(2): pp. 79-87.

Viereck, Leslie A. and Little, Elbert L.

1972 Alaska Trees and Shrubs. Agriculture Handbook No. 410. Forest Service, United States Department of Agriculture, U.S. Government Printing Office, Washington, D.C.

West, Frederick Hadleigh and William Workman

1971 Archaeology and Paleoecological Research in The Tangle Lakes, Central Alaska, 1966-1972: A Report of Progress. Ms. on file, Bureau of Land Management Glennallen Field Office, Glennallen, Alaska.

1975 Dating The Denali Complex, Arctic Anthropology 7(1) pp. 76-81

1981 The Archaeology of Beringia, Columbia University Press, New York.

1996 American Beginnings The Prehistory and Paleoecology of Beringia. University of Chicago Press, Chicago.

Zinck, Brian and Teresa Zinck

1976 Survey of Archaeological Sites, Tangle lakes Archaeological District Near Paxson, Alaska, 1976. Boulder: Western Interstate Commission for Higher Education.