U.S. Department of the Interior
Bureau of Land Management

Ring of Fire

Draft Resource Management Plan Amendment
Haines Block Planning Area

December 2012

BLM

Anchorage Field Office, Alaska

The Bureau of Land Management Today

Our Vision

To enhance the quality of life for all citizens through the balanced stewardship of America's public lands and resources.

Our Mission

To sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

BLM/AK/PL-12/003+1610+A01000

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BLM File Photos:

1. Aerial view of the Takinsha Mountains area in the southern portion of the Haines Block planning area.
2. Radio collared mountain goat near Haines, Alaska. (photo courtesy of Alaska Dept. of Fish and Game)
3. Helicopter at West Creek Glacier area.
4. Norse Glacier area in the northern portion of the Haines Block planning area.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Alaska State Office
222 West Seventh Avenue, #13
Anchorage, Alaska 99513-7504
http://www.blm.gov/ak

In Reply Refer To:
1610 (010)

Dear Reader:

The Bureau of Land Management (BLM) is pleased to provide for your review the Draft Ring of Fire Resource Management Plan Amendment/Draft Environmental Impact Statement (Draft RMP Amendment/DEIS) for the Haines Planning Area in Southeast Alaska. The plan addresses future management of 320,000 acres of BLM-managed lands within the Planning Area.

Specifically, this Draft RMP Amendment/DEIS evaluates whether to retain the Special Recreation Management Area (SRMA) designation in the Planning Area and whether any part of the Planning Area meets the criteria for an Area of Critical Environmental Concern (ACEC) designation. The DEIS also assesses implementation actions pertaining to permitting helicopter and other organized flight excursions, one of the primary actions of BLM in the Planning Area.

The BLM will accept public comment on the Draft RMP Amendment/DEIS for 90 days after the Notice of Availability is published in the *Federal Register*, from December 14, 2012-March 14, 2013. There are three ways to submit comments during the public comment period:

1. Mail written comments to BLM Anchorage Field Office, Attn: Haines Amendment, 4700 BLM Road, Anchorage, AK 99507.
2. Submit electronic comments via email at BLM_AK_AFO_ROF_Amend@blm.gov.
3. Provide comments during public meetings in Haines and Skagway. Dates, times and locations of these meetings will be announced through the local media and on the project website at http://www.blm.gov/ak/st/en/prog/planning.html.

The BLM will consider and evaluate all comments in preparation of the Proposed RMP Amendment/Final EIS, and all substantive comments will be addressed. Comments will be most useful if they are specific, mention particular pages (where appropriate), and address one or more of the following:

- Inaccuracies or discrepancies in information,
- Identification of new information that would have a bearing on the analysis,
- Identification of new impacts, alternatives, or mitigation measures, and
- Suggestions for improving management direction.

All public comments received during the public comment period will be available for public review at the BLM Anchorage Field Office during regular business hours, 7:30 a.m. to 4 p.m., Monday through Friday, except holidays, and may be published as part of the Final EIS.

Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from organizations and businesses, or from individuals identifying themselves as representatives or officials of an organization or business, will be available for public inspection in their entirety.

The BLM appreciates your help in this planning effort and we look forward to your continued interest and participation.

If you would like additional information or clarification regarding the Draft RMP Amendment/ DEIS, please contact Molly Cobbs, Planning and Environmental Coordinator, or BLM Anchorage District Manager Karen Kelleher at (907) 267-1246 or (800) 478-1263.

Sincerely,

Bud C. Cribley
State Director

Enclosure

RING OF FIRE RESOURCE MANAGEMENT PLAN

DRAFT RESOURCE MANAGEMENT PLAN AMENDMENT / DRAFT ENVIRONMENTAL IMPACT STATEMENT

HAINES PLANNING AREA AMENDMENT

DOI-BLM-AK-A010-2012-0027-EIS

Anchorage Field Office, Anchorage District
BLM Alaska

December 14, 2012

For more information, contact:

Anchorage Field Office
4700 BLM Road
Anchorage, AK 99507
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EXECUTIVE SUMMARY

Introduction

The Bureau of Land Management (BLM), Anchorage Field Office has prepared this Draft Ring of Fire Resource Management Plan Amendment/Draft Environmental Impact Statement (Draft RMP Amendment/DEIS) to evaluate which, if any, designation and associated management practices and implementation actions best fulfill the resource needs and multiple-use demands within the Haines Planning Area.

The Haines Planning Area encompasses approximately 950,000 acres in Southeast Alaska, bound by the Canadian Border to the north and west, Glacier Bay National Park to the southwest, and the Tongass National Forest to the south and east. This Planning Area consists mainly of steep and remote mountainous terrain, with bedrock and glaciers that restrict road and trail access. Of the total acreage within the Planning Area, the BLM manages approximately 320,000 acres. All BLM-managed lands in the Planning Area are currently selected by the State of Alaska or Native Corporations. Until the selections are relinquished or conveyances are finalized, State- and Native-selected lands will continue to be managed by the BLM. The two blocks of State-selected lands in the Planning Area have been categorized by the State as "Identified for Relinquishment." Based on the State's current selection category, the BLM believes that the State-selected land in the Planning Area will remain under Federal management indefinitely.

The Draft RMP Amendment/DEIS was prepared using BLM's planning regulations and guidance issued under the authority of the Federal Land Policy and Management Act of 1976 (FLPMA), and under requirements of the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality regulations for implementing NEPA (40 CFR 1500-1508), BLM's NEPA Handbook 1790-1, and BLM's Land Use Planning Handbook 1601-1 (March 2005).

Purpose and Need

Action is needed at this time to re-evaluate special designations in the Planning Area, identified in the Ring of Fire RMP Record of Decision (ROD) and recent changes in BLM Recreation Management Area (RMA) policy. Given that special designations and designation changes are land use plan-level decisions, this land use plan amendment is an appropriate vehicle for assessing the current designation in light of new policies. Lastly, given that these lands are likely to remain under BLM management indefinitely, action is needed to establish a maximum number of annual helicopter landings in the Planning Area that meets the needs of the local economy, recreation use demand, as well as protects natural resources.

The purpose of this planning effort is to identify which, if any, designation and associated management practices best fulfill the resource needs and multiple-use demands within the Planning Area.

Decisions to be Made

The land use planning-level decisions to be made through this plan amendment process include:

- Whether to retain the SRMA designation in the Planning Area or to change the recreation management area designation, including whether to expand a recreation management area designation to the south block.
- Whether any part of the Planning Area meets the criteria for an ACEC designation.

The implementation-level decisions to be made through this process include:

- Whether to retain the Monitoring and Control Area for wildlife studies.
- Establish a maximum number of authorized annual helicopter landings.

Issues

Based on the BLM's management concerns, and through scoping input received from Federal, state, and local agencies, and the public (refer to Chapter 5), the Draft RMP Amendment/DEIS addresses the following primary issues and concerns:

- How to apply updated BLM RMA policy to the current SRMA and the south block (currently undesignated) in the Planning Area.
- Disturbance to local communities due to helicopter noise.
- Impacts of flight paths and associated noise from helicopters to other visitors and local residents.
- Impacts of helicopter-supported activities on wildlife, particularly on eagles, mountain goats and mountain goat habitat, and whether a monitoring and control area should be maintained for mountain goat studies.

Alternatives

This Draft RMP Amendment/DEIS evaluates four alternatives. Alternative A (No Action Alternative) represents the continuation of current management practices. Alternatives B, C, and D describe proposed changes to current management. Alternative D represents BLM's preferred alternative. Under all alternatives, BLM would manage the public lands in accordance with all applicable laws, regulations, and BLM policies and guidance. For a complete discussion of alternatives, see Chapter 2 of the Draft EIS.

Alternative A – No Action Alternative

This alternative would retain the SRMA designation in the north block of the Planning Area. However, the boundaries of the SRMA have changed from the 2008 signing of the Ring of Fire ROD due to the conveyance of several sections of BLM land to the State of Alaska. Under the No Action Alternative, an SRMA Plan would be developed consistent with the direction in the

2008 Approved Ring of Fire RMP and ROD. The 98,000-acre Monitoring and Control Area in the northwest portion of the Planning Area where permitted helicopter landings are currently prohibited would be retained. The total number of authorized helicopter landings in the Planning Area would be maintained at 2,400 annually during the summer only. This alternative would prevent current operators from expanding their operations, and would prevent other operators from using BLM lands for helicopter/aviation-supported tourism activities.

Alternative B – Resource Development

The current SRMA designation in the northern block of the Planning Area (approx. 251,900 acres) would be retained. The boundaries of the SRMA have changed due to the conveyance of several sections of BLM land to the State of Alaska since the signing of the Ring of Fire ROD. The SRMA designation would be expanded to encompass the south block of the Planning Area (approx. 66,200 acres). An SRMA Plan would be developed. The 98,000-acre Monitoring and Control Area would be lifted and permitted helicopter landings would be allowed to occur within the former boundary of the Monitoring and Control Area. The total number of authorized helicopter landings on BLM-managed lands in the Planning Area would be set to a maximum of 7,500 landings annually during the summer and winter. Permitting 7,500 landings annually would allow current operators to expand their operations, while also leaving capacity for additional operators to conduct helicopter and organized flight excursion activities, including commercial filming, in the Planning Area.

Alternative C – Resource Conservation

The current SRMA designation for the north block area would be changed to an Extensive Recreation Management Area (ERMA) and extend the ERMA designation to BLM-managed lands in the south block. The boundaries of the ERMA would encompass all BLM-managed lands in the Planning Area. The 98,000-acre Monitoring and Control Area would be retained for a period of five years from the signing of the ROD for the EIS to provide a control area for mountain goat studies conducted jointly between the BLM and ADFG. After the five-year period expires, the Monitoring and Control Area would be lifted and permit applications would be accepted for review through site-specific NEPA prior to any new authorizations. Future landing authorizations would be contingent on the results of the study efforts. The total number of authorized helicopter landings on BLM-managed lands in the Planning Area would be set to a maximum of 4,000 annually during the summer and winter. Permitting 4,000 landings annually would allow current operators to expand their operations, while also leaving capacity for additional operators to conduct helicopter/aviation-supported tourism activities, including commercial filming, in the Planning Area.

Alternative D – Agency Preferred Alternative

The RMA and Control Monitoring Area designations would be the same as described for Alternative C. The total number of authorized helicopter landings on BLM-managed lands in the Planning Area would be set to a maximum of 6,000 landings annually during the summer and winter. Permitting 6,000 landings annually would allow current operators to expand operations, while also leaving capacity for additional operators to conduct permitted helicopter landings,

including commercial filming, in the Planning Area.

Environmental Consequences

Alternative A, the No Action Alternative, would maintain the current number of requested landings authorized through SRPs in the Planning Area, with a modified Required Operating Procedure and current terms and conditions applied to SRPs. The BLM lands in the area would retain the SRMA designation. The Monitoring and Control area, where no SRP landings are permitted, would be retained which would continue to provide a study area for future wildlife studies.

Alternative B would allow for a significant increase in the number of landings authorized annually in the Planning Area under SRPs, which would benefit operators but could potentially increase noise impacts to wildlife, other visitors, and local residents. Impacts of this alternative would be mitigated through a modified Required Operating Procedure as well as current terms and conditions applied to SRPs.

Alternative C would allow a smaller increase in the number of landings authorized annually in the Planning Area under SRPs, which may limit operators from expanding their businesses, but could potentially reduce noise impacts to wildlife, other visitors, and local residents. Impacts of this alternative would be mitigated through a modified Required Operating Procedure as well as current terms and conditions applied to SRPs.

Alternative D allows for a moderate increased level of number of landings authorized annually in the Planning Area under SRPs, but sets places an upper limit to help reduce noise impacts to wildlife, other visitors, and local residents. The area would be designated an ERMA. The retention of the Monitoring and Control Area for five years allows for the completion of current studies before the area is opened to SRP applicants. Impacts of this alternative would be mitigated through a modified Required Operating Procedure as well as current terms and conditions applied to SRPs.

Public Involvement

A Notice of Intent (NOI) to prepare the Draft RMP Amendment/DEIS was published in the Federal Register in March 2009. The NOI initiated a 90-day formal scoping period that lasted until June 26, 2009. Public meetings were held during the scoping period in the communities of Haines, Skagway, and Anchorage.

In addition to public meetings, BLM consulted and solicited comments from local, state, and federal governments, special interest groups, and Native American tribes. The Municipality of Skagway has entered into a formal cooperating agency status with BLM regarding this planning effort. Concurrent with the beginning of the scoping period the BLM developed a planning website for the Draft RMP Amendment/DEIS. All planning-related documents, including the Scoping Report is available for online viewing. Public involvement is described in more detail in Chapter 5 of the Draft RMP Amendment/DEIS.

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ACRONYMS

ACEC	Area of Critical Environmental Concern
ADFG	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
AFO	Anchorage Field Office
ALTAA	Alaska Land Transfer Acceleration Act
AMG	Alaska Mountain Guides
ANCSA	Alaska Native Claims Settlement Act
ANILCA	Alaska National Interest Lands Conservation Act
AO	Authorized Officer
BLM	Bureau of Land Management
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DEIS	Draft Environmental Impact Statement
E.O.	Executive Order
ERMA	Extensive Recreation Management Area
FAA	Federal Aviation Administration
FLPMA	Federal Land Policy and Management Act
GWC	Galena Wildlife Consulting
GMU	Game Management Unit
IM	Instruction Memorandum
NEPA	National Environmental Policy Act
NOI	Notice of Intent
NPS	National Park Service
OHV	Off-highway vehicle
R&VS	Recreation and Visitor Services
RAC	Resource Advisory Council
RMA	Recreation Management Area
RMP	Resource Management Plan
RMZ	Recreation Management Zone
RNA	Research Natural Area
ROD	Record of Decision
ROP	Required Operating Procedure
ROS	Recreation Opportunity Spectrum
RSF	Resource Selection Function
SRMA	Special Recreation Management Area
SRP	Special Recreation Permit
TEMSCO	TEMSCO Helicopters, Inc.
USDA	United States Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VRM	Visual Resource Management

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1.0 INTRODUCTION

The Bureau of Land Management (BLM) has prepared this Draft Ring of Fire Resource Management Plan Amendment/Draft Environmental Impact Statement (Draft RMP Amendment/DEIS) to evaluate which, if any, designation and associated management practices and implementation actions best fulfill the resource needs and multiple-use demands within the Planning Area.

This Draft RMP Amendment/DEIS evaluates whether to retain the Special Recreation Management Area (SRMA) designation in the Planning Area and whether any part of the Planning Area meets the criteria for an Area of Critical Environmental Concern (ACEC) designation. The DEIS also assesses two implementation actions pertaining to permitting helicopter and other organized flight excursions, one of the primary administrative actions of BLM in the Planning Area. Specifically, the DEIS assesses whether to retain the Monitoring and Control Area for wildlife studies as well as establishing a range of annual helicopter landings or permits authorized annually.

1.1 Planning Area Description

1.1.1 Geographic Description and Scope

The Haines Planning Area encompasses approximately 950,000 acres in Southeast Alaska, bound by the Canadian border to the north and west, Glacier Bay National Park to the southwest, and the Tongass National Forest to the south and east (Map 1, see Section 7.0). A description of the BLM-managed lands is provided in Section 1.1.2.

This Planning Area consists primarily of steep and remote mountainous terrain, with bedrock and glaciers that restrict road or trail access. The primary mountain ranges consist of the Coast, Chilkat, Takhinsha, and Takshanuk mountains. Glaciers have scoured these mountains to form broad U-shaped valleys with steep sidewalls which ultimately terminate into the fjordland rich waters of the Chilkat or Chilkoot inlets.

River bottoms are dominated by a complex array of coastal and interior transitional deciduous cottonwood forests and wetlands. Lower slopes are dominated by dense Sitka spruce, western hemlock and lodgepole pine forests that transition mid-slope to dense alder dominated brush fields. Above the shrub zone, slopes are dominated by alpine tundra and herbaceous and grass-covered areas. Higher elevations include sparsely vegetated ridgelines, rock cliffs and spires, and glacier icefields.

The region, including the Haines Planning Area, has flora and fauna unique to Alaska due to its proximity to interior Canadian ecosystems and temperate rainforest ecosystems (Selkregg, 1974-1976c).

The communities of Haines and Skagway, Alaska (2010 population: 1,713 and 920, respectively) are located within the Planning Area.

Sections 3.2 and 3.3, respectively, provide complete descriptions of recreational uses and wildlife occurring within the Haines Planning Area.

1.1.2 Land Status

Of the total acreage within the Planning Area, the BLM currently manages approximately 320,000 acres (Table 1). All BLM-managed lands in the Planning Area are currently selected by the State of Alaska or Native Corporations.

BLM-managed lands in the Planning Area are located in two main blocks or parcels: the north block is located northwest of Skagway along the U.S.-Canadian border and the south block is located southwest of Haines along the boundary of Glacier Bay National Park.

The BLM Alaska Land Transfer Program is tasked with conveying Federal lands to the State of Alaska, Native allottees, and Native Corporations under processes described in the Native Allotment Act of 1906, the Alaska Statehood Act of 1958, the Alaska Native Claims Settlement Act (ANCSA) of 1971, the Alaska Native Veteran Allotment Act of 1998, and the Alaska Lands Transfer Acceleration Act (ALTAA) of 2004. Until the selections are relinquished or conveyances are finalized, State- and Native-selected lands will continue to be managed by the BLM.

Per Section 404 of the ALTAA, the State submitted selection priorities for the BLM-managed lands in the Planning Area by December 10, 2008. The State ranked selection priorities on a scale of 1 (highest) to 14 (lower). The remaining State-selected lands in the Haines Planning Area were categorized as priority 14 at that time. However, Section 404(b)(2) of ALTAA allowed the State to reprioritize any selection that remained on record (not conveyed) after September 30, 2009. Since that time, the State has been reordering its selection priorities. The State no longer has a 1 to 14 priority ranking. Instead, the numeric priorities have been replaced by the following categories: High Priority; Medium Priority; Low Priority; Indeterminate Priority; and Identified for Relinquishment. The two blocks of State-selected lands in the Haines Planning Area have been categorized as "Identified for Relinquishment." Based on the results of State's selection prioritization processes, the BLM believes that the majority of the State-selected land in the Haines Planning Area will remain under Federal management indefinitely.

As part of this planning effort, the BLM will only make decisions regarding lands and resources under its jurisdiction; however, these decisions will be made considering the varied jurisdictional interests in the Planning Area.

Table 1. Land Ownership/Management in the Planning Area

Jurisdiction / Land Category	Acres	Percent of the Planning Area
BLM public lands (unencumbered)	0	0 %
State-selected	319,144	33.5%
Native-selected	75	< 0.1 %
BLM-managed lands (subtotal)	319,219	33.5%
National Park Service managed lands	13,044	1.4%
Military lands	690	<0.1%
State of Alaska	604,579	63.5 %
Native Allotments	7,318	0.8%
Native Patented	4,333	0.5%
Private	1,835	0.1%
TOTAL	951,018	100.0%

1.1.3 Special Designations

Section 6 of the Ring of Fire RMP Record of Decision (ROD) designated a Special Recreation Management Area (SRMA) in the north block of the Planning Area. Due to recent changes in BLM's policy for Recreation Management Areas, this DEIS will reevaluate the 2008 designation.

At the time of the 2008 ROD, it was assumed that most, if not all, of the BLM-managed lands in the south block would be conveyed to the State. Therefore, the SRMA boundary was not extended to the south block at that time. Given the land status described in Section 1.1.2, this DEIS will evaluate appropriate recreation management area designations for the south block which is currently undesignated.

The boundary of the SRMA described in the 2008 ROD follows the boundary of BLM-managed lands in the north block as of 2008. However, the boundary reflected in the Approved RMP is now inaccurate due to the recent conveyance of several sections of land to the State along the border of the SRMA. Therefore, the boundaries of the SRMA have changed (Map 1, see Section 7.0). The new boundary of the SRMA follows the current boundary of BLM-managed lands (and excludes recently conveyed State land).

There currently is no Recreation Area Management Plan (or, "SRMA Plan") for the SRMA.

1.1.4 Monitoring and Control Area

In 2002, a Monitoring and Control Area was established in the northwest portion of the Planning Area. With its establishment, commercial helicopter landings were prohibited within the area boundary with the intention of providing a source of consistent monitoring data if and when adaptive management changes were necessary. Monitoring data and study results will be used to inform future management decisions concerning uses and potential impacts in the Haines Planning Area.

The original Monitoring and Control Area described in the Ring of Fire RMP was 112,790 acres; however, after recent land conveyances to the State of Alaska, the Monitoring and Control Area now consists of 98,000 acres (Map 1, see Section 7.0). The Monitoring and Control Area boundaries were drawn based on where helicopter supported recreation had not occurred, due to the flight times from Skagway and the unsuitability of the glaciers in the area for landing zones.

1.1.5 Permits and Operations

Helicopter landings are authorized by the BLM through Special Recreation Permits (SRP). Prior to 2006, the number of annual landing authorizations and actual landings were much higher on BLM-managed lands. However, land conveyances to the State as well as changes in TEMSCO Helicopters, Inc.'s (TEMSCO) operations account for a significant decrease in annual landings on BLM lands in recent years (see Section 3.2.4 for more information).

Currently (as of 2011), two helicopter operators are authorized for up to 2,400 summer landings annually in the Haines Block SRMA (north block only), excluding the Monitoring and Control Area where no landings are permitted. (Section 3.2.4 further discusses types of authorized summer uses.) However, at least two additional helicopter operators have also requested landing authorizations on BLM-managed lands in the Planning Area. Requests for winter landing authorizations are currently on hold pending the outcome of this planning effort.

TEMSCO and Alaska Mountain Guides (AMG) have been the only permitted helicopter operators on BLM lands within the Planning Area in recent years. Helicopter landings for AMG activities are provided by TEMSCO. TEMSCO's 2009 permit was authorized for 4,700 summer landings annually on BLM land, though for 2010-2014 they have requested only 1,900 summer landings annually. AMG was permitted 500 landings through 2011 but has requested a total of 2,500 annual helicopter landings in the future.

Permitting helicopter and other organized flight excursions in the project area is one of the primary administrative actions of BLM in the Planning Area. This document will evaluate the appropriate number of annual helicopter landings as well as the impacts of permitted helicopter activities to the local communities, recreationists, and wildlife.

1.2 Purpose and Need

Action is needed at this time to re-evaluate special designations in the Planning Area, consistent with the direction in the Ring of Fire RMP ROD and recent changes in BLM Recreation Management Area policy. Given that special designations and designation changes are land-use plan-level decisions, this land use plan amendment is an appropriate vehicle for assessing the current designation in light of new policies. Lastly, given that these lands are likely to remain under BLM management indefinitely (refer to Section 1.1.2), action is needed to establish a maximum number of annual helicopter landings in the Planning Area that meets the needs of the local economy, recreation use demand, as well as protects natural resources.

The purpose of this planning effort is to identify which, if any, designation and associated management practices best fulfill the resource needs and multiple-use demands within the Planning Area.

The land use planning-level decisions to be made through this plan amendment process include:

- Whether to retain the SRMA designation in the Planning Area or to change the recreation management area designation, including whether to expand a recreation management area designation to the south block.
- Whether any part of the Planning Area meets the criteria for an ACEC designation.

The implementation-level decisions to be made through this process include:

- Whether to retain the Monitoring and Control Area for wildlife studies.
- Establish a maximum number of authorized annual helicopter landings.

1.3 Issues Addressed

Based on the BLM's management concerns, and through scoping input received from Federal, state, and local agencies, and the public (refer to Chapter 5), the Draft RMP Amendment/DEIS addresses the following issues:

- How to apply updated BLM Recreation Management Area policy to the current SRMA and the south block (currently undesignated) in the Planning Area.
- Disturbance to local communities due to helicopter noise.
- Impacts of flight paths and associated noise from helicopters on dispersed recreation opportunities and recreation users.
- Impacts of helicopter-supported activities on wildlife, particularly on eagles, mountain goats and mountain goat habitat, and whether a monitoring and control area should be maintained for mountain goat studies.

1.4 Issues and Resources Considered but Dismissed

The following issues were raised during scoping, but will not be further analyzed:

- *Effects of helicopter-supported activities on cultural resources, specifically availability of mountain goat wool* - This was identified as an issue during the public scoping process. However, local dependence upon these culturally important resources (i.e., mountain goat wool) is very low due to the distant and generally inaccessible nature (steep terrain and glaciation) of the BLM-managed lands.
- *Effects of proposed land use planning level decisions and implementation level decisions on subsistence uses in the Planning Area* - The Federal Subsistence Board implements a priority for subsistence uses by rural residents over other consumptive uses on unencumbered Federal public lands. All BLM-managed lands in the Planning Area are currently selected by the State of Alaska or Native Corporations. Under Alaska National Interest Lands Conservation Act (ANILCA) of 1980, State- and Native-selected lands are

not within the jurisdiction of the Federal subsistence management program and are therefore, not subject to the Federal subsistence priority. None of the decisions made out of this planning effort would affect access to or use of subsistence resources in the planning area. Therefore, subsistence uses are not considered further in this DEIS. (All of the wildlife species identified in Section 3.3 are subsistence resources. The effects to these species and/or populations are described in Section 3.4.)

- *Redistributing currently authorized landings by season* - This DEIS covers all permitted helicopter landings in the Planning Area year-round, and is not specific to summer helicopter activities. Specifying landing sites for summer use is outside of the scope of this DEIS.
- *Environmental Justice (pursuant to Executive Order 12898)* - There are no known Environmental Justice concerns pertinent to this planning effort. Within the Planning Area, BLM-managed lands are not adjacent to areas with minority or low-income populations that would be disproportionately affected by the decisions made out of this planning effort.

The following resources were reviewed for consideration in the planning process, but will not be further analyzed because no resource-specific issues were identified and/or no effects are anticipated. No further issues or resource information, beyond that which was discussed in the Ring of Fire RMP was identified for this planning effort. The following resource descriptions and analysis from the Ring of Fire RMP, in order of appearance in the RMP, are hereby incorporated by reference and will not be further discussed in this DEIS:

- Air Resources
- Wildland Fire and Fuels
- Fisheries
- Forestry
- Grazing (Livestock and Reindeer)
- Hazardous Materials
- Iditarod National Historic Trail
- Paleontology
- Renewable Energy
- Soils
- Water Resources
- Floodplains
- Wetlands-Riparian

1.5 Planning Criteria

Planning criteria are the constraints or sideboards that guide the development of the Draft RMP Amendment/DEIS. These criteria help tailor the DEIS to the pertinent issues, and ensure that BLM avoids unnecessary data collection and analysis. Planning criteria are based on laws and regulations; guidance provided by the BLM Director and State Director; results of public participation; and coordination with cooperating agencies and other Federal agencies, State and local governments, and Tribal governments. Modifications to planning criteria may occur as the planning process progresses.

Planning criteria guiding this Draft RMP Amendment/DEIS include the following:

- The principles of multiple use and sustained yield, as defined by FLPMA, will be applied in the Haines Planning Area.
- Decisions will be made for the surface lands administered by the BLM in the Haines Planning Area.
- Decisions will be limited to recreation, wildlife, travel management, and special designations (i.e., ACECs).
- Valid existing rights will be protected throughout the Planning Area.
- Plans and policies of other federal land managers, land owners and State and local governments in and adjacent to the Haines Planning Area will be considered. BLM's decisions will be consistent with other land manager's and owner's decisions to the degree reasonably practical within existing laws.
- The BLM will encourage and participate in collaborative planning and management. BLM will provide opportunity for input from other federal agencies, the State of Alaska, Native governments and Tribal members, local government, adjacent private land owners, local residents and other affected and/or interested parties.
- The BLM will comply with all relevant laws, statutes, regulations, manuals, and handbooks.
- Subsistence resources will be considered and adverse impacts minimized in accordance with Section 810 of ANILCA.
- Resource management plans prepared by BLM will conform to the Bureau's H-1601-1 Land Use Planning Handbook, Appendix C, Program-Specific and Resource-Specific Decision Guidance and supplemental program guidance manual for ACECs.
- The plan will be consistent with the Alaska Land Health Standards.
- Areas proposed for ACEC designation will meet the criteria found in 43 Code of Federal Regulations (CFR) § 1610.7-2.
- The BLM will consider Lands with Wilderness Characteristics in this DEIS consistent with the BLM Instruction Memorandum (IM) 2011-154.

1.6 Relationship to BLM Policies, Plans, and Program Areas

The following laws, regulations, policies, and guidance were considered in the preparation of this Draft RMP Amendment/DEIS. (This is not an all-inclusive list.)

- National Environmental Policy Act (NEPA) of 1969
- Federal Land Policy and Management Act of 1976 (FLPMA)
- BLM Land Use Planning Regulations at 43 CFR 1600
- BLM Land Use Planning Handbook, H-1601-1, updated March 11, 2005
- BLM NEPA Handbook H-1790-1
- Clean Water Act of 1977, as amended
- Executive Order (E.O.) 11990: Protection of Wetlands
- E.O. 13112: Control of Invasive Species

- BLM IM 2011-154: Requirement to Conduct and Maintain Inventory Information for Wilderness Characteristics and to Consider Lands with Wilderness Characteristics in Land Use Plans
- BLM IM 2011-004: Transmittal of Revised Recreation and Visitor Services Land Use Planning Guidance, Updated Checklist, and Three Land Use Planning Templates

1.7 Related Plans

Non-BLM lands adjacent to the Haines Planning Area are managed according to area- or jurisdiction-specific land and/or resource management plans. The BLM has considered the following plans in this planning effort:

- Haines Borough Comprehensive Plan (2004)
- Municipality of Skagway 2020 Comprehensive Plan (2009)
- State of Alaska Northern Southeast Area Plan (2002)
- Chilkat Bald Eagle Preserve Management Plan (2002)
- Haines State Forest Management Plan (2002)
- Tongass National Forest Land and Resource Management Plan (2008)
- General management plan development concept plan and environmental impact statement: Klondike Gold Rush National Historical Park: Skagway, Alaska and Seattle, Washington (1996)
- U.S. Forest Service Environmental Assessment Meade Glacier Heli-Tour Landings (2009)
- U.S. Forest Service Final Environmental Impact Statement for Commercially Guided Helicopter Skiing on the Kenai Peninsula (2004)

1.8 Summary of Consultation and Outreach Efforts

This section summarizes efforts to consult and coordinate with local, state, and federal government agencies, special interest groups, Native American tribes, and the public in the development of this RMP Amendment/DEIS. Additional information regarding Consultation and Coordination efforts is described in Chapter 5. The RMP Amendment/DEIS Scoping Report is available in Appendix A.

In March 2009, the BLM Anchorage Field Office (AFO) began a scoping process for this RMP Amendment/DEIS. The first formal scoping period began on March 24, 2009, with the publication of the Notice of Intent in the Federal Register. In an effort to reach many groups, agencies, and corporations who may have an interest in this planning effort, a general letter was sent to the entire original Ring of Fire RMP mailing list. This letter gave a brief explanation of the scope and need for the RMP Amendment, announced the dates, time and locations for the scoping meetings and invited all stakeholders to participate in scoping by attending a meeting, visiting the website, and providing comments to BLM.

The formal scoping period ended June 26, 2009. Public meetings were held during the scoping period in the communities of Haines, Skagway, and Anchorage. A Scoping Report summarizes the 33 comments received during the scoping period (Appendix A). The majority of comments

discussed wildlife and their habitat, particularly goats, as the main reason to create an ACEC. Several comments were also made in support of maintaining the Monitoring and Control Area, while other comments focused on the whether or not to change the SRMA designation.

Additional public involvement opportunities will occur following publication of the Notice of Availability of this Draft RMP Amendment/DEIS in the Federal Register. The AFO will provide for a minimum of 90 days for public review. The public and interested parties are encouraged to continue to participate in this process.

It is the BLM's policy to formally consult with Federally-recognized Tribes prior to taking action or undertaking activities that will have a substantial, direct effect on the Tribes, their assets, rights, services, or programs. To this end, a letter requesting government-to-government consultation was sent to the only Tribe within the Planning Area, the Chilkat Indian Village Council on April 6, 2009. Follow-up phone calls were made to John Brower with Chilkat Indian Village Council prior to the scoping meetings held in Haines and Skagway. Additionally, BLM offered to come to the community to conduct government-to-government consultation either before or after the Haines public scoping meeting, however the Chilkat Indian Village Council was unavailable for a meeting. To date, they have not responded to the BLM's invitation to enter into Government-to-Government Consultation.

The BLM invited Federal, State, local and Tribal entities with interest and/or special expertise to become cooperating agencies for the Ring of Fire RMP Amendment. The Municipality of Skagway has entered into formal cooperating agency status with BLM. The State of Alaska responded that the current developed strategy for cooperation and consultation on land use planning efforts was working well for them and that they would like to participate through that manner. As part of the strategy, the State of Alaska and the BLM jointly fund a liaison position. The National Park Service (NPS) submitted scoping comments but declined formal cooperating agency status.

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2.0 ALTERNATIVES

2.1 Introduction

This chapter outlines different alternatives (approaches) considered to manage BLM lands and resources in the Haines Planning Area. Each alternative represents a complete and reasonable set of objectives, actions, and allocations that would guide future management of public lands and resources in the Planning Area. Alternatives are limited to the scope of the analysis as well as the purpose and need of this amendment, as described in Chapter 1, and will not affect the management decisions outside the scope of this amendment, as set forth in the Ring of Fire RMP ROD (2008). This chapter also includes discussions of alternatives considered but eliminated from detailed analysis (Section 2.7).

Alternatives were developed using an interdisciplinary team process that included BLM staff specialists and a cooperating agency, as well as input from public scoping. Implementation of future management actions under any alternative will be subject to available staff and funding levels.

Four alternatives are presented in this chapter:

As required by Council on Environmental Quality (CEQ) regulations on implementing NEPA, the **No Action Alternative (Alternative A)** describes the continuation of current, existing management.

Three action alternatives (**Alternatives B, C, and D**) describe proposed changes to current management, as well as what aspects of current management would be carried forward. The action alternatives provide a range of choices for meeting BLM's planning and program management requirements as well as resolving the planning issues identified (see Section 1.4).

At the end of this chapter, Tables 3 and 4 provide a summary of management actions across each alternative as well as a comparison of the anticipated impacts by alternative.

2.2 Management Common to All Alternatives

The following management actions, measures, and strategies are common to all alternatives, including the No Action Alternative.

2.2.1 Required Operating Procedures

The Ring of Fire RMP ROD contains Required Operating Procedures (ROPs) that apply to all permitted activities, including FLPMA leases and permits, special recreation permits, etc. (BLM 2008). "These ROPs were developed to ensure that the objectives identified in the Alaska Land Health Standards continue to be met when carrying out permitted activities and management practices," (BLM, 2008). Unless otherwise noted, the ROPs established in the Ring of Fire RMP

ROD are common to all alternatives and remain in effect for the purposes of this planning effort (refer to Appendix D for a list of ROPs).

Since the 2008 ROD, the AFO has modified ROP #16 due to Alaska Department of Fish and Game (ADFG) mountain goat collar data that has contributed considerably to the BLM's understanding of goat dispersal and use patterns in the Haines Planning Area (Table 2):

Table 2. Comparison of ROP #16.

ROP #16, Original Language (2008 ROD)	ROP #16, Modified (Current) Language
In critical Dall sheep and mountain goat habitat (Figures D-12 and D-13), helicopters used in support of permitted activities will maintain one-half mile of horizontal and 1,500 ft vertical distance from goats and sheep. Heli-ski landing or skiing is not permitted in Dall sheep or goat critical ranges, as identified based on Alaska Department of Fish & Game (ADFG) maps and refined by monitoring.	In Dall sheep and mountain goat habitat, aircraft used in support of permitted activities will not land within a ½ mile of known kidding areas* between May 1 and June 15. Dall sheep and mountain goat high use areas and important winter habitat are shown on Map 6, see Section 7.0. Aircraft will maintain 1,500 feet vertical and horizontal distance from visible goats and sheep, as well as habitats that are mapped as high use areas. Aircraft will not land within ½ mile of habitats that are mapped as high use areas. In winter, recreation activities are not permitted in mapped high use areas. As new data becomes available, Map 6 any nearby authorized activities will be reviewed accordingly.

*Data is currently being collected on goat high use and kidding areas. SRP requests will be reviewed on a case-by-case basis to identify flight avoidance areas.

For the purposes of analysis, all alternatives in this DEIS, including the No Action Alternative, are based on this modified version of ROP #16. (Additionally, this modified ROP is included in all current SRP stipulations for authorized aviation operations occurring on BLM lands within the Haines Planning Area.)

2.2.2 Current Permit Stipulations

This analysis assumes the continuation of current SRP stipulations, or terms and conditions, for all authorized aviation operations on BLM land within the Haines Planning Area. The following nine SRP special stipulations and general terms are applicable to all alternatives:

1. In Dall sheep and mountain goat habitat, aircraft used in support of permitted activities will not land within a ½ mile of known kidding areas between May 1 and June 15. Dall sheep and mountain goat high use areas and important winter habitat are shown on Map 6 (see Section 7.0). Aircraft will maintain 1,500 feet vertical and horizontal distance from visible goats and sheep, as well as habitats that are mapped as high use areas. Aircraft will not land within ½ mile of habitats that are mapped as high use areas. In winter, recreation activities are not permitted in mapped high use areas. As new data becomes available, Map 6 (see Section 7.0) any nearby authorized activities will be reviewed accordingly.

2. All operations will maintain a 1,500 foot clearance of key mountain goat areas, mountain goats, sensitive bird nesting sites, brown and black bears, wolves, moose, sea lions, and other marine mammals. Steepness (degree in slope) and roughness (outcrops and spur ridges) affect the ratio of elevation to horizontal distance significantly. Attempts should

be made to maximize distance between ground and habitats or animals wherever possible. Flight routes over near level terrain will maintain a minimum of 1,500 feet above ground level and at least 1,500 feet horizontal distance from wildlife habitat features described above. Pilots are not expected to compromise safety when weather conditions indicate the 1,500 foot minimum cannot be met.

3. All authorized operations will adhere to U.S. Fish and Wildlife Service (USFWS) recommendations regarding eagle nests.
   a. Maintain established travel routes, but avoid any eagle nest by at least ¼ mile (1,320 feet).
   b. Helicopters must avoid hovering near and circling any eagle nest.

4. Helicopter use on the Nourse Glacier is restricted from May 1 through June 15 as follows:

   a. Approaches and departures will be from the south to reduce potential impact to goats on kidding habitats north of the site.
   b. Flight corridors to the north and northwest of the Nourse Glacier will not be used for flight seeing or access to the Chilkat icefields until June 15th.
   c. Access to the Chilkat icefields will be through either the West Creek or Grand Canyon corridors.

   These restrictions are intended to reduce potential impacts to wildlife, in general, as well as goat use patterns when dispersing to and/or occupying kidding habitat or high quality forage sites. Additional timing limitations may be applied to other important habitat areas as determined by current goat collaring studies.

5. Authorized operators shall not hover, circle, or harass wildlife in any way. This refers particularly to mountain goats, wolves, bears, eagles, sea lions, and other marine mammals, but includes all wildlife species.

6. All flights shall operate within designated flight corridors and elevation restrictions.

7. All authorized operators will assure that their operations meet Federal Aviation Administration (FAA) requirements to achieve safe air operations (routing, airspace separation and coordination with other operators).

8. All authorized operators will be required to submit and abide by a Safety and Operating Plan which will be approved by the BLM and will be a part of the Special Recreation Permit. The FAA may review these submissions.

9. The Authorized Officer (AO) may suspend or modify an SRP, including adaptive management strategies, if necessary to protect public resources, health, safety, or the environment or as a result of non-compliance with permit stipulations.

2.2.3 Adaptive Management Strategy

Adaptive management is a system of management practices based on clearly identified outcomes (goals), monitoring to determine if management actions are meeting outcomes, and, if not, facilitating management changes that will best ensure that outcomes are met or to re-evaluate the outcomes. Adaptive management recognizes that knowledge about natural resource systems is sometimes uncertain and is the preferred method of management in these cases.

The goals of the BLM's Adaptive Management Strategy in the Haines Planning Area include:

1. Annual review and incorporation of new goat data and information provided by ADFG at least through 2015. Annual review and incorporation of new goat data is dependent on funding.
2. Annual review of permitted activities for compliance with conditions and stipulations of each permit.
3. Determine if changes to the authorized activities are necessary to reduce effects on goats in critical winter and summer habitats. For example, telemetry data and the habitat model (described in Section 3.3.1) will be used annually to refine permit stipulations for helicopter based recreation permitted on BLM lands to further protect mountain goats and their seasonal habitats in the Haines/Skagway area.
4. Annual review of items 1-3 to determine effectiveness of modifications and whether to continue annual reviews in the future.

Due to the limited amount of available winter goat habitat and movement data (see Section 3.3.1 for more information), future requests for winter use would be considered for temporary authorization for one winter season only. Longer-term authorization of winter activities (i.e., more than one winter season) will not be considered until:

1. At least three years of winter-specific goat data are collected and analyzed (anticipated December 2013);
2. A Resource Selection Function (RSF) winter model using data from the current goat collaring research is developed; and,
3. Annual review of authorized activities, as part of the Adaptive Management Strategy, indicates minimal effects upon goat populations.

Temporary winter authorizations in the interim (before 2014) will only be considered if they adhere to the following restrictions, developed based on the best available winter goat data as of December 2011:

1. No helicopter landings, flight routes, or skier routes within ½ mile of known winter habitat based upon GPS collar data collected by ADFG and BLM annually. Currently, only two winter seasons of data has been recorded (2010-2012). A future winter flight route, skier route, and landing zone map would be created similar to Map 3 (see Section 7.0).

All future adaptive management action would aim to minimize the effects of authorized activity on goat populations temporally and spatially. An adaptive strategy to reduce effects temporally may include, but is not limited to, additional flight and/or landing restrictions during difficult winter months or during kidding. An adaptive strategy to reduce effects spatially may include, but is not limited to, additional flight and/or landing restrictions in identified important winter habitat.

2.3 Alternative A – No Action Alternative

This is the No Action Alternative required by the CEQ's Regulations on Implementing NEPA (40 CFR § 1500). The No Action Alternative represents a continuation of current management practices. This alternative includes the following elements:

Recreation Management Area Designation

- Retain the SRMA designation in the north block of the Planning Area. However, the boundaries of the SRMA have changed from the 2008 signing of the Ring of Fire ROD due to the conveyance of several sections of BLM land to the State of Alaska (currently, approximately 251,900 acres; Map 1, see Section 7.0).
- One Recreation Management Zone (RMZ) boundary would be delineated to reflect the changes in BLM land ownership. The four defining characteristics of the RMZ (niche, management objectives, setting, and targeted outcomes) are identified within the Haines Block SRMA matrix (Appendix B).
- There is currently no SRMA Plan for the northern block of the Planning Area. Under the No Action Alternative, an SRMA Plan would be developed consistent with the direction in the 2008 Approved Ring of Fire RMP and ROD.

Monitoring and Control Area

- Retain the 98,000-acre Monitoring and Control Area in the northwest portion of the Planning Area where permitted helicopter landings are currently prohibited (Map 1, see Section 7.0).

Number of Authorized Helicopter Landings – Summer Only

- Maintain the current number of total landings authorized in the Planning Area at 2,400 summer landings annually (TEMSCO with 1,900 landings; AMG with 500 landings). This alternative would prevent TEMSCO and AMG from expanding their operations, and would prevent other operators from using BLM lands for helicopter/aviation-supported tourism activities.

2.4 Alternative B

This alternative highlights management that would facilitate recreation resource opportunity development, and includes the following elements:

Recreation Management Area Designation

- Retain SRMA designation in the northern block of the Planning Area (approx. 251, 900 acres). The boundaries of the SRMA have changed due to the conveyance of several sections of BLM land to the State of Alaska since the signing of the Ring of Fire ROD.
- Expand the SRMA designation to encompass the south block of the Planning Area (approx. 66,200 acres).
- An SRMA Plan would be developed.
- One RMZ boundary would be delineated to reflect the changes in BLM land ownership. The four defining characteristics of the RMZ (niche, management objectives, setting, and targeted outcomes) are identified within the Haines Block SRMA matrix (Appendix B).

Monitoring and Control Area

- Lift the 98,000-acre Monitoring and Control Area; permitted helicopter landings would be allowed to occur within the former boundary of the Monitoring and Control Area.

Number of Authorized Helicopter Landings – Summer and Winter

- Increase total landings permitted on BLM-managed lands in the Planning Area to a maximum of 7,500 landings annually. This is approximately 212% more than the current authorized level. Permitting 7,500 landings annually would allow TEMSCO and AMG to expand their operations, while also leaving capacity for additional operators to conduct helicopter and organized flight excursion activities, including commercial filming, in the Planning Area.

2.5 Alternative C

This alternative provides emphasis on actions and management that would protect or enhance resource values, and includes the following elements:

Recreation Management Area Designation

- Change the current SRMA designation for the north block area to an Extensive Recreation Management Area (ERMA) and extend the ERMA designation to BLM-managed lands in the south block. ERMAs are defined as administrative units that require specific management consideration in order to address recreation use, demand, or Recreation and Visitor Services (R&VS) program investments. The management focus of ERMAs is to support and sustain the principal recreation activities and the associated qualities and conditions of the ERMA, commensurate with management of other resources and resource uses (see also Table 9, Section 3.2.5). This change in designation would be based on recent BLM policy changes regarding the focus and use of SRMAs. The BLM now develops each new SRMA based on where the existing or proposed recreation opportunities and recreation setting characteristics are recognized for their

unique value, importance and/or distinctiveness, especially as compared to other areas used for recreation. These areas may require a higher level of investment and/or management to protect and enhance a targeted set of activities, experiences, benefits, and desired recreation setting characteristics. Increased investment or management may include development and maintenance of recreation amenities to administer or enhance the physical, social, and operational recreation setting characteristics. The Planning Area does not contain recreation amenities, and the lands currently have a low concentration of recreation use as compared to other areas in the region, which suggests that an ERMA would be appropriate.

- The boundaries of the ERMA would encompass all BLM-managed lands in the Planning Area. (Map 1, see Section 7.0).
- Under this alternative, no SRMA Plan would be developed.

Monitoring and Control Area

- Under Alternative C, the 98,000-acre Monitoring and Control Area would be retained for a period of five years from the signing of the ROD for the EIS to provide a control area for mountain goat studies conducted jointly between the BLM and ADFG. After the five year period expires, the Monitoring and Control Area would be lifted and permit applications would be accepted for review through site-specific NEPA prior to any new authorizations. Future landing authorizations would be contingent on the results of the study efforts.

Number of Authorized Helicopter Landings – Summer and Winter

- Increase total landings permitted in the Planning Area to a maximum of 4,000 landings annually. This is approximately 66% more than the current authorized level. Permitting 4,000 landings annually would allow TEMSCO and AMG to expand their operations, while also leaving capacity for additional operators to conduct helicopter/aviation-supported tourism activities, including commercial filming, in the Planning Area.

2.6 Alternative D – Agency Preferred Alternative

This alternative provides a balance of resource protection and recreation resource opportunity development, and includes the following elements:

Recreation Management Area Designation

- Same as Alternative C

Monitoring and Control Area

- Same as Alternative C

Number of Authorized Helicopter Landings – Summer and Winter

- Increase the total permitted landings in the Planning Area to a maximum of 6,000 landings annually. This is approximately 150% more than the current authorized level. Permitting 6,000 landings annually would allow TEMSCO and AMG to expand operations, while also leaving capacity for additional operators to conduct permitted helicopter landings, including commercial filming, in the Planning Area.

2.7 Alternatives Considered but Eliminated from Further Study

During the scoping Draft RMP development process, three alternatives were suggested for analysis in the Ring of Fire RMP Amendment but were not carried forward for further analysis for the reasons described below.

2.7.1 Designate an Area of Critical Environmental Concern

Background

During the Ring of Fire RMP Amendment Scoping Period, BLM received a nomination for a potential ACEC designation for all BLM lands within the Haines Planning Area (Map 1 in Section 7.0 shows BLM lands in the Planning Area).

BLM designates ACECs as a way to highlight areas where special management attention is needed in order to protect and prevent irreparable damage to important historic, cultural and scenic values, fish or wildlife resources or other natural system or processes; or to protect human life and safety from natural hazards (BLM, ACEC Manual 1613, 1988). BLM regulation 43 CFR 16010-7.2 (CFR, 2002) states that in order for an area to be a *potential* ACEC, *both* the relevance and importance criteria shall be met. An ACEC can only be considered as an alternative if it meets ACEC criteria for *both* relevance and importance.

An area meets the relevance criteria if it contains <u>at least one</u> of the following:

1. A significant historic, cultural, or scenic value (including but not limited to rare or sensitive archeological resources and religious or cultural resources important to Native Americans).
2. A fish and wildlife resource (including but not limited to habitat for endangered, sensitive or threatened species, or habitat essential for maintaining species diversity).
3. A natural process or system (including but not limited to endangered, sensitive, or threatened plant species; rare, endemic, or relic plants or plant communities which are terrestrial, aquatic, or riparian; or rare geologic features).
4. Natural hazards (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human action may meet the relevance criteria if it is determined through the resource management planning process that it has become part of a natural process.

If the lands meet at least one of the relevance criteria, it must also meet <u>at least one</u> of the following importance criteria:

1. Has more than locally significant qualities which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resources.
2. Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.

3. Has been recognized as warranting protection in order to satisfy national priority concerns or to carry out the mandates of FLPMA.
4. Has qualities which warrant highlighting in order to satisfy public or management concerns about safety and public welfare.
5. Poses a significant threat to human life and safety or to property.

A Research Natural Area (RNA) is a type of ACEC. In order for any part of the Planning Area to be designated an RNA, it would first have to meet the relevance and importance criteria to be designated an ACEC.

In addition to meeting the relevance and importance criteria, to be designated as an ACEC, an area must require special management attention to protect important and relevant values. "Special management attention" refers to management prescriptions developed during preparation of an RMP or amendment expressly to protect the relevant and important values of an area from the potential effects of actions permitted by the RMP, including proposed actions deemed to be in conformance with the terms, conditions, and decisions of the RMP. These are management measures which would not be necessary and prescribed if the relevant and important features were not present.

Analysis

The following analysis was conducted in accordance with ACEC criteria found in 43 CFR 1610.7-2 and the BLM Manual for ACECs (BLM, 1988).

In order to determine whether to carry forward the designation of an ACEC as an alternative in this EIS, the BLM conducted an intensive internal review to determine whether any portions of the Planning Area qualify as ACECs. First, to ensure consistency in review and analysis, BLM specialists met to discuss and clarify the relevance and importance criteria noted above.

Each specialist conducted a review of his or her area of resource expertise to determine whether it met the relevance and/or importance criteria. The following resources and/or values were evaluated against the ACEC criteria for relevance and importance:

- Cultural Resources
- Fisheries
- Natural Hazards
- Scenic Values
- Vegetation
- Wildlife

Of the evaluated resource areas, only the following features of the Planning Area met the relevance criteria:

- Wildlife/wildlife habitat in the Planning Area
- The Nourse Moraine as a natural hazard

Relevance Criteria

Wildlife Resources

Wildlife resources meet relevance criteria number 2: A fish and wildlife resource (including but not limited to habitat for endangered, sensitive or threatened species, or habitat essential for maintaining species diversity). The Planning Area contains wildlife habitat and diverse wildlife, including bald eagles and mountain goats, both of which have potential to be affected by human activities. Bald eagles are present throughout the Planning Area, and nest in mature or old growth trees, snags, cliffs and rock promontories (Buehler, 2000). The river flats of the Chilkat River along the Haines Highway adjacent to BLM-managed lands attract bald eagles to the Planning Area due to availability of salmon, and open waters in late fall and winter. A resident population of 200 to 400 bald eagles inhabits the Chilkat Valley, but the total number of bald eagles within the Planning Area is unknown. Mountain goats are also found throughout the Planning Area, which includes both kidding areas and summer and winter ranges. Mountain goat home ranges are relatively small, and seasonal range site fidelity is high, particularly for summer range.

Nourse Moraine

The Nourse Moraine meets the relevance criteria number 4: Natural hazards (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human action may meet the relevance criteria if it is determined through the resource management planning process that it has become part of a natural process.

The Nourse Moraine is a significant natural hazard in the form of a potential glacial lake outburst. Increased melting and receding of glaciers in the Planning Area "has caused an increase in the size of glacial lakes and the weakening of the glacial moraines that typically impound these lakes to a point of failure," (Denton, Lewis, & Fisk, 2009). These failures are often catastrophic and are known as Glacial Lake Outburst Flood. The process of weakening is not solely based upon the increasing lake size, but also the melting of the moraine's ice-core, i.e., ice contained within the sediments of some glacial moraines. On July 23, 2002, a lateral moraine of the West Creek Glacier failed, causing such a flood. Though the mechanics of this flood are unknown, it raised concerns about the potential for additional floods in the area of the Klondike Gold Rush National Historic Park. In a previous study by Capps (2004), the NPS identified the Nourse Moraine as having a potential to cause a Glacial Lake Outburst Flood. Currently, the Nourse Moraine is on lands administered by the BLM.

Importance Criteria

Wildlife Resources

Of the five importance criteria, numbers one and two are particularly relevant to the Wildlife Resources discussion:

1. Has more than locally significant qualities which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resources.

Wildlife Resources does not meet this criterion because the ecosystem does not have more than locally significant qualities. The wildlife resources and natural processes in the Planning Area are typical of all of Southeast Alaska, and are not unique to the mountainous regions of southeast Alaska. There is nothing about the bald eagle or mountain goat populations or habitat in the Planning Area that is distinct from the surrounding areas.

2. Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.

According to recent surveys by the ADFG, wildlife resources in the area are not fragile or vulnerable. They are also not unique when compared to the surrounding areas. USFWS surveys have located approximately 150 eagle nests within the Haines Planning Area across land ownerships (USFWS, 2007a). As stated above, there is a resident population of 200 to 400 bald eagles in the Chilkat River valley. Mountain goat populations are widely dispersed across the region on all land ownerships, and have remained stable over time. Habitat conductivity remains intact, and subpopulations of goats are not isolated. Additionally, based on counts conducted by the ADFG of overall number of goats, percent of kids, and the number of goats seen per hour, the goat population on State lands in the project area is healthy (Scott, 2008). Furthermore, required operating procedures and stipulations to protect wildlife are still in effect, and since the population is stable, no special management attention is currently required to protect the mountain goat population in the project area.

Natural Hazards
Of the five importance criteria, the following are relevant to the Nourse Moraine:

- Has more than locally significant qualities which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resources. (Importance Criterion 1)
- Has qualities which warrant highlighting in order to satisfy public or management concerns about safety and public welfare. (Importance Criterion 4)
- Poses a significant threat to human life and safety or to property. (Importance Criterion 5)

The BLM, with assistance from the U.S. Geological Survey (USGS) and the NPS, conducted a geophysical survey of the Nourse Moraine to determine its stability, and concluded that the moraine is stable (Denton, Lewis, & Fisk, 2009). Therefore, this area is not more than locally significant, and does not present an immediate and/or significant threat to human life or property. Therefore, the BLM's conclusion is that natural hazards in the Planning Area do not meet any importance criteria.

Although the Wildlife Resources and Nourse Moraine satisfy the relevance criteria, they do not satisfy the importance criteria and, thus this portion of the Planning Area, fail to meet the criteria for ACEC designation. Therefore, the BLM has determined that the Haines Planning Area does not warrant designation as an ACEC.

2.7.2 SRMA with Destination Recreation-Tourism Market Emphasis

Consistent with revised BLM policy on the focus and intent of SRMAs, the BLM considered whether to manage the SRMA as a *destination recreation*-tourism market. The *destination recreation*-tourism market would consist of a higher level of investment and/or management to protect and enhance recreation activities, experiences, benefits, and recreation settings. For example, development of brochures and websites; backcountry access maps; construction of access trails and trailheads; restrooms at key access points; backcountry permit kiosks; increased BLM management presence and patrol flights; visitor surveys; developed or primitive campsites or areas; hiring additional staff; and nearby interpretive panels or displays could be considered to provide destination-type recreational opportunities in the area.

The increased level of investment and/or management to administer an SRMA *destination recreation*-tourism market strategy would be very challenging on BLM lands within the Planning Area for many reasons. The steep terrain, lack of access for materials transport, logistics involved, and distance from a BLM administrative facility to run construction, operations, and maintenance activities would make such efforts infeasible, cost-prohibitive, and a poor use of taxpayer dollars. Scoping did not indicate public interest in this area as a destination recreation area with associated amenities such as developed trails, trailheads, parking areas, campgrounds, etc. Furthermore, this alternative would not address the resource-specific issues identified. Therefore, the BLM determined that consideration of an SRMA with *destination recreation*-tourism market emphasis is eliminated from consideration.

2.7.3 Public Lands not Designated As Recreation Management Areas

On October 1, 2010, the BLM revised the Recreation and Visitor Services (R&VS) Land Use Planning Guidance with regard to the designation of Recreation Management Areas (RMAs) (BLM, 2010). The revised guidance identified three recreation classifications as well as a definition, management focus, and requirements for each. The three RMA classifications are: 1) SRMA, 2) ERMA, and 3) Public Lands Not Designated as RMAs.

SRMA and ERMA designations are based on recreation and demand issues, recreation setting characteristics, resolving user conflicts, compatibility with other resource uses, and resource protection needs. The third designation of "Public Lands Not Designated …" is intended for lands that do not clearly fall into either the SRMA or ERMA category. It is more appropriate for areas where recreation is not emphasized, even though some level of basic recreation activities may occur.

This DEIS does not include an alternative to designate the Haines RMA as "Public Lands Not Designated..." The very preparation of this DEIS document clearly demonstrates that more than basic recreational activity complexity exists that requires analysis and some intermediate designation to best address recreation use restrictions, or mitigations, in order to achieve interdisciplinary goals.

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2.8 Comparison of Alternatives

Table 3. Summary Comparison of the proposed Management Actions by Alternative.

Management Actions	Alternative A: No Action	Alternative B: highlights management that would facilitate resource development	Alternative C: highlights management that would protect or enhance resource values	Alternative D: Agency Preferred Alternative - provides a balance of protection, use, and enhancement of resources
Recreation Management Area Designation	Retain approx. 251,900-acre SRMA in the north block; decreased acreage due to the conveyance of BLM land since the signing of the Ring of Fire ROD in 2008. Develop SRMA Plan.	Retain approx. 251,900-acre SRMA in the north block and expand SRMA boundaries to include the approx. 66,200-acre south block. Develop SRMA Plan.	Change the north block SRMA designation to an ERMA and extend the ERMA to the south block. ERMA would encompass approx. 319,000 acres. No SRMA Plan would be developed.	Same as Alternative C.
Monitoring and Control Area	Retain the 98,000-acre Monitoring and Control Area, with current decrease in acreage and change in boundaries due to the conveyance of BLM land since the signing of the Ring of Fire ROD in 2008.	Lift the 98,000-acre Monitoring and Control Area and allow helicopter/aviation supported tourism to occur in this area.	Retain the 98,000-acre Monitoring and Control Area for a period of five years from the signing of this ROD to provide a control area for mountain goat studies conducted jointly between the BLM and ADFG. After the five year period expires, the Monitoring and Control Area would be lifted and permit applications would be accepted for review through site-specific NEPA prior to authorization.	Same as Alternative C.
SRP number of helicopter landings	2,400 landings Maintain total landings permitted in the Planning Area to 2,400 summer landings annually (TEMSCO 1,900, AMG 500). This alternative would prevent TEMSCO and AMG from expanding their operations, and would exclude other operators from using BLM lands for permitted helicopter activities.	7,500 landings Increase total landings permitted in the Planning Area to a maximum of 7,500 annually. Permitting 7,500 landings annually allows for TEMSCO and AMG to expand their operations, while also leaving room for additional operators to conduct permitted helicopter activities.	4,000 landings Increase total landings permitted in the Planning Area to a maximum of 4,000 annually. Permitting 4,000 landings annually allows for TEMSCO and AMG to expand their operations, while also leaving room for additional operators to conduct permitted helicopter activities.	6,000 landings Increase total annual permitted landings in the Planning Area to a maximum of 6,000 landings. Permitting 6,000 landings annually allows for TEMSCO and AMG to expand operations, while also leaving room for additional operators to conduct permitted helicopter activities.

Table 4 summarizes the anticipated effects of each alternative.

Table 4. Summary Comparison of Alternative Impacts

Management Action	Alternative A No Action	Alternative B	Alternative C	Alternative D Preferred Alternative
Recreation Management Area Designation	Retain SRMA in North Block Recreation: Minimal change from existing conditions.	Retain SRMA in North Block; extend SRMA to South Block Recreation: Same as Alternative A.	Designate all BLM-managed lands as ERMA Recreation: ERMA designation is better aligned with BLM's undeveloped tourism market strategy. Indirect benefits to tourism industry, dispersed/independent backcountry users.	Designate all BLM-managed lands as ERMA Recreation: Same as Alternative C.
Monitoring and Control Area	Retain the Monitoring and Control Area Recreation: No change to existing operations; operators would not be able to operate in the Monitoring and Control Area. Wildlife: No effect to wildlife. Noise and disturbance caused by permitted helicopter landings in Monitoring and Control Area would continue to be prevented. Area would remain available for future research on the effects of helicopter disturbance on wildlife.	Lift the Monitoring and Control Area Recreation: This alternative would effectively open 98,000 acres of terrain that has been previously closed to helicopter landings. Operators would have increased opportunity to expand business into new terrain. Would further disperse recreational use. Wildlife: Populations of mountain goats and other wildlife in Monitoring and Control Area would be subjected to permitted helicopter landings. Total area of wildlife habitats within the Planning Area that experience helicopter noise and disturbance would increase.	Retain the Monitoring and Control Area for 5 years Recreation: No change to existing operations for five years. Then, operators would have opportunity to expand business into the area. After the five-year period, this alternative would effectively open 98,000 acres of terrain that has been previously closed to helicopter landings. Would further disperse recreational use. Wildlife: No effect to wildlife initially. Noise and disturbance caused by permitted helicopter landings in Monitoring and Control Area would be prevented for 5 years, during which time the area would remain available for research on the effects of helicopter disturbance on wildlife. Additional data collected in the five years following the ROD could be used to inform future permit stipulations, decisions, etc. After the five-year period, effects would be the same as Alternative B.	Retain the Monitoring and Control Area for 5 years Recreation: Same as Alternative C. Wildlife: Same as Alternative C.

Management Action	Alternative A No Action	Alternative B	Alternative C	Alternative D Preferred Alternative
Annual Landings Permitted through SRPs	Currently, 2,400 summer landings permitted annually Recreation: No change in number of landings authorized annually. Landings only authorized in summer months. Currently, there is no maximum on landings permitted annually. Limited potential growth of permitted helicopter landings. Wildlife: Current impacts of noise and overflights on wildlife continue unchanged. Impacts could include stress responses; there is also a possibility that acclimation occurs. Wildlife impacts limited to summer. Acoustics: Estimated to exceed 75 dB in 10-minute increments up to 20 times/day on the busiest summer day. Lands with Wilderness Characteristics: No permanent impairment of existing wilderness characteristics. Estimated GHG Emissions: 229,680 kgCO2 annually (equivalent to 3.3 one-way commercial flights from Anchorage to Seattle)	Maximum of 7,500 landings permitted annually Recreation: Maximum landings authorized represents 212% increase in over current authorizations. Current operators could expand business; new operators could also conduct permitted helicopter landings in the Planning Area. Wildlife: Potential impacts of noise and overflights would become more frequent and year-round; more backcountry trekkers could increase human/wildlife encounters. Acoustics: Based strictly on the numbers of landings authorized, this alternative could represent up to a 212% increase in the frequency of noise in excess of 75 dB; however, an increase in authorized landings does not necessarily equate to more takeoffs from Haines/Skagway as flights may land several times in the backcountry without returning to town or may base from point along the local road system. Additionally, this alternative would distribute landings across the seasons. Lands with Wilderness Characteristics: No permanent impairment of existing wilderness characteristics.	Maximum of 4,000 landings permitted annually Recreation: Maximum landings authorized represents 66% increase in over current authorizations. Current operators could expand business; new operators could also conduct permitted helicopter landings in the Planning Area. Wildlife: Potential impacts of noise and overflights would become more frequent and year-round; more backcountry trekkers could increase human/wildlife encounters. Acoustics: Based strictly on the numbers of landings authorized, this alternative could represent up to a 66% increase in the frequency of noise in excess of 75 dB; however, an increase in authorized landings does not necessarily equate to more takeoffs from Haines/Skagway as flights may land several times in the backcountry without returning to town or may base from point along the local road system. Additionally, this alternative would distribute landings across the seasons. Lands with Wilderness Characteristics: No permanent impairment of existing wilderness characteristics.	Maximum of 6,000 landings permitted annually Recreation: Maximum landings authorized represents 150% increase in over current authorizations. Current operators could expand business; new operators could also conduct permitted helicopter landings in the Planning Area. Wildlife: Potential impacts of noise and overflights could become more frequent and year-round; more backcountry trekkers could increase human/wildlife encouters. Acoustics: Based strictly on the numbers of landings authorized, this alternative could represent up to a 150% increase in the frequency of noise in excess of 75 dB; however, an increase in authorized landings does not necessarily equate to more takeoffs from Haines/Skagway as flights may land several times in the backcountry without returning to town or may base from point along the local road system. Additionally, this alternative would distribute landings across the seasons. Lands with Wilderness Characteristics: No permanent impairment of existing wilderness characteristics.

Management Action	Alternative A No Action	Alternative B	Alternative C	Alternative D Preferred Alternative
		Estimated GHG Emissions: 717,750 kgCO2 annually (equivalent to 10.4 one-way commercial flights from Anchorage to Seattle)	Estimated GHG Emissions: 382,800 kgCO2 annually (equivalent to 5.6 one-way commercial flights from Anchorage to Seattle)	Estimated GHG Emissions: 574,200 kgCO2 annually (equivalent to 8.3 one-way commercial flights from Anchorage to Seattle)

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This chapter contains background information about the physical, biological, and socioeconomic resources, resource uses, and programs that exist or occur on the BLM lands in the Haines Planning Area. This information is provided to establish the environmental baseline for analysis of the direct, indirect, and cumulative effects analyses that will be presented in Chapter 4.0.

Topics discussed in this section are defined and limited by the issues identified during scoping for the Haines Planning Area effort. The order in which topics are addressed is not intended to imply relative importance of the topic. Resources and resource uses within the Planning Area that are not discussed in this chapter are considered to be unaffected by the alternatives or unchanged from the Ring of Fire RMP.

3.2 Recreation

The BLM provides opportunities for outdoor recreation and nature-based tourism under the concept of multiple use management. Recreation activities on BLM-managed public lands are multi-faceted and include consumptive activities, such as big game hunting, and non-consumptive, such as photography. The BLM lands within the Haines Planning Area provide a spectrum of dispersed and undeveloped outdoor recreation opportunities affording visitors the freedom of recreational choice with minimal regulatory constraints.

3.2.1 Area Profile

The three mountain ranges within the Planning Area – the Chilkat Range south of Haines, the Takshanuk Mountains to the northwest, and the Coast Range in the northeast – are typical of the mountain ranges throughout the region (Map 5, see Section 7.0). These are narrow ranges that rise from the surrounding valley floors and trend mainly north to south, and are comprised of rugged and remote terrain with jagged peaks towering over large icefields. The Coast Range is the highest of the three ranges, with peaks reaching elevations slightly over 8,000 feet above sea level. These mountain ranges have terrain that is especially well-suited for air tours, such as glacier landings.

Recreation use within the area is low compared to other recreation areas in the region, including the Tongass National Forest and Glacier Bay National Park and Wilderness. There are no BLM developed recreation sites or amenities within the Planning Area. Neither the approved Ring of Fire RMP nor public scoping for this amendment process identified or recommended the need to develop any recreation sites or amenities in the future (e.g., waysides, roads, trails or trailheads, campgrounds, public use cabins, signage, interpretation panels, etc.). Lands directly north of the Haines Highway were classified as Semi-Primitive Motorized and have since been conveyed to the State. This has created a greater distance or buffer from potential motorized access to BLM lands in this region. There are currently no BLM-managed roads or trails within the Planning Area.

Due to the area's size, remoteness, and lack of any type of existing facilities or improvements, the majority of the Planning Area has been classified as Primitive (Table 4).

3.2.2 Management of Adjacent Lands

State of Alaska
Due to recent land conveyance actions completed within the Planning Area, it is highly unlikely there are remaining BLM lands that can still be considered as Semi-Primitive Motorized. Within the past few years, nearly 100,000 acres of State Priority Selected lands within the Planning Area have been conveyed to the State. The conveyance of four entire townships, which included Takhin Ridge and the Tsirku River, directly affected BLM-permitted activities. Prior to conveyance, the majority of the BLM's SRPs were for activities occurring on these lands. When the lands were conveyed to the State, the activities continued, but the permit administration was transferred to the State. It is not anticipated that any further significant land conveyance will occur within the Planning Area. The established goal of the majority of State land within and around the Planning Area recommends accessible outdoor recreational opportunities with well-designated and conveniently located recreational facilities. In addition, undeveloped lands should be provided for recreation pursuits that do not require developed facilities (ADNR, 2002). Another goal of the State is to maintain, enhance, or provide adequate access to public and private lands and resources.

U.S. Forest Service
Much of the National Forest Lands near the Planning Area are designated Remote Recreation (where opportunities for solitude and self-reliance are high) and are managed to maintain these uses (Haines, 2004).

Haines Borough
The Haines Borough has designated the following land use prescriptions for a number of areas within the BLM Planning Area (Haines, 2004):

- Chilkat Range: Recreation Emphasis – primarily open space with recreation and tourism uses with associated infrastructure and shelters allowed, fish and wildlife habitat and scenic values maximized and retained.
- Takshanuk Mountains: Multiple Use – commercial timber harvest, mineral extraction, tourism, settlement and similar intensive uses allowed with consideration and measures to protect fish and wildlife habitat and scenic values.
- Coast Range: Same as the Chilkat Range and with recognized mineral potential.

3.2.3 Current Condition of Recreation Opportunities

Roads and Trails
There are no existing BLM-managed roads or trails within the Planning Area. Much of the area consists of steep and remote mountainous terrain. The current demand to provide access to the Planning Area is negligible, and such access that is provided occurs through fixed-wing aircraft and helicopters.

In August 2009, BLM staff met with city officials from Skagway to discuss current and future road, trail, and access plans and opportunities which may affect nearby BLM lands. The West Creek Road, a favorite among locals for easy access into the backcountry of the West Creek Valley, is on the City of Skagway's wish list for development of a route/trail to the (West Creek) glacier from the road terminus (Skagway, 2009). A city official expressed to BLM that blasting may be required for any future road or trail extension from the end of West Creek Road. A site visit to the West Creek Valley area confirmed that there is currently limited road and trail access to BLM lands from the West Creek Road, the terminus of which is approximately five miles from BLM lands. From the end of the road, a steep and unmaintained single track foot and/or all-terrain vehicle trail continues west for approximately one mile. An over-flight by BLM staff revealed extensive wet and boggy areas located between the end of the existing single track trail and BLM lands near West Creek Glacier.

Most state uplands near the Planning Area are seldom used given their remoteness, lack of access, and steep or mountainous terrain. There are sporadic fixed-wing or helicopter landings associated with land or resource management by state and Federal agencies, mineral exploration, and some limited recreation use (ADNR, 2002).

Wild and Scenic Rivers

The BLM has deferred wild and scenic river suitability determinations until the land ownership patterns within the Planning Area are better defined (BLM, 2008). Since evaluation of wild and scenic rivers is not included within this plan, protecting previously identified outstandingly remarkable values will continue during interim management of the State-selected lands within the Planning Area. This applies to approximately one mile of the Tahini River, approximately six miles of Chilkat River, and approximately seven miles of the Chilkoot River.

Visual Resource Management

Lands within the Planning Area have been classified as Visual Resource Management (VRM) Class IV. VRM Class IV objectives allow for major modifications of the existing character of the landscape.

Recreation Opportunity Spectrum

Recreation Opportunity Spectrum (ROS) is the method that the BLM and the U.S. Forest Service use to indicate the type of recreation experience and setting their management is designed to achieve for an area. Due to the area's remoteness, naturalness, and lack of any type of facilities or improvements, the majority of the Planning Area has been classified as Primitive. Small sections of BLM lands located directly north of the Haines Highway, the Chilkoot Lake Power Site Withdrawal, and the West Creek area near Skagway have been classified as Semi-Primitive Motorized. Note that some lands north of the Haines Highway as well as the Chilkoot Lake Power Site Withdrawal have since been conveyed to the State, creating a greater distance or buffer from potential motorized access to BLM lands.

A ***Primitive*** classification is an area typically characterized by a remote unmodified natural environment of fairly large size. Concentration of users is rare and evidence of other users is minimal. Sights and sounds of the road systems are nonexistent. Human-built structures are few and far between or are inconspicuous. In general, visual resources are natural and unaltered.

Vegetation and soils remain in a natural state. This class may include areas accessed by aircraft and helicopter and is therefore motorized unless otherwise noted (BLM, 2008).

A ***Semi-Primitive Motorized*** classification is an area characterized by a predominantly unmodified natural environment of moderate to large size. Concentration of users is moderate, and evidence of use is present but rare. The area is accessible to off-highway vehicles (OHV) weighing less than 1,500 pounds gross vehicle weight and generally, is not accessible to most street four-wheel drive vehicles. Sights and sounds of the road system may or may not be dominant. Some portions of the area may be distant from road systems, but all portions are near motorized trails. Vegetation and soils are predominantly natural but localized areas of disturbance may exist such as an impacted trail.

Table 5. Current Recreation Management.

Management Area/Description	Current Designation(s)	Past, Current and/or Potential Recreation Use
Chilkat Range: Alpine area surrounded by Glacier Bay National Park & Wilderness and state land West of Chilkat Inlet. Located near Tahkin Ridge where heli-skiing occurs on state/borough land (formally BLM). Predominant land cover is steep or mountainous terrain consisting of bedrock and glaciers. Bertha, Garrison, and Davidson Glaciers remain partially on BLM. No road, trail or ocean access.	Visual Resource Management classification IV. Recreation Opportunity Spectrum is *Primitive*.	Heli-skiing and related commercial filming activities. Scenic over-flights by fixed-wing aircraft.
Takshanuk Mountains: Mountainous area bounded by the Haines State Forest to the South and West, the Canadian Border to the North, and the Haines/Skagway Borough boundary to the East. Also surrounds the Northern-third of the Chilkat Bald Eagle Preserve. Predominant land cover is steep or mountainous terrain consisting of bedrock. No road, trail or ocean access.	Same as above.	Scenic over-flights by fixed-wing aircraft. Wildlife monitoring area by BLM.
Coast Range: Bounded to the North by Canada, Haines/Skagway Borough boundary to the West, and state land to the East and South. Covered with 3000-7000 foot elevation mountains, predominant land cover is also steep or mountainous terrain made of bedrock and glaciers. No road or trail access.	Same as above.	Scenic over-flights by fixed-wing aircraft. Commercial helicopter tours; glacier landing tours; and guided mountaineering adventures such as alpine hiking, glacier trekking, skiing, ice and rock climbing near Mount Harding.

3.2.4 Recreation Resource Uses

BLM-managed lands account for approximately 30% of the current land ownership within the Planning Area (Table 1), and an estimated 1% of all local outdoor recreation participation within the Planning Area in 2011 occurred on BLM-managed lands (RMIS, 2011) (ADNR, 2004) which excludes two nearby major Federal management areas. The Planning Area is within, adjacent to, or near a number of existing designated management areas administered by other agencies: The Tongass National Forest (the nation's largest national forest), Glacier Bay National Park and Wilderness, Chilkat Bald Eagle Preserve, Chilkat River Critical Habitat Area, Klondike Gold Rush National Historic Park, Haines State Forest, and the Haines Coastal Management Area (Alaska, 2005). For this reason, outdoor recreation is currently a principal attraction to the region.

Outdoor recreation demand on BLM lands within the Planning Area consists primarily of organized excursions provided by commercial recreation businesses, although there are limited opportunities for independent recreation use and exploration. The Planning Area is also within the State Game Management Unit 1D, which allows for various draw, registration and tier II permits for hunting brown/grizzly bear, mountain goat, moose, deer, elk, and black bear (Alaska, 2011).

Due to land conveyance actions that transferred a large amount of acreage out of BLM ownership in 2005, the number of SRPs and subsequently, visitation on BLM lands, declined sharply. In 2004, eleven SRPs were authorized for heli-skiing, river rafting, and guiding-outfitting (Table 6). In 2007, three SRPs were issued and only one was issued in 2009 (Table 6). Visitation on BLM lands simultaneously decreased during this time period.

Table 6. Authorized Commercial Recreation Activities and Visits in the Planning Area

Permit Activity *(number of permits)*	Recreation Visits in 2004	Recreation Visits in 2007	Recreation Visits in 2009
Air Tours (2)	11,602	4,700	4,622
Big Game Hunting Guiding-Outfitting (3)	6	5	n/a
Guided Adventures (2)	80	344	n/a
Heli-skiing & Commercial Filming (3)	150	0	n/a
Guided River Rafting (1)	29	0	n/a

Source: SRP Post-use Reports

BLM gathers visitation data for BLM-managed lands from SRP post-use reports submitted by permittees (Table 6) and a total annual visitation number is estimated for both commercial as well as dispersed/independent recreation specifically at Dalton Cache Historical Site. A visit is considered the entry of any person onto lands or related waters administered by the BLM for any period of time. A same day reentry, negligible transit, and entry to another recreation site, or detached portion of the management area on the same day are considered a single visit. The applicable rule is that one entrance per individual per day to public lands is reportable as a visit (BLM, 2003) and these are the assumptions upon which estimated annual visitation is calculated.

Summer Aviation-Supported Recreational Use

Cruise ship dockings in Skagway and Haines and visitor interest in the natural and scenic resources of the area create a high demand for guided air tour excursions and landings on glaciers. Access to safe areas on glaciers within the Planning Area for large groups of people with limited time available is best obtained through the use of helicopter transportation. The primary summer uses include scenic over-flights and glacier landing tours. Less frequent summer use includes limited hiking, camping, hunting, and ice climbing that might include fixed-wing aviation support. An activity that is authorized on BLM land between May 16 and October 15 is considered a summer authorization. (Winter authorizations occur from January 15 to May 15.)

Past authorized summer activities on BLM lands included glacier landing tours by L.A.B. Flying Service. TEMSCO and AMG are currently the only BLM-permitted air tour operators within the Planning Area, though other operators may choose to submit permit applications in the future. TEMSCO has been permitted by the BLM to conduct air tours and glacier landing tours in the

Planning Area since 1995, and AMG has been permitted to conduct guided trekking trips in the Planning Area since 2000. TEMSCO has also had a similar permit with the U.S. Forest Service to operate on nearby Tongass National Forest lands since 1986 (USDAFS, 2009).

The amount of recreation use for air tours and glacier landings vary by year and are dependent upon factors such as weather, maintenance, and demand. Flight routes and landing zones are selected daily by the operator based on these factors, as well as to account for aircraft and passenger safety. In 2010, TEMSCO's five-year BLM permit was modified from 4,700 to 1,900 landings through 2014, and AMG was reauthorized a one-year permit for 500 landings again in 2011.

Winter Aviation-Supported Recreational Use
An authorized activity on BLM land is considered a winter authorization if it occurs between January 15 and May 15; no such activities have been authorized since 2005.

Past authorized winter activities on BLM lands have included helicopter-supported skiing (heli-ski) and associated commercial filming of heli-ski activities. BLM authorized two winter heli-ski operators and one commercial film operator through 2005; Southeast Alaska Backcountry Adventures (SEABA), Alaska Heliski (formerly Out of Bounds Adventures), and Teton Gravity Research. Due to significant acreage being conveyed out of BLM management in 2005, their activities are now managed by the State of Alaska and/or the Haines Borough.

The region has a relatively mild climate and an abundance of snow that complements the increased popularity of backcountry heli-skiing. Commonly featured in adventure magazines and other popular print, this region has become a well-known winter sport destination for adventure-seeking visitors from other Alaskan communities as well as from the Lower 48 and foreign countries. As such, local operators have a heightened interest in opportunities to serve this winter clientele and round out their off-season revenues (Haines, 2004).

Both AMG and TEMSCO, traditionally summer tour operators, submitted winter heli-ski activity requests in 2010 and 2011 on BLM land. In 2011, two additional operators submitted winter requests: SEABA and Alaska Heliski.

In both 2010 and 2011, AMG requested 2,500 total annual helicopter landings, 2,450 more than their currently authorized 500 (non-winter) landings in 2011. Of their 2,950 total aviation landings requested, AMG proposed 225 winter ski plane, 2,450 winter helicopter, 225 summer ski plane, and 50 summer helicopter landings.

In both 2010 and 2011, TEMSCO requested 3,400 total annual landings (1,500 winter), 1,500 more than their currently authorized 1,900 (non-winter) landings. Of the 3,400 total landings requested, TEMSCO proposed 1,900 summer helicopter and 1,500 winter helicopter landings.

Heli-ski activities have been authorized by the Haines Borough on non-BLM land over the past several winters, based at mile 33 of the Haines Highway as well as from the Haines airport. Some local residents view these activities as disruptive to a quiet, rural lifestyle. It is likely that additional future requests will be received from operators other than AMG and TEMSCO for

more commercial heli-ski and filming in areas such as the Chilkat Range, as well as guided mountaineering adventures in the southern portions of the Coast Range, such as Mount Harding and West Creek Glacier areas near Skagway.

Table 7 demonstrates the number of total annual helicopter landings authorized, actual landings reported, as well as winter-specific authorizations. The total landings authorized include all past summer and winter uses (glacier tours, trekking/mountaineering, commercial filming, and heli-skiing). Land conveyances from BLM to the State of Alaska, beginning in 2004, account for the majority of the decrease in total number of landings. Additionally, changes in TEMSCO's operations account for a significant decrease in landings on BLM land annually, from 3,227 in 1995 to 348 in 2010, and 139 in 2011. In 2009, the U.S. Forest Service approved TEMSCO's request for 2,800 landings annually on the Meade Glacier, which allowed TEMSCO to transfer that number of landings from the shrinking BLM-managed West Creek Glacier. The BLM has extended TEMSCO's current multi-year permit to the end of 2011, with 1,900 landings authorized. TEMSCO is currently requesting a maximum of 1,900 total summer and 1,500 winter landings annually on BLM land during the period of 2010 to 2014.

Table 7. Annual Historical Permitted Helicopter Use

Year	# Operators Authorized	Total # of Landings Authorized	Total # of Actual Landings	# of Winter Landings Authorized	# of Actual Winter Landings	Total Actual Visits
1993	1 summer	3500	3440	n/a	n/a	15136
1994	1 summer	3500	3306	n/a	n/a	14546
1995	2 summer	3590	3227	n/a	n/a	14215
1996	2 summer	4375	3590	n/a	n/a	16457
1997	2 summer	6125	3875	n/a	n/a	19322
1998	2 summer	7200	4102	n/a	n/a	21386
1999	2 summer 1 winter	8980	3675	480	26	18464
2000	1 summer 1 winter	7580	3600	2880	14	18403
2001	1 summer 1 winter	7580	3148	2880	48	15289
2002	1 summer 3 winter	11480	3032	6780	380	14592
2003	2 summer 3 winter	11780	2912	6780	350	14332
2004	2 summer 3 winter	11880	2642	6780	321	13129
2005	2 summer 3 winter	11980	2914	6780	300	14770
2006	2 summer	5200	2159	n/a	n/a	10764
2007	2 summer	5200	1943	n/a	n/a	10074
2008	1 summer	4700	1418	n/a	n/a	7138
*2009	1 summer	4700	925	n/a	n/a	4622
2010	1 summer	1900	348	n/a	n/a	1888
2011	2 summer	2400	147	n/a	n/a	704
Average		6,508	2,653	4,766	206	12,907

(Includes TEMSCO, Alaska Mountain Guides, Teton Gravity Research, SEABA, LAB Flying Service, and Alaska Heliski. Does not include fixed-wing aviation.)
*In 2009, 2,800 landings for TEMSCO were transferred off of BLM administered lands to the nearby Meade Glacier, which is managed by the U.S. Forest Service

3.2.5 Recreation Area Designations

Special Recreation Management Areas
In the 2008 Ring of Fire ROD, the BLM designated a portion of the BLM lands (north block) within the Planning Area as an SRMA. The established goals of the Haines SRMA identified within the Ring of Fire RMP include:

1. Manage recreation to maintain a diversity of opportunities.
2. Provide opportunities for commercial recreation consistent with area objectives for recreation management.

Management objectives for the Haines SRMA established in the Ring of Fire RMP include:

1. Manage the SRMA to maintain a diversity of opportunities, including designated Recreation Opportunity Spectrum classification.
2. Maintain the area for designated Visual Resource Management classification.
3. Develop further guidance for management of OHV use.
4. Manage commercial recreation activities to maintain the quality of user experience, avoid adverse effects on wildlife resources, and minimize disturbance to adjacent communities.
5. Work collaboratively with other landowners in the area, recreation users, and adjacent communities to develop management strategies and define enforcement responsibilities.

The BLM's Land Use Planning Handbook was revised on October 1, 2010. Identification and management of RMAs, including SRMAs and ERMAs has been modified. Tables 8 and 9 summarize specific revisions relating to SRMAs and ERMAs.

SRMAs are identified and managed primarily for unique recreation resources, where recreation is the predominant focus.

Due to the lack of appropriate and reasonable access, there is no need for a separate comprehensive travel and transportation planning effort for the region. This requirement can be completed at a future time, to include all lands contained within the Ring of Fire Resource Management Planning area.

Table 8. Land Use Planning Updates for SRMAs: Past and Current Policies

SRMA Management Strategy During Ring of Fire RMP Planning Process (BLM, 2008)	Current SRMA Management Policy
SRMAs are managed for unique recreation resources. Detailed recreation planning and more intensive management is typically needed to guide use in these areas. SRMAs are identified through the RMP/EIS planning process. Each SRMA has a distinct primary recreation-tourism market. For each SRMA selected, BLM determines whether that primary market-based strategy will be to manage for a *destination* recreation-tourism market (usually involve areas with use fees, facilities, and interpretive displays), a *community* recreation-tourism market (may involve use fees, attract a variety of local users based on its value to community recreationists for direct health benefits), or an *undeveloped* recreation-tourism market (does not usually involve use fees or facilities, and access is difficult).	Definition: SRMAs are administrative units where the existing or proposed recreation opportunities and recreation setting characteristics are recognized for their unique value, importance and/or distinctiveness, especially as compared to other areas used for recreation. Management Focus: The management focus of SRMAs is to protect and enhance a targeted set of activities, experiences, benefits, and desired recreation setting characteristics. Within SRMAs, Recreation and Visitor Service (R&VS) Management is recognized as the predominant Land Use Plan focus, where specific recreation opportunities and recreation setting characteristics are managed and protected on a long-term basis. SRMAs must have measurable outcome-focused objectives. Management actions are required to 1) Sustain or enhance recreation objectives 2) Protect the desired recreation setting characteristics 3) Constrain uses, including non-compatible recreation activities that are detrimental to meeting recreation or other critical resource objectives (e.g. cultural or threatened and endangered species).

Table 9. Land Use Planning Updates for ERMAs: Past and Current Policies

ERMA Management Strategy During Ring of Fire Planning Process (BLM, 2008)	Current ERMA Management Policy
ERMAs are recognized as having dispersed recreation with limited recreation issues or management concerns. ERMAs are those areas not designated as an SRMA, but contain special features that provide for unstructured recreation activities such as hunting, dispersed camping, hiking, and wildlife viewing. Most of these public lands are offered for use by recreationists with few restrictions. Therefore, actions within ERMAs are generally implemented directly from land use plan decisions and do not require activity-level planning.	ERMAs are defined as administrative units that require specific management consideration in order to address recreation use, demand, or Recreation and Visitor Services (R&VS) program investments. The management focus of ERMAs is to support and sustain the principal recreation activities and the associated qualities and conditions of the ERMA, commensurate with management of other resources and resource uses.

3.2.6 Monitoring and Control Area

In 2002, a Monitoring and Control Area was established in the northwest portion of the Planning Area. With its establishment, commercial helicopter landings were prohibited within the Monitoring and Control Area boundary with the intention of providing a source of consistent monitoring data if adaptive management changes become necessary. The original Monitoring and Control Area described in the Ring of Fire RMP was 112,790 acres; however, after recent land conveyances to the State of Alaska, the Monitoring and Control Area now consists of 98,000 acres (Map 1, see Section 7.0). The Monitoring and Control Area boundaries were drawn based on where helicopter supported recreation had not occurred, due to the flight times from Skagway and the unsuitability of the glaciers in the area for landing zones.

3.2.7 Future Trends and Forecasts

Visitation
From now until the year 2020, Alaska expects much slower growth in population than in previous decades, though Alaska's population in 2020 is still expected to increase by approximately 25% over 2008 levels. As the population increases, Alaska will continue to have a resource based economy, and will continue to be a major travel destination as demand for access to Alaska's scenic and recreation resources is expected to continue to grow accordingly (ADNR, 2004).

Increased tourism to Alaska will impact visitation numbers to the Planning Area, since the primary economic niche of the Haines Planning Area is that of a tourist destination. An estimated 1.56 million out-of-state visitors came to Alaska between May and September, 2011 (Alaska Department of Commerce, 2011). Tourism has moved from the 7th largest private sector employer to the 2nd since the development of the last Statewide Comprehensive Outdoor Recreation Plan, employing over 27,000 persons during the peak season. The cruise ship sector is one of the contributing factors to this growth (ADNR, 2004).

Cruise ship volume is projected to grow by 6% in 2012, and continued nationwide economic recovery should result in a boost for both the air and highway/ferry markets (Alaska Department of Commerce, 2011). Locally, both Haines and Skagway serve as ports of call for cruise ships, and are terminals for the Alaska Marine Highway System. Once visitors arrive, many are dependent on commercial recreation providers such as fixed-wing aircraft or helicopters to access nearby public lands. Within the Planning Area, it is estimated that dispersed recreation increased 2-3% annually from 1998 to 2011, although, as previously mentioned, the number of SRPs has decreased since 2004 due to recent land conveyance actions within the Haines area.

The communities of Skagway and Haines benefit from the attractiveness of recreation opportunities available within the Planning Area. Many residents with permanent or seasonal jobs work within the local tourism industry. In 2006, TEMSCO was ranked number 14 of the top 25 Skagway employers (Skagway, 2009). Over the last 20 years, revenue from sales and tourism (hotel) taxes has risen significantly, coincident with Skagway's rising prominence as part of the Alaska Inside Passage cruise ship itinerary (Skagway, 2009). The Haines Borough's setting has made it a popular destination as visitors come to see and experience the mountains,

fjords, glaciers, fishing, eagle viewing, and other wildlife in the area. The increase in cruise ship visits to Haines since the mid-1990s is a major element in the local economy (Skagway, 2009).

Cruise ship traffic to Skagway is increasing, but since the number of *independent* travelers (mainly highway tourism) visiting the area is declining, the accommodations industry, which often thrives as tourism grows in an area, has been in a job loss trend since 2000. High gas prices and the relatively low expense of visiting the region by cruise ship may continue to limit growth in independent highway travelers in the coming years.

Local Planning Efforts

The BLM has reviewed and considered resource and/or recreation development plans and future proposals from neighboring lands. The West Creek Valley is a major area that the residents of Skagway use to get away, hunt, ride snow machines, and access the backcountry (Skagway, 2009). Skagway's Comprehensive Plan identifies the West Creek area as a "future growth area" to focus attention on improved all-weather access for all types of recreational use, low-density housing, hunting, fire wood gathering, and possibly hydroelectric development. In a 2008 Skagway community opinion survey, 70% agreed that pedestrian and bike trails through the community should be improved, and 75% supported improving the West Creek Valley trail system for year-round recreational use (Skagway, 2009). Subsequently, the Municipality of Skagway has been proceeding with long range plans to increase residential, commercial and recreation use in this part of the borough. Traffic volumes on Dyea Road, leading to West Creek Road, continue to increase, and the city has identified that the road needs a wider shoulder, a pedestrian and bicycle lane, and better winter maintenance.

The nearest BLM lands to Skagway are located approximately five miles from the end of West Creek Road. The BLM is currently partnering with the Municipality of Skagway to help determine and coordinate future improvements to access in the West Creek Valley area to enhance and benefit recreation development and use. The BLM will work closely with the Municipality of Skagway for future use and development of the West Creek Valley area. In addition, the BLM will also continue to work collaboratively with other landowners in the area, recreation users, and adjacent communities to develop management strategies and define enforcement responsibilities.

In Haines, a statistical survey of 201 households conducted in 2002 found that Haines residents are strongly supportive of the tourism industry, 68% supported growth in tourism while 25% supported maintaining current levels (Haines, 2004). One Haines Borough objective is to promote the creation of trails and infrastructure where appropriate to allow for better access into the forests and outlying areas of the Borough (Haines, 2004).

Recreation opportunities in the Haines and Skagway Boroughs will certainly increase in the future. On the Chilkat peninsula, an expansion of hiking trails is a definite possibility as well as increased use of the Chilkat State Park and the Sullivan Island areas (Haines, 2004). An emphasis on increased access to the more remote areas around Chilkoot Lake has been suggested as well as expanded visitor opportunities in the form of fishing and higher alpine access. A possible trail from Chilkoot (Lake) to Skagway was proposed within the Haines Borough

Comprehensive Plan of 2004, and this trail would most likely cross BLM land, but no additional work or proposed route information has since been developed.

3.3 Wildlife

Wildlife habitats in the lower elevations of the Planning Area consist of complexes of thick coniferous forests of Sitka spruce, western hemlock, red cedar and yellow cedar interspersed with muskegs, shore pine, and mountain hemlock where saturated soils prevent the growth of large trees. Tall shrub communities of Sitka alder occur on the higher side slopes, while cottonwood, willow and alder communities occur along floodplains of the larger rivers. The higher mountain slopes support alpine tundra habitats of low and prostrate shrubs, grasses and forbs. Along the extensive coastline, nearshore habitats consist of steep rock shores with kelp beds and sea grasses, such as surfgrass and eelgrass; beaches of unconsolidated sand and gravel with salt-tolerant grasses and forbs; and extensive sand and gravel flats on river deltas and glacial outwash plains. Salt marsh communities are often associated with broad upper intertidal areas near outwash plains and mouths of major rivers. These habitats are of great importance to terrestrial mammals such as brown and black bears, but also to migrating waterfowl and shorebirds.

The Planning Area contains extensive mountain goat habitat. The Planning Area and surrounding area also has a diverse set of flora and fauna unique to Alaska, due to its proximity to both interior ecosystems and coastal temperate rainforest ecosystems.

The Chilkoot Lake Power Site Withdrawal area, managed by the State of Alaska but surrounded by BLM land, receives heavy recreational use, largely due to the strong runs of salmon during the summer and fall. This area supports moose, black and brown bears, mountain goats, Dall sheep, furbearers, and raptors. Much of this area includes the Chilkat Bald Eagle Preserve.

The Tahini River, a tributary of the Chilkat River, runs for a total length of four miles before entering Canadian ownership. Near the Canadian border, on BLM land, the Flemer River joins the Tahini River. Wildlife species found here include moose, brown and black bears, mountain goats, Dall sheep, furbearers, and raptors. ADFG maintains a lease through BLM on the lower part of this river for fisheries research.

BLM manages approximately 12 miles of the 24-mile Tsirku River uplands. The river valley supports anadromous fish, and provides habitat for moose, brown and black bear, mountain goats, waterfowl, and bald eagles.

Mountain Goats

Mountain goats are considered an important species in the Planning Area because actions permitted in goat habitats, particularly in winter, may affect their movements and energy expenditures, their ability to use important habitats, vulnerability to predators, and ultimately, their productivity and survival.

Mountain goats *(Oreamnos americanus)* are common in the mountainous terrain of the Planning Area. In general, mountain goat habitat selection in southeast Alaska is influenced by security

from predators, movement to escape terrain, and by the ability to acquire food (Fox, Smith, & Schoen, 1989). Goats use cliffs and steep alpine and subalpine habitats in summer, old growth forest habitats in winter, (Schoen & Kirchoff, 1982) and occur in these habitats throughout the region (Fox, Smith, & Schoen, 1989). Goat densities over all of southeastern Alaska average about 1.5 animals per square mile (Fox, Smith, & Schoen, 1989) with pronounced cycles in the population of twofold to fivefold in association with weather patterns and snow depth (Smith, 1984). The quantity and quality of winter habitat is the most limiting factor for mountain goats in southeast Alaska (Fox & Smith, 1988) (USDAFS, 2002b). Mountain goats in southeastern Alaska generally occupy habitats that provide abundant areas of high quality forage during summer, but use more limited feeding areas during winter because of deep snow.

Mountain goat home ranges are relatively small. A study of 28 radio-collared mountain goats in southeastern Alaska showed year-round home ranges from 10 to 20 square kilometers (Fox, Smith, & Schoen, 1989). Goats showed fidelity to preferred sites, especially in summer range, and returned there year after year.

Mountain goats breed from late October to early December and give birth to a single kid mid-May to early June, usually in rocky outcrops or near cliffs that offer safety from predators (Festa-Bianchet & Cote, 2008) (Cote & Festa-Bianchet, 2003). Based on surveys in the Juneau Icefield, kidding habitat likely occurs throughout the project area in dense subalpine vegetation, usually between 1,000 and 2,000 feet in elevation (USDAFS, 2002b). Kids typically remain with their mother for one year, but may continue to associate with her for two years, with females forming nursery groups of kids, yearlings, and two-year olds of both sexes (Chadwick, 1977). Nursery groups of females and kids have longer average daily movements and larger home ranges than solitary males, likely as an anti-predator strategy (Cote & Festa-Bianchet, 2003). Adult female mountain goats have heightened sensitivity to disturbances during kidding and post-kidding periods (Penner, 1988). Mountain goats typically live fewer than 12 years, with major causes of mortality including starvation in late winter and spring, predation by wolves and brown bears, and falling in steep terrain and avalanches (Cote & Festa-Bianchet, 2003).

Mountain goats are an important game species statewide and the population is open to hunting annually in fall in the Planning Area (ADFG, 2002) (ADFG, 2004). Mountain goat populations are very sensitive to overharvest because kid production is low and age at first reproduction is late (Cote & Festa-Bianchet, 2001).

Mountain Goat Winter Habitat Use

Winter ranges are typically restricted to wind-swept and west and south facing slopes, at and just below treeline, near escape terrain (Cote & Festa-Bianchet, 2003). In winter, mountain goats of the Haines/Skagway area and other coastal regions typically migrate from high elevation summer ranges to lower forested elevations (White & et al., 2011) (White, 2006) (Fox, Smith, & Schoen, 1989). These movements are influenced mainly by snow depth, as deep snow conditions are common and greatly reduce or eliminate the availability of food resources for goats (White & et al., 2011) (Fox, Smith, & Schoen, 1989) and increase the cost of movement (Dailey & Hobbs, 1989). Generally, goat survival is lower in years with deeper snow depths (White K. S., 2009).

Goats face a trade-off in winter habitat use based on snow depth, predator escape terrain and food quality and availability. Telemetry data from the Chilkat River valley indicates mountain goats winter primarily on windswept, high elevation habitats (Hundermark, Eberhardt, & Ball, 1983). These data suggest goats winter in predator escape terrain with little food availability. These winter changes in habitat use result in the goats feeding on lower quality forages in lower elevation forested habitats (Fox, Smith, & Schoen, 1989), and as a consequence, winter survival of mountain goats is highly dependent on their pre-winter body condition and their ability to conserve energy by adjusting their behavior and physiologic activities (White & et al., 2011). Given these winter habitat constraints, reproductively active male mountain goats are most vulnerable to mortality, because male goats, unlike females, greatly increase movement rates and decrease foraging activity during the rut in early winter (White, 2006) (Mainguy & Cote, 2008) (Pelletier, Mainguy, & Cote, 2008). As a consequence, males are more likely to begin the critical winter period in poorer body condition than females, and are more likely to die later in the winter as a result (White & et al., 2011). White (2009) found the highest overall mortality rates in April in the Berner's Bay area of Lynn Canal, adjacent to the Planning Area (White & et al., 2011).

Current Mountain Goat Management

Little is currently known of the specific short- or long-term population trends of mountain goats in the Planning Area. ADFG conducted mountain goat surveys within the Planning Area in 1973-1975, 1977 and 1980-1987 to determine the area's population size for the management of sport harvest (Denton J. , 2006). Additionally, periodic aerial composition counts for mountain goats have been conducted by ADFG in Game Management Unit (GMU)[1] 1D since 1983, with the objective of identifying geographic areas for use as goat trend counts and management areas; to establish the minimum number of goats needed to provide harvest opportunities in the area; and to provide mountain goat viewing opportunities along the Haines and Skagway road system (Scott, 2008). ADFG's management objectives have not changed since helicopter use has been permitted in the area (Scott, 2008) (Hessing, 2004).

Buffer distances necessary to protect goats from helicopter disturbance have been established in Alberta and British Columbia, Canada (Cote S. , 1996) (Foster & Rahs, 1983) and in the Chugach Mountains, Alaska (Goldstein & et al., 2005), and some of these measures have been modified and adopted on the Tongass National Forest for helicopter recreation activities. Currently in the Tongass National Forest, helicopters are required to maintain a 1,500-foot vertical and horizontal distance from all observed wildlife (USDAFS, 2002b). In addition, a one-mile buffer is maintained between helicopter landing sites and important mountain goat kidding areas from May 15 to June 15 each year (USDAFS, 2002b).

Previous Mountain Goat Survey Efforts

Due to the fact that most goats live in rugged, mountainous terrain, population surveys use helicopters or fixed-wing aircraft, usually in summer, when goats are easy to see (Denton J. , 2006) (Cote & Festa-Bianchet, 2003). Aerial counts of mountain goats have limited precision and high amounts of variability (Gonzalez-Voyer, Festa-Bianchet, & Smith, 2001). In addition,

[1] The Planning Area is located within state game management area, GMU 1D. This is a close equivalent for state wildlife management in the area.

because adult male goats are either solitary or in small groups, they are likely less observable than other sex-age classes (Risenhoover & Bailey, 1982). Kids and yearlings are difficult to classify from the air, adding more variability to age-class observations (Gonzalez-Voyer, Festa-Bianchet, & Smith, 2001).

In 1995, the BLM AFO established a long-term mountain goat monitoring program which continued until 2005. The objective of this monitoring project was initially to determine the distribution, age classification and population size of the mountain goats on BLM lands in the Haines Planning Area. Twenty transect strips were flown every June from 1995 to 2005, in Husky and Piper super-cub fixed-wing aircraft. Each transect strip was flown once each year, although not all transects were flown each year, as weather did not allow flights in some areas in some years. Flights were flown at 400m contour lines inside each transect strip. The survey flight path followed contours starting along the lowest contour and ending at the contour along which goats were no longer detected. Data were recorded on the number, age, class, sex and locations of mountain goat groups. Mountain goat observations during these surveys show concentrations of goats along Takhin Ridge, in the Chilkat Range near Davidson Glacier, in the mountains at the source of the Nourse River, near the Chilkat Glacier, near the Ferebee Glacier, and at Hiteshitak Mountain near the Canadian border (Denton J. , 2006). The density and age class distribution for goats from this data has not been determined.

In 1995, a joint BLM and U.S. Forest Service environmental analysis was completed (AK-040-95-EA-015) to address the potential impacts of helicopter supported special recreation, particularly summer glacier landings and winter heli-skiing and filming operations in or near mountain goat habitats on BLM and U.S. Forest Service lands. BLM's goat monitoring data was used to establish a baseline for goat population size and distribution, and to adjust permit stipulations of permitted helicopter activities for the area. The Record of Decision required development of a mountain goat monitoring plan to attempt to evaluate goat population responses to the activities. Permitted helicopter landings have been renewed annually since 1995, and updated Environmental Assessments were completed in 2000, 2001, and 2002 that included analysis of glacier tours, heli-skiing/filming, and helicopter supported mountaineering.

Monitoring and Control Area

In 2002, a Monitoring and Control Area was established that prohibited helicopter landings. The intent was to set aside an area that had not been impacted by permitted helicopter landings for study. The boundaries of the area were drawn based on where permitted helicopter landings had not occurred, due to the flight times from Skagway, and the unsuitability of the glaciers in the area for landing zones.

Analysis and Mountain Goat Habitat Model Development

In November 2009, WEST, Inc. Environmental Consultants prepared a report on mountain goat habitat selection in Southeast Alaska, based on the 11 years of monitoring data collected from 1995-2005 (Griswold, Nielson, & Swayer, 2009). The report developed a mountain goat habitat model that ranked habitat into five categories based on probability of use. Distance to foraging sites, vegetative cover, elevation, escape terrain, slope, and aspect were all highly significant in determining habitat selection, and these factors were weighted and combined with BLM's survey

data to generate the model. Areas shown in red represent habitat with the highest probability of use by mountain goats (Maps 3 and 6, see Section 7.0).

The model was made with data collected in June of each year, so it is only descriptive of June habitat use and does not include habitat use for the rest of the year. Mountain goats in early summer prefer moderate elevations, with steep south-facing slopes within or close to cover-type classes comprising grasses, forbs and lichens. The report also concluded that these results agreed with the findings of other mountain goat behavioral and habitat selection studies, but as no monitoring was done at other times of year, conclusions about habitat selection or mountain goat behavior during other times of year can only be inferred. The model provides no conclusions about winter use, but in the future may be supplemented with telemetry data currently being collected by ADFG and BLM, described in detail below. Finally, this model does not make correlations between BLM's monitoring data and mountain goat response to helicopter and noise disturbance. This was not the focus of the monitoring, which made no comparisons between goat data and helicopter flights.

Goat habitat from the model does not overlap with actual landing sites, as shown in Maps 3 and 4 (see Section 7.0). Mountain goats are found primarily on the mountain tops in June, and the helicopter landings are on the lower, stable parts of the glaciers.

In order to show an accurate distance between flight routes and areas of highest probability of mountain goat habitat, a calculation had to be made that took into account the helicopter's X, Y, and Z distances from the habitat at some given pixel location (Table 10). A Euclidean Distance function within the GIS software was applied to all data under the following assumptions:

1. The helicopter was always 1,500 feet (458 meters) above the surface directly below it. This was taken into account when calculating the difference in altitude between the helicopter and any given elevation pixel on the surface (Z distance).

2. A given elevation pixel was "assigned" to the closest (X & Y linear distance) pixel along the flight route, using a Euclidean Allocation function.

3. A threshold maximum value of 2,000 feet (610 meters) was set for the calculation of linear X and Y distances. In other words, any elevation pixels that were beyond 2,000 feet from the helicopter were not included in the calculation. This threshold distance was subjectively chosen because this is an approximate distance from flight routes (one side; both sides would be 4,000 feet) to ridgelines across gorges and canyons. If a longer threshold had been set, it was possible that distances to habitat areas on the other side of a mountain could be included in the calculation.

Table 10. Flight Routes and Shortest Distance to Highest Probability of Use Habitat

Route Name	Route Distance (miles)	Route Distance (miles)<=1500 ft. from habitat	% of Route<=1500 ft.
Burro Creek Route	8.85	2.06	23.1
Chilkat Route	14.5	1.64	11.5
Ferebee River Route	34.14	0.0	0.0
Grand Canyon Route	18.69	5.99	32.0
Nourse Route	3.15	0.07	2.2
West Creek Route	11.6	0.8	6.9
Total	90.6	10.56	11.6

The same shortest distance function was used for the TEMSCO landing sites, with a threshold set at 2,000 meters (6,560 feet), meaning that distances were not calculated to any landing zones beyond this point (Table 11).

Table 11. Landing Zones and Shortest Distance to Habitat with High Probability of Use

Landing Zone Name	Shortest Distance to High Probability of Use Goat Habitat in feet
Upper Chilkat	2205
Lower Chilkat	1283
Mid Chilkat	263
Nourse	165
Grand Canyon	1152
Upper Ferebee	1918
Lower Ferebee	3048

Current Mountain Goat Survey Efforts

The BLM, in cooperation with the ADFG, continues to gather information about the mountain goat populations in the Planning Area. In August 2010, BLM began working cooperatively with ADFG to monitor mountain goat movements in the Haines/Skagway area using GPS radio collars. A total of 23 adult mountain goats (13 billies, 10 nannies) were darted, captured and released with radio collars in the area between Takhin Ridge and the Nourse River valley on both State- and BLM-managed lands, including 6 goats from the Monitoring and Control area. In the winter of 2010-2011, three female and four male collared goats died from avalanches or other unknown reasons. Throughout the summer of 2011, the collars of those animals were recovered. In August 2011, 10 new or reinitialized collars were deployed on new animals (3 nannies, 7 billies), and included two captures at Haska, one in the Monitoring and Control Area (N. Takshanuk mountains), four on Takhin Ridge, and three in the Porcupine Mountain area. This resulted in a total of 26 collared animals (16 billies and 10 nannies) in the area.

The GPS radio collars store location and movement data, and telemetry flights are conducted bi-monthly to collect location data by remote download from the aircraft. The collar data will provide detailed goat movement information from 2010 – 2014 or possibly longer. Telemetry data provides information on seasonal movement patterns, habitat selection, reproductive success and survival, population abundance, and age and sex composition of mountain goats in an area. In addition, telemetry data provides an accurate method to ground truth and evaluate the resource selection model created from BLM data in 2009 by West, Inc. As part of the Adaptive Management Strategy, telemetry data and the habitat model will be used annually to refine

permit stipulations for helicopter based recreation permitted on BLM lands to further protect mountain goats and their seasonal habitats in the Haines/Skagway area.

Preliminary results from GPS collars downloaded from 2010 telemetry flights suggests that some mountain goats winter at low, moderate, and high elevations in the Upper Lynn Canal area, where BLM lands are located (White, Crupi, Scott, & Seppi, 2011). In addition, telemetry data suggests that all age and sex classes of animals restrict their movements during the winter season relative to summer and fall, and animals within the lower elevation coastal areas winter in low-elevation forested habitats, while animals from the interior areas, away from the coast generally winter at high elevations (White, Crupi, Scott, & Seppi, 2011), possibly in response to snow depth. In November 2010 and October 2011, six snow depth sensors were deployed in the Chilkat Valley to gather data on local variation in snow depth to determine how that may affect wintering strategies (White, Crupi, Scott, & Seppi, 2011).

Since this project has only recently been initiated, the current ability to provide representative conclusions from existing data is limited. Consequently, any summary of these data must be considered preliminary and only general patterns in mountain goat habitat use and distribution can be provided at this time. After three years of data collection, there is a higher possibility for more conclusive data. A cooperative agreement has been established between BLM and ADFG to continue mountain goat research using collars. This research will continue until the last collars are programmed to drop off collared goats in 2014.

Bald Eagle

Bald eagles (*Haliaeetus leucocephalus*) are common in the Planning Area and occur throughout southeastern Alaska, where population densities reach their highest levels on the North American continent (USDAFS, 1997).

The Alaska Chilkat Bald Eagle Preserve also lies along the Chilkat River within the Planning Area boundaries. The Preserve, created by the State of Alaska in June of 1982, was established to protect and perpetuate the world's largest concentration of bald eagles and their habitat. It also sustains and protects the natural salmon runs and allows for traditional uses, provided such uses do not adversely affect Preserve resources. The State-managed Preserve consists of 48,000 acres of river bottom land of the Chilkat, Kleheni, and Tsirku Rivers (ADNR, 2008). The river "flats" of the Chilkat River along the Haines Highway between miles 18 and 24 are the main viewing area for eagle watchers and considered "critical habitat" in the preserve by ADFG. Bald eagles are attracted to the area by the availability of large quantities of spawned-out salmon and open waters in late fall and winter. This portion of the Chilkat River naturally remains open in this winter months due to its hydrology and suspended sediments, and the spawned-out salmon carcasses attract a large concentration of bald eagles in late fall. Over 3,000 bald eagles were counted within the Preserve during the Fall Congregation from October 2007 to February 2008 (ADNR, 2008). A resident population of 200 to 400 bald eagles inhabits the Chilkat Valley, with more than 80 eagle nests observed within the Preserve. The total number of bald eagles within the Planning Area is unknown.

Current Bald Eagle Management
Eagle nesting habitat is primarily old-growth trees along the coast and within riparian areas. Following USFWS standards and guidelines for regulating human disturbance of bald eagles in Alaska, all identified eagle nests are surrounded by a 330-foot radius protective habitat management zone (USFWS, 2007b). Repeated aircraft flights are restricted within ¼ mile of nest trees when active. All nest trees are considered active March 1 to May 31, and those nest trees containing eggs or young are considered active June 1 to August 31 annually (USFWS, 2007b). All permitted activities in the Planning Area would include stipulations to follow these guidelines. USFWS surveys have located approximately 150 eagle nests within the Planning Area across land ownerships (USFWS, 2007a).

Moose
Moose (*Alces alces gigas*) generally are abundant in recently burned areas that contain willow and birch shrubs, on timberline plateaus, and along the major rivers. Populations vary considerably as numbers are affected greatly by predation and winter severity.

In the Planning Area, moose inhabit the Chilkat River watershed and the Chilkat Peninsula. Small areas of moose habitat are also located in the Chilkoot, Katzehin and Warm Pass valleys and along the western shore of Lynn Canal (ADFG, 1990). Due to the steep, mountainous terrain of the area, most moose habitat is associated with the shrub and forested areas of the major watersheds. The population supports a limited sport and subsistence hunt on all land ownerships (Hessing, 2002a). Moose immigrated to the Chilkat valley from Canada in the 1930's, with populations peaking in the 1960's. By the 1970's, the population declined sharply due to over over-utilization of the range and over-harvest. Current population estimates by ADFG for GMU 1D suggests the moose population is now between 300 and 400 animals and remains stable (Hessing, 2002a). It is unknown how much of the population is located on BLM-managed lands.

The effect of predation on moose calf survival in this area is currently unknown. However, a healthy brown and black bear population may account for substantial summer mortality, and deep snow combined with limited mobility and wolf predation may affect overall moose numbers (Hessing, 2002a).

Brown Bear
Brown bears (*Ursus arctos*) are indigenous to Southeastern Alaska (Southeast), where they are found in some of the highest population densities in the world. In the Southeast, the brown bear population along the mainland coast (GMU 1), from the Canadian border to Haines in Upper Lynn Canal, was estimated to be 1,042 bears (ranging from 791 to 1,293). The highest densities were estimated to occur in the upper Lynn Canal and Chilkat River Valley with the lowest density in the vicinity of Glacier Bay (Miller, 1993). Brown bears seasonally move throughout this region, therefore numbers of bears actually inhabiting BLM-managed lands at any given time is unknown.

ADFG management objectives for brown bears in GMU 1 includes the take of bears older than 6.5 years, maintaining a male female harvest ratio of at least 3:2, and reducing the number of bears taken due to defense of life and property. Generally, about half of the annual brown bear

harvest come from Unit 1D (Haines area), likely due to road access there (ADFG, 2007) (ADFG, 2001).

Habitat use within the Planning Area varies because brown bears travel extensively and use a variety of habitats throughout their range. Seasonal habitat preferences are affected by changing food quality and abundance, and include south facing slopes and avalanche chutes for spring foraging, riparian forests and tidal estuaries during salmon runs, higher forests to tree line and avalanche slopes in fall in search of berries, and steep slopes above 1,000 feet for denning (Schoen & Gende, 2007).

Black Bear
In the Planning Area, small openings and disturbed areas, wetlands, avalanche chutes, clearcuts and subalpine meadows are important foraging areas for black bears. Diets range from vegetation to mostly meat, and black bears may subsist by scavenging or by predation on small mammals or fish, with moose calves as prey in the spring. In this overall area (GMU 1D), black bears share habitats with brown bears and may be displaced by them in the Chilkoot Valley (Scott, 2007) (Barten, 1999). There is an annual sport and subsistence hunt for black bears in the unit, including BLM-managed lands in the Planning Area (Hessing, 2002).

There are no current black bear estimates for the area or unit, with only State harvest reports used to estimate numbers of bears in the unit. Past estimates have ranged from 1.3 to 3.8 black bears per square mile (Scott, 2007) (Linzey & et al., 1986). Black bear numbers may be sustained because of productive salmon streams in the area, but populations may also be affected by brown bears and possibly suppressed by them (Hessing, 2002). Both cinnamon and glacier bear color phases have been documented in the area (Hessing, 2002). High brown bear numbers and habitat changes associated with human encroachment may cause a decline in black bears' number in the future.

Wolverine
There is little information on the wolverine population in this area, and population trends are estimated by annual harvest reports from trappers (Barten, 2001). Mountainous terrain in the Planning Area provides extensive wolverine habitat and scavenging opportunities on wolf -killed moose and goats. Late season salmon runs provide food for many furbearers throughout the winter. Wolverine population levels are naturally low compared to other predators; due to extensive suitable habitat in the area, the wolverine population is probably stable at low numbers (Scott, 2007).

Migratory Birds
Since the helicopter tourism activities occur on glaciers in summer or when migratory birds are not present in the winter, the activities proposed in this plan amendment would have no measurable effects on migratory bird populations or their habitats in the Planning Area. Therefore, no further analysis will be provided.

3.4 Acoustical Environment

Skagway
TEMSCO's tour and flight operations are located at the south end of the City of Skagway, immediately adjacent to the airport, train terminal, and the ship-docking facilities. The existing acoustical environment in this part of town is dominated by sounds of engines for transportation-related industries. Small turbo-propeller planes take off and land several times a day at the airport, diesel engines power freight and tour trains, busses shuttle tourists to and from the cruise ship dock, and cruise ship engines idle to provide power while the ships are in port. Each of these sounds has a different magnitude (loudness), frequency (pitch), timing, duration, and frequency of occurrence. Noise from a variety of engine and transportation sources occur throughout the day at this location and noise from helicopter flights is considered part of the normal background noise. The background noise at this location is low to moderate most of the time and does not impede the ability of tourists to use a normal conversation voice at the cruise ship dock. Louder noises occur intermittently for brief periods when planes or helicopters take off, a train whistles, or a ship horn blows. A sound survey conducted in Skagway in 1989 provides general reference sound levels for different activities around the city (Bon 1989 as referenced in the Environmental Assessment for Helicopter Landing Tours in the Skagway and Haines Area (USDAFS, 1995). Results of the survey show the loudness of the White Pass and Yukon Train whistle (105 dB), the Fairweather cruise ship when docking (100 dB), and an A-Star 350 helicopter, which is one of the models flown by TEMSCO, when taking off and landing (81 dB).

For comparison, Table 12 shows the typical noise levels for a variety of noise sources that are encountered around the home environment.

Table 12. Noise Sources and Effects

Noise Source	Decibel Level	Noise Effect Spectrum
Maximum Output of Stereo	100-110 110 dBA	Human pain threshold
Circular Saw	100-104	
Leaf Blower	95-105 100 dBA	Serious hearing damage (8 hrs.)
Weed Whacker	94-96	
Food Processor	93-100	
¼" Drill	92-95	
Air Compressor	90-93	
Lawn Mower	88-94	
Handheld Electric Mixer	86-91	
Coffee Grinder	84-95 90 dBA	Hearing damage (8 hrs.)
Vacuum Cleaner	84-89	
Electric Can Opener	81-83	
Hairdryer	80-95	
Air Popcorn Popper	78-85	
Garbage Disposal	76-83 80 dBA	Possible hearing damage
Inside Car, Windows Open, 30 MPH	72-76	
Kitchen Exhaust Fan, High	69-71	
Handheld Electronic Games	68-76	
Inside Car, Windows Closed, 30 MPH	68-73	
Push Reel Mower	68-72	
Phone	66-75 70 dBA	Annoying
Clothes Washer	65-70	
Dishwasher	63-66	
Alarm Clock	60-80	
Window Fan on High	60-66	
Printer	58-65	
Clothes Dryer	56-58	
Normal Conversation	55-65	
Microwave	55-59 60 dBA	Quiet
Bathroom Exhaust Fan	54-55	
Background Music	50	
Radio Playing in Background	45-50	
Forced Hot Air Heating System	42-52	
Typical Living Room	40	
Refrigerator	40-43	
Quiet rural area	30	
Quiet Room	28-33 30 dBA	Very quiet
Grand Canyon at Night (no roads, birds, wind)	10	

The Klondike Gold Rush Historical National Park is located a few miles northwest of Skagway at the mouth of the Taiya River. This location is separated from Skagway by distance and a prominent ridge which isolates noise generated in Skagway from being heard at the National Park. The National Park setting is more rural in nature than the City of Skagway; however, the visitor center, campground, and indoor and outdoor tour activities conducted throughout the tourist season also generate low levels of noise. Helicopter flights that conduct landing tours on the West Creek and Chilkat Glaciers on BLM land fly along the hillslope immediately west of the park. Sound measurements taken at the Dyea Ranger Station recorded the loudness of a Hughes 500D at approximately 1,000 feet altitude as 20 dB (Bon 1989 as referenced in the Environmental Assessment for Helicopter Landing Tours in the Skagway and Haines Area

(USDAFS, 1995). It is assumed that this 20 dB measurement reflects 20 dB above ambient levels, although the document does not explicitly state such.

Haines

The City of Haines is located approximately 15 miles south of Skagway and approximately 6 miles northwest of the mouth of the Katzehin River. Sound measurements have not been measured in Haines, but the ambient (background) noise levels in Juneau were measured during studies for the Juneau Icefield landing permit process, and include many of the noise sources, such as aircraft noise, that are also present in Haines. The ambient noise in Haines is a product of passenger cars and trucks, large truck transportation, shipping, light manufacturing, and construction activities. General ambient noise levels around the city center can be expected to range from approximately 60 to 80 dB, while noise levels in the surrounding rural residential areas would be expected to be approximately 50 to 70 dB (AirportNoiseLaw, 2008). The noise level that could be attributed to TEMSCO's flights along Chilkoot Inlet (at three miles distance) would be a maximum of 56-58 dBA at their closest point to Haines (USDAFS, 2009).

The Battery Point State Park is located on the Chilkat Peninsula immediately southeast of Haines. This park is a common recreation area for residents of Haines and is often used by tour groups during the summer tour season. The park has a visitor center, 15-site campground, picnic area, boat launch, and three trails. The Battery Point Trail follows the eastern shoreline of the peninsula and is approximately two miles across Chilkoot Inlet from the mouth of the Katzehin River. The common ambient sound levels in the park would be expected to range from 40 to 60 decibels (dB), typical of a forested ambient level. Short periods of noise levels at the upper end of this range would occur as a result of overhead planes, boats along the shoreline, or adverse weather conditions such as wind and rain.

Surrounding Lands

The Tongass National Forest along the eastern shore of Taiya and Chilkoot Inlet is comprised of undeveloped forest, riparian, sub-alpine, and alpine ecosystems. There are no designated recreation facilities or existing trails within this area, and recreational and subsistence hunters, or glacier tour customers, account for most of the use. Ambient noise levels for general forested areas of the Tongass National Forest have not been measured, but measurements have been made of the Mt. Baker-Snoqualmie National Forest, which is a similar temperate rain forest climate. Identified ambient noise levels were between 52 and 60 dB (WSDOT, 2011) for undisturbed forested areas. The Olympic National Forest programmatic biological assessment uses an estimated ambient noise level of 40 dBA for undisturbed forested areas (WSDOT, 2011). Weather conditions such as wind or rainfall can increase the ambient noise level. Locations near rivers or shorelines have higher ambient noise levels as well (USDAFS, 2009).

Currently, in addition to the flight routes for TEMSCO and AMG (Map 4, see Section 7.0), there are five authorized landing areas for helicopters on BLM-managed lands that would be affected by helicopter noise. These are Ferebee Glacier, Nourse Glacier, Grand Canyon Glacier, Harding Glacier, and Chilkat Glacier.

Aviation Noise

Noise is generally defined as unwanted sound, or any sound not occurring in the natural environment. Noise has characteristics that may annoy a listener, interfere with a listener's activities, or cause hearing loss or health concerns. The annoyance that a listener experiences from a sound is based on the amplitude (loudness), frequency (pitch), and context in which the sound was heard (listener's expectations and ambient noise levels) (USDAFS, 2009).

Noise is measured and described by numerous characteristics, the most common one being the decibel level (dB), which expresses the sound pressure level. Aircraft noise is a type of transient noise that is characterized by a sound that increases over a period of time to a maximum level, then decreases back to the normal background noise level (USDAFS, Meade Glacier Heli-Tour Landings EA, 2009).

Sound measurements of the A-Star 350 helicopter, which is one of the models flown by TEMSCO, have been conducted by the FAA to determine its general noise characteristics. Measurements were taken in controlled conditions with the helicopter flyover at 500 feet above ground at an airspeed of 100 miles per hour. The average peak noise level of the helicopter is 81 dBA (FAA, Noise Measurement Flight Test: Data/Analyses FAA-EE-84-05, 1984). The FAA has not repeated the study since 1984 and improvements in aircraft noise reduction may have reduced this measured noise level since then, although it is unknown how much of a reduction may have occurred (USDAFS, Meade Glacier Heli-Tour Landings EA, 2009).

Additional information on aviation noise is found in the 2004 U.S. Forest Service Final EIS on Commercially Guided Helicopter Skiing on the Kenai Peninsula (page 3-3 and 3-4), (as quoted on p. 4-1 in the Alaska Quiet Rights Coalition's "Helicopter-Supported Commercial Recreation Activities in Alaska" report):

> The Federal Aviation Administration has published some detailed noise outputs of light aircraft and helicopters. For example common models such as the Cessna 206 generate 70 dB and the Piper PA-18 Super Cub generates 60 dB on takeoff. In level flight at 500 feet elevation, an A-Star 350 helicopter used by [Chugach Powder Guides] produces 75 dB, at 1,000 feet. During power ascent and landing approaches sound are the loudest, 87.1 to 94.5 dB. (Welch-Rodman & Loeffler, 2006)

3.5 Lands with Wilderness Characteristics

Inventories of the lands within this Planning Area were conducted in 2002-2003 and in 2012. The 2012 inventory report is included in Appendix C. The inventories were completed by consulting existing maps of the Planning Area, compiling photographs taken during overflights, utilization of in-house expertise from staff specialists as well as existing land use planning information (Ring of Fire Resource Management Plan, 2008) to assess whether or not specific lands possess wilderness characteristics.

BLM Washington Office IM-2011-154, 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 NEPA. This IM contains current BLM guidance and general procedures for conducting wilderness characteristics inventories under Section 201 of FLPMA. Managing the wilderness resource is part of the BLM's multiple use mission. Lands with wilderness characteristics provide a range of uses and benefits in addition to their value as settings for solitude or primitive and unconfined recreation.

The criteria for determining wilderness characteristics are established by the IM indicated above. To be identified during the inventory process as having wilderness characteristics, lands must:

- Be a roadless area with over 5,000 acres of contiguous BLM lands;
- Be roadless of less than 5,000 acres of contiguous BLM lands where any of the following apply:
    - They are contiguous with lands which have been formally determined to have wilderness or potential wilderness values, or any Federal lands managed for the protection of wilderness characteristics. Such lands include: designated Wilderness, BLM Wilderness Study Areas, USFWS area Proposed for Wilderness designation, U.S. Forest Service Wilderness Study Areas or areas of Recommended Wilderness, and NPS areas Recommended or Proposed for Designation.
    - It is demonstrated that the area is sufficient size as to make practicable its preservation and use in an unimproved condition.
    - Any roadless island on the public lands.

- Generally appear to have been affected primarily by the forces of nature, and any work of human beings must be substantially unnoticeable, and;
- Have outstanding opportunities for solitude or a primitive and unconfined type of recreation.

The 2012 inventory (Appendix C) provides a brief explanation of how each criterion applies to the Planning Area. The lands in the inventory area consist of two major areas, both of which far exceed 5,000 acres. The tract located southwest of Haines, along the border of Glacier Bay National Park and Wilderness, is 66,239 acres, and the tract of BLM lands located north of Haines and west of Skagway that extends to the Canadian border is 251,873 acres.

Second, all of the lands inventoried retain their natural appearance, and are without permanent improvements and human habitation.

Third, opportunities for solitude and for primitive, unconfined recreation are present due to the lack of roads and trails, and to the fact that access to the Planning Area is possible only with aircraft or on foot.

Finally, the inventory notes other values found in the Planning Area, which include scenic and geological features associated with natural landscapes, rugged mountain peaks, glaciers, spires, high tundra, deep valleys, wild rivers, and viewable wildlife.

In conclusion, all BLM-managed lands in the Planning Area have wilderness characteristics and are identified as Lands with Wilderness Characteristics.

3.6 Climate and Environmental Change

The region is within the Coastal Western Hemlock/Sitka Spruce Forest Ecosystem, which is influenced primarily by warm ocean currents of a maritime climate. Less than four months each year have average temperatures higher than 50°F (10°C). Despite the many glaciers, the climate is mild, with average winter temperatures of about 32°F (0°C) and minimum temperatures of 0°F (18°C). Summer temperatures average in the 50's (10-15°C), and maximum temperatures in the 90's (32-37°C). The growing season lasts approximately four months. Precipitation is heavy, averaging more than 80 in (2,040 mm) annually, with some places getting more than 150 in (3,830 mm). Inland, the climate grows increasingly severe, partly because of increasing distance from the ocean, but chiefly due to higher altitude. Topography and high precipitation form so much ice in the mountains that glaciers extend down to sea level despite mild temperatures. There is perennial ice above 3,000 ft (900 m), and even summer storms are usually accompanied by snow above 8,000 ft (2,400 m).

Climate trends over the last three decades have shown considerable warming (UAF, 1999) (AMAP, 1997) (USDA, 2004) (USDA, 2004). This has already led to major changes in the environment and in Alaska's ecosystems. Alaska has experienced the largest regional warming of any state in the U.S., with a rise in average temperature of about five degrees Fahrenheit since the 1960s and eight degrees Fahrenheit in winter (UAF, 1999). This has led to extensive melting of glaciers, thawing of permafrost and reduction of sea ice (UAF, 1999).

The Bering Glacier is one of few Alaskan glaciers for which comprehensive melt measurements exist, and while it is located in a more maritime climate than Haines and Skagway, it is in a similar latitude to the Planning Area. The Bering Glacier is the largest temperate surging glacier in the world, and contains approximately 20% of the glacial ice in Alaska. The glacier has been rapidly retreating and thinning since it surged in 1993-1995, and is thought by scientists to be releasing approximately 8 trillion gallons of water a year into the ocean – the equivalent of two Colorado Rivers (MTRI, 2007). Records show that in 1988, Bering and nearby Wolverine Glacier began a period of rapid melting which has continued to the present. This melting is the result of generally warmer summers, rather than decreased snowfall (Shuchman & Josberger, 2010).

Alaska's warming is part of a larger warming trend throughout the Arctic and Subarctic. The warming has been accompanied by increases in precipitation of roughly 30% between 1968 and 1990 in some areas. Other areas have experienced drying (UAF, 1999). Projections suggest that the strong warming trend will continue, particularly warming during the winter months (UAF, 1999). Some anticipated changes in weather patterns include intensification of the Aleutian low-pressure system, which may shift slightly southward. Alaska would then continue to grow wetter, with annual precipitation increases of 20-25% in the north and northwest. Winters are anticipated to be wetter in the east and drier in the west, with summers being drier in southeast Alaska and wetter elsewhere.

Tree growth in the boreal forest depends on temperature and precipitation. Boreal forests may be at risk from climate change associated with regional warming. Potential impacts may include decreases in effective moisture sufficient for forest growth, tree mortality from insect and disease outbreaks, probability of an increase in wildland fires, changes caused by permafrost thawing and invasion of trees, shrubs and other plant species that are acclimated to the new conditions (UAF, 1999) (USDA, 2004).

3.7 Special Status Species

Threatened and endangered species are those plant and animal species formally listed by USFWS or National Marine Fisheries Service, under the authority of the Endangered Species Act. An endangered species is defined as a species in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as a species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Species designated as Bureau sensitive must be native species that occur on BLM lands, and for which BLM has significant management capability to affect their conservation status. In addition, one of the following two criteria must also apply:

1. There is information that a species is known or predicted to undergo a downward trend such that viability of the species or a distinct population segment of the species is at risk across all or a significant portion of its range, or
2. The species depends on ecological refugia, specialized habitats or unique habitats, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.

Threatened and Endangered Species
Two Threatened and Endangered species are found near the Planning Area. The humpback whale (*Megaptera novaeangliae*) and Steller sea lion (*Eumetopias jubatus*) occur in coastal waters near, but not within, the Planning Area. Consultations with the U.S. Fish and Wildlife Service and National Marine Fisheries Service (NMFS) occurred during the Ring of Fire RMP planning effort. All potential activities permitted by BLM within the Planning Area will have no effect on these species as all BLM-managed lands are inland from Lynn Canal and coastal waters. Therefore, no further consultations were pursued for this RMP Amendment. No critical habitat has been designated in Lynn Canal for either species.

There are six bird species listed on the BLM sensitive species list that occur in or near the Haines Planning Area, including the coastal areas of Lynn Canal. These species include: trumpeter swan (*Cygnus buccinator*), olive-sided flycatcher (*Contopus cooperi borealis*), blackpoll warbler (*Dendroica townsendi*), rusty blackbird (*Euphagus carolinus*), short-eared owl (*Asio flammeus*), and golden eagle (*Aquila chrysaetos*). These species use coastal wetland and forest habitats, and all potential activities permitted by BLM are in higher elevation areas are not expected to affect these species. Golden eagles may nest in higher alpine habitats in the Planning Area, however permit stipulations do not allow hovering near any wildlife, and USFWS recommendations

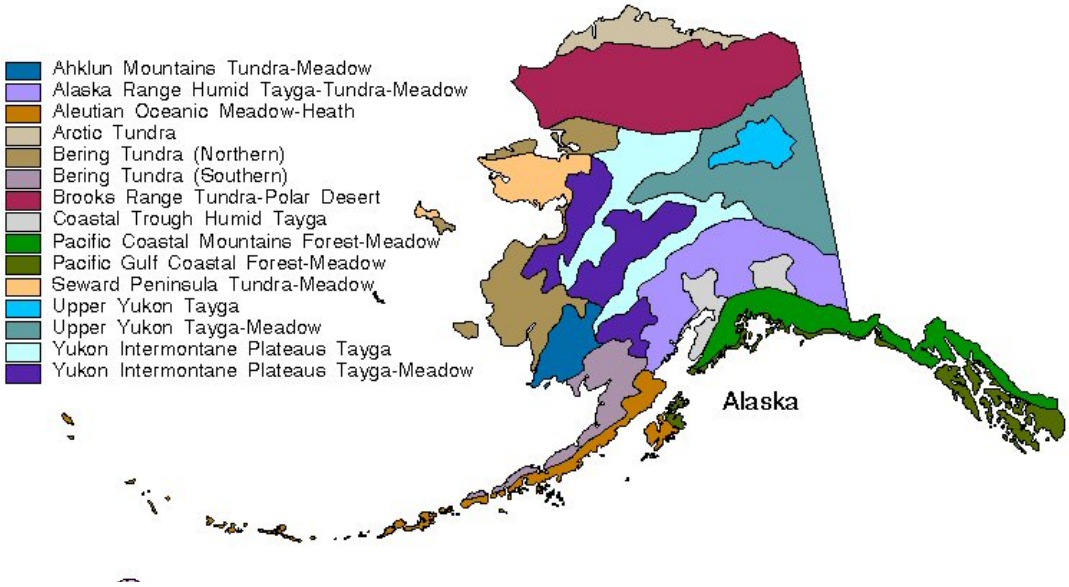
require aircraft to avoid eagle nest sites and maintain ¼ mile distances from eagle nest sites, to avoid impacts.

The Kittlitz's murrelet (*Brachyramphus brevirostris*), a BLM sensitive species, nests near glaciers and has potential to occur in the Planning Area. The Kittlitz's murrelet nests in remote, solitary places high in rugged coastal mountains and feeds near tidewater glaciers. The USFWS named the murrelet as a candidate for protection under the Act in 2004. Candidate species are not subject to the regulatory protections of the Endangered Species Act, and human activities that may affect candidate species are not restricted. Rather, the listing encourages the formation of partnerships among federal agencies, researchers, and others to carry out research and conservation activities that may preclude the need to list a species as threatened or endangered.

3.8 Vegetation Resources

Pacific Coastal Mountains Forest-Meadow Province
The Coast Mountains rise precipitously from the sea to altitudes of about 9,000 ft. (2,700 m), cut by an intricate network of deep, narrow fiords. Farther north, in the rugged St. Elias, Chugach, and Kenai Mountains, elevations range from sea level to more than 16,000 ft. (4,900 m). Mount Logan (19,850 ft. [6,050 m]) and Mount St. Elias (18,008 ft. [5,490 m]) are the second and fourth highest peaks on the continent of North America, respectively. Icefields and glaciers cover the higher parts of the mountains, forming some of the most extensive valley glacier systems in North America (USDAFS, 1995).

Figure 1. Ecosystem Provinces of Alaska (U.S. Forest Service, 1995)



Forest Health: Insects and Disease
Insect and disease activity is commonly closely tied to weather conditions. Warmer-than-average temperatures occurred during 2010 for most of the world's surface, including Alaska and Canada (NOAA, 2011).

Aerial detection surveys in 2010 identified both coniferous and deciduous defoliation, with the greatest observed increase of defoliated trees or mortality between 2009 and 2010 attributed to the spruce aphid-defoliated Sitka spruce. Isolated patches of forest pest insect and disease activity were identified in the Chilkoot, Ferebee, and Taiya river drainages in the Planning Area; larger and more contiguous patches were identified in the Chilkat River drainage. As of 2010, only one patch was identified on BLM-managed lands in the upper reaches of the Chilkoot River drainage. The success of defoliating insects was likely, in part, due to Alaska's warm spring weather creating close to ideal conditions for defoliators in 2010.

In addition, defoliation was observed in other species including cottonwood, alder, hardwood, and conifer in varying intensities throughout the study area. New to Alaska (positively identified in 2009) is an exotic pest called the green alder sawfly. Along with the other two major alder-defoliating sawflies in Alaska, the woolly and the striped alder sawfly, the green alder sawfly appears to be affecting the red alder *(A. Rubra)* in this region of the state, however intensity is light at this time (USDAFS, 2011).

Although there is some history of large-scale spruce beetle outbreaks in Southeast Alaska, typically outbreaks are confined to relatively small, scattered patches of activity. One of the more concentrated areas of spruce beetle activity, from Haines to just north of Skagway, declined in 2008. Reported acres of infestation were down 20% from 2007 figures, following a 90% reduction the year before (USDAFS, 2009). Very limited occurrences of spruce beetle damage were observed in 2010 (USDAFS, 2011).

Non-Native and Invasive Plants

Non-native plants are plants whose presence in a given area is due to the accidental or intentional introduction by humans. Invasive plants are exotic plants that produce viable offspring in large numbers and have the potential to establish and spread in natural areas (AKEPIC, 2005). Some invasive plants have strong negative impacts on ecosystems, cause economic losses or harm to human health.

Most of the BLM-managed lands within the Planning Area are remote and without road access, and thus are at low risk of infestation. Invasive plant inventory and assessment on transportation corridors of BLM-managed lands began in 2004, by the NPS and U.S. Department of Agriculture (USDA) in collaboration with the Alaska Natural Heritage Program, but there have been none conducted in the remote parcels of this Planning Area. It is anticipated that there are little or no weed infestations on the majority of the remote parcels.

Known existing non-native /exotic species data can be found at http://akweeds.uaa.alaska.edu/.

Plant surveys conducted by and for the United States Department of Agriculture and the National Park Service in 2004-2010 identified seventy-six species of non-native plants on travel corridors in the Haines Planning Area (AKEPIC, 2011) (Table 13). These plants are given a rank to indicate the potential invasiveness and impacts of non-native plants to natural areas in Alaska. The ranking system, developed by the USDA, incorporates ecosystem impacts, biological attributes, distribution, and control measures, and potential for establishment in ecogeographic regions of Alaska (USDAFS, Invasiveness Ranking System for Non-Native Plants of Alaska,

R10-TP-143, 2008). This ranking system is designed to aid land managers and the broader public in identifying problematic non-native plants for prioritizing control efforts.

Table 13. Non-native Plant Species in the Planning Area

Common Name	Scientific Name	Invasiveness Rank	Number of Occurrences
spotted knapweed	*Centaurea stoebe L.*	86	6
reed canarygrass	*Phalaris arundinacea L.*	83	98
ornamental jewelweed	*Impatiens glandulifera áRoyle*	82	13
white sweetclover	*Melilotus alba Medikus*	81	229
orange hawkweed	*Hieracium aurantiacum L.*	79	7
Canada thistle	*Cirsium arvense (L.) Scop.*	76	76
bird vetch	*Vicia cracca L.*	73	9
perennial sowthistle	*Sonchus arvensis áL.*	73	31
rugosa rose	*Rosa rugosa áThunb.*	72	29
bigleaf lupine	*Lupinus polyphyllus Lindl.*	71	9
yellow sweetclover	*Melilotus officinalis (L.) Lam.*	69	6
yellow toadflax	*Linaria vulgaris P. Mill.*	69	253
herb Robert	*Geranium robertianum L.*	67	1
foxtail barley	*Hordeum jubatum L.*	63	11
smooth brome	*Bromus inermis Leyss.*	62	8
bull thistle	*Cirsium vulgare (Savi) Ten.*	61	2
oxeye daisy	*Leucanthemum vulgare Lam.*	61	259
common tansy	*Tanacetum vulgare L.*	60	25
European mountain ash	*Sorbus aucuparia áL.*	59	1
quackgrass	*Elymus repens (L.) Gould*	59	72
white clover	*Trifolium repens L.*	59	501
common dandelion	*Taraxacum officinale F.H. Wigg. ssp. officinale*	58	645
alsike clover	*Trifolium hybridum L.*	57	275
field bindweed	*Convolvulus arvensis áL.*	56	2
narrowleaf hawksbeard	*Crepis tectorum L.*	56	217
European forget-me-not	*Myosotis scorpioides L.*	54	4
creeping buttercup	*Ranunculus repens L.*	54	92
tall buttercup	*Ranunculus acris L.*	54	272
timothy	*Phleum pratense L.*	54	194
Siberian wildrye	*Elymus sibiricus L.*	53	138
orchardgrass	*Dactylis glomerata L.*	53	3
red clover	*Trifolium pratense L.*	53	272
meadow foxtail	*Alopecurus pratensis L.*	52	33
spreading bluegrass or Kentucky bluegrass	*Poa pratensis L. ssp. irrigata (Lindm.) H. Lindb. or Poa pratensis L. ssp. pratensis*	52	121
common sheep sorrel	*Rumex acetosella L.*	51	230
fall dandelion	*Leontodon autumnalis L.*	51	1
purple foxglove	*Digitalis purpurea L.*	51	1
birdsrape mustard	*Brassica rapa L.*	50	3
black bindweed	*Fallopia convolvulus (L.) A. Love*	50	3
brittlestem hempnettle	*Galeopsis tetrahit L.*	50	13
splitlip hempnettle	*Galeopsis bifida Boenn.*	50	11
common comfrey	*Symphytum officinale*	48	1
curly dock	*Rumex crispus L.*	48	48
annual bluegrass	*Poa annua L.*	46	239
prostrate knotweed	*Polygonum aviculare L.*	45	39

Common Name	Scientific Name	Invasiveness Rank	Number of Occurrences
common plantain	*Plantago major L.*	44	378
bladder campion	*Silene vulgaris á(Moench) Garcke*	42	2
common chickweed	*Stellaria media (L.) Vill.*	42	18
common eyebright	*Euphrasia nemorosa á(Pers.) Wallr.*	42	154
field pennycress	*Thlaspi arvense L.*	42	5
nightflowering silene	*Silene noctiflora áL.*	42	26
white cockle	*Silene latifolia Poir.*	42	1
mayweed chamomile	*Anthemis cotula L.*	41	1
woodland ragwort	*Senecio sylvaticus áL.*	41	1
shepherd's purse	*Capsella bursa-pastoris (L.) Medik.*	40	39
white deadnettle	*Lamium album áL.*	40	1
Canada bluegrass	*Poa compressa L.*	39	12
Icelandic poppy	*Papaver croceum Ledeb.*	39	1
lambsquarters	*Chenopodium album L.*	37	16
big chickweed	*Cerastium fontanum Baumg. ssp. vulgare (Hartm.) Greuter & Burdet*	36	125
common groundsel	*Senecio vulgaris L.*	36	33
sticky chickweed	*Cerastium glomeratum Thuill.*	36	1
thymeleaf speedwell	*Veronica serpyllifolia L. ssp. serpyllifolia*	36	2
johnny jumpup	*Viola tricolor L.*	34	4
red sandspurry	*Spergularia rubra (L.) J.& K. Presl*	34	8
corn spurry	*Spergula arvensis L.*	32	15
pineappleweed	*Matricaria discoidea DC*	32	232
bromegrass	*Bromus secalinus L.*	not ranked	1
cicer milkvetch	*Astragalus cicer L.*	not ranked	9
crested wheatgrass	*Agropyron cristatum L. Gaertn.*	not ranked	1
garden sorrel	*Rumex acetosa L. spp. acetosa*	not ranked	51
low cudweed	*Gnaphalium palustre Nutt.*	not ranked	2
mountain tarweed	*Madia glomerata áHook.*	not ranked	1
sticky ragweed	*Senecio viscosus áL.*	not ranked	1
tower rockcress	*Arabis glabra L. Bernh.*	not ranked	7
tumbling mustard	*Sisymbrium altissimum L.*	not ranked	1

Invasive Plants

Invasive plant surveys have been limited to existing travel corridors within the Planning Area. Regardless of the different alternatives, invasive plants left unmanaged are likely to spread and invade areas of human and natural soil disturbance in the vicinity of the existing infestations.

Under all Alternatives, Best Management Practices relative to invasive species will be incorporated into stipulations for all administrative, permitted activities and authorizations for the occupancy and use of BLM-managed lands, as per the 2010 BLM Alaska Invasive Species Management Policy (BLM, 2010). These Best Management Practices require all equipment, gear, and mode of transportation to be thoroughly cleaned and void of invasive species propagules prior to use and occupancy of BLM lands. This includes not only the airplane wheels and helicopter skids, but any and all other gear that is provided to clients such as hiking gear, day packs, and "glacier boots," where it is possible for invasive plant seeds and propagules to be harbored from usage of the gear in other areas that may have invasive plants present.

Due to the nature of the permitted aviation-supported tourism, associated activities and the gear used, there is little to no risk for invasive plant introduction or spread. Helicopters and fixed-wing planes take off from asphalt surfaces, void of vegetation, therefore minimizing the likeliness of transporting invasive plant propagules to the snow and ice surface of glaciers where landing, and where tour activities occur. It is possible but highly unlikely that invasive plant propagules are or could be transported under these operating conditions.

3.9 Cultural Resources

The prehistory of the Southeast region is relatively poorly known due to the limited number of excavations done in the region. Complicating factors for the location, identification, and investigation of older sites include changes in marine sea levels, the effects of glaciation, and active geological processes affecting site formation and preservation. The early prehistory is of particular interest to researchers studying the colonization of the Americas by people traveling from Eurasia at or before 15,000 years ago. Later prehistoric and historic period archaeology is comparatively well-documented due to the number of travelers, explorers, and colonizers arriving in the region beginning in the 1700s. Russian, British, French, Spanish, and American fur traders and explorers visited, traded, fought, and established settlements along the coast, with the Russian and British fur companies building forts along the coasts and rivers of the region (Gibson, 1976), (Black, 2004).

Geological and sea level changes have likely affected the types and locations of sites. The interrelated effects of continental glaciation lowered and raised sea levels through the amount of water locked up in the glaciers. As they melted, the sea level would rise, and as they accumulated, the sea level would fall. Glaciers cut through the coastal mountains, themselves formed from the interplay between subducting continental plates and glaciers pushing down on plate sections. As glaciers retreated, the weight was removed and the plate sections rebounded at rates up to 25 millimeters per year (Larson, Motyka, & et al., 2004). In some cases, rather than an entire plate section rising, only one section would rise while the other fell. Thus, some sites may be underwater while others may be high above the current tide line by several meters. Tectonic effects caused by plate movement as well as by glacial retreats and advances may also change the altitude and attitude of plate segments, such as in Lynn Canal and in the Wrangell vicinity (Butzer, Butler, & et al., 2004).

The overarching research question for much of Alaskan prehistoric research is the search for the first people to arrive in the new world from Eurasia. Early human remains were discovered by Timothy Heaton in On Your Knees Cave on Prince of Wales Island, including human bone dated at 9,730 and 9,880 years ago, and a bone artifact dated at 10,300 years ago (Heaton, 2003). Other researchers are working to connect the interior and coastal populations to determine which group came first and what connections existed between them (Ames & Maschner, 1999), (BLM, 2008, pp. 3-123).

There are approximately 128 cultural resource sites in the Planning Area. Of these 128 sites, the Office of History and Archaeology has identified 37 sites as historic and three sites as prehistoric. A large number of these documented sites are associated with mining. There are currently 10 sites in the Haines Planning Area listed on the NRHP. To date, the Alaska

Department of Natural Resources (ADNR), Office of History and Archaeology has recorded 83 cultural resource surveys in the Planning Area (ADNR, Alaska Department of Natural Resources, Office of History and Archaeology, 2005a).

The land in this area includes the prehistoric and historic routes to the interior owned by Chilkoot and Chilkat Tlingit people, important trade routes for a variety of commodities. During the Russian period, the Tlingit sent trade goods to the interior and down the Yukon, providing competition to the Hudson's Bay Company in the fur trade (McClellan, 1981). Later, Tlingit packers profited by assisting Klondike Gold Rush miners ascending the passes to get to the Upper Yukon River gold fields (Brooks, 1973). Recent finds in the vicinity include human remains in the ice which show the time depth of human passage through the mountains here (Schuster, 1999a) (Schuster, 1999b). Gold Rush period archaeological materials and historic structures and properties are most likely present in this area.

Dalton Cache
The Dalton Cache building was built by Jack Dalton in 1896 as an inn for travelers along the Dalton Trail. The cabin sits partially within the 60-foot strip on the U.S.-Canada border, which was set apart as a public reservation by presidential proclamation in 1908. It is located along the Haines Highway at the present border crossing approximately 40 miles northwest of the City of Haines. The building has been maintained and repaired by BLM and General Services Administration over the years to preserve the character of the structure and to provide an educational and interpretive opportunity. It is one of the few remaining original cabin structures dating back to the days of the Klondike Gold Rush. It was listed on the National Register of Historic Places in 1973 (BLM, 2008, pp. 3-126).

3.10 Geology/Natural Hazards

There are several sources of potential natural hazards in the Planning Area. Natural hazards may result in localized and regional impacts. Examples of natural hazards in the Planning Area include a falling tree limb, rock slide caused by an eroding mountain slope, or a tsunami or earthquake resulting from tectonic activity.

Flooding from glacial lake outbursts is another natural hazard that has occurred in the region in recent years. On July 23, 2002, a lateral moraine of the West Creek Glacier liquefied, causing debris to slide into a glacial lake located in front of the glacier's terminus. The debris displaced a large volume of lake water into West Creek, generating a tremendous flood that poured into the Klondike Gold Rush National Historic Park and the community of Dyea, Alaska.

In reaction to this event, the Klondike Gold Rush National Historic Park funded an investigation of geologic hazard potential in the region (Capps, 2004). This investigation identified an area of concern at the Nourse Glacier.

Climate change has increased the rate of melting and receding of glaciers, and subsequently has caused an increase in size of glacial lakes and the weakening of the glacial moraines, which typically impound these lakes, to a point of failure. These failures are often catastrophic and are known as Glacial Lake Outburst Flood. The process of weakening is not solely based upon the

increasing lake size but also the melting of the moraine's ice-core, i.e., ice contained within the sediments of some glacial moraines.

The Nourse Moraine (latitude -135.4250, longitude l59.5693) impounds a large icy-blue proglacial lake known as Nourse Lake. The lake is estimated to occupy a surface area of 200 acres with a depth of 95 feet and spills over the moraine at two primary locations. With an estimated gradient of 14.5% (Capps, 2004), the outlets form high gradient glacial streams that flow to a smaller unnamed proglacial lake. Eventually this watershed enters the Taiya River at a confluence approximately 8 miles downstream. Located approximately 22 river-miles farther downstream is Dyea, Alaska. The Nourse and Taiya River valleys were carved out by past glacial events and form the broad U-shaped valleys. Though the glaciers remain, they have significantly receded and mainly reside high in the mountains. The surface of Nourse Moraine is composed of multiple-size class sediments including large boulders, cobbles, gravel and sand with clusters of dense vegetative growth, primarily common alder (*Alnus glutinosa*). The Nourse Moraine has a measured length of 2,640 ft. (804 m), an average slope of 15%, and a calculated height of 396 ft. (120 m) (Denton C., 2005). The estimated width of the moraine is 2,296 ft. (700 m).

The BLM, with assistance from the USGS and the NPS, conducted a geophysical survey of the Nourse Moraine to determine its stability. Three geophysical methods were used to assess the presence of an ice-core within the moraine. Each of these methods relies upon a different geophysical property on which to base an interpretation and conclusion, and when used collectively, these methods greatly increase the confidence in the conclusions. Moreover, because unforeseen site conditions might hinder or even prohibit the use of any one method, having multiple methods available provided a backup approach to the field effort. The specific methods used for this geophysical survey were direct current (dc) resistivity, electromagnetic (EM), and gravity.

A static stability assessment was performed using the visual information collected in 2004 and 2005, and the geophysical results.

Preliminary findings of each of the geophysical methods suggest there is no ice-core within the Nourse moraine. The 500m long resistivity profile indicates a thick layer (30 to 80m) of unconsolidated gravels and boulders lie atop a competent bedrock surface. The GEM survey (EM) acquired 20km of data and shows spatial changes related to the various sediment deposits of the moraine. This data suggest the lack of an ice-core.

Based upon the results of the geophysical data and the basic dimensions of the moraine, the BLM preformed a static stability assessment of the moraine as an earthen dam. The conclusion of this assessment is that the moraine is stable; however, environmental hazards other than a melting ice-core could have adverse effects on the moraine, including liquefaction of earthen material due to violent shaking induced by earthquake events; and overtopping of the moraine as proglacial lake water is displaced by a large mass wasting events such as catastrophic glacial calving or ice falls of upstream glaciers (Denton, Lewis, & Fisk, 2009).

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

The following planning assumptions are made for the purposes of impact analysis in this chapter. Additional assumptions specific to each resource are listed with their respective sections.

- Winter demand for permitted helicopter landings in the Planning Area is currently very low; however, demand is likely to increase as operators seek ways to generate additional income year-round and as more people discover the area as a destination for backcountry skiing and winter trekking.
- The Monitoring and Control Area is within a reasonable flight range for heli-tour and other outfitters, and would be used for recreation and commercial filming if opened.
- Although all flights associated with permitted use currently originate from Skagway, future operations based in Haines, or from points along the local road system, are possible.
- Unless otherwise noted, the geographic scope for the cumulative effects analysis is defined as the Haines Planning Area. Although BLM managed lands comprise only a portion of the Planning Area, similar resources, issues, and/or permitted uses (i.e., helicopter-supported tourism) occur throughout the Planning Area.
- The temporal scope for the cumulative effects analysis is defined on a resource by resource basis. In some cases, the temporal scope is defined by the anticipated duration of the direct and indirect effects. Elsewhere, the temporal scope is defined by anticipated use requests.

4.2 Recreation

ALTERNATIVE A

Maintain SRMA Designation
Under the current management alternative, the north block of the Planning Area would be retained and managed as an SRMA. An SRMA plan would be developed in accordance with Appendix C, Part C, Recreation and Visitor Services, pages 15-17, of the BLM Land Use Planning Handbook H-1601-01 (BLM, 2010). The boundaries of the SRMA have changed due to the conveyance of several sections of BLM land to the State of Alaska since the signing of the Ring of Fire ROD.

Goals and management objectives for the SRMA as it was established in 2008 are detailed in Section 3.2.5.

If the SRMA is retained and managed as an *undeveloped recreation*-tourism market, bureau guidance may allow for a higher level of investment and/or management, if necessary, to protect and enhance desired recreation activities, experiences, benefits, and recreation settings. Opportunities would primarily consist of experiencing adventure and nature through independent remote backcountry use and through guided tours. The average annual visitation to BLM lands within the Planning Area within the past 15 years is approximately 14,000 people (includes commercial and dispersed/independent use). Potential increased investment and/or management

to support desired recreation activities, experiences, benefits, and recreation settings for the designated SRMA could increase use by 10-15% annually.

Maintain Monitoring and Control Area
Maintenance of the Monitoring and Control Area would have no impact on current heli-tourism operations.

Retention of the Monitoring and Control Area could benefit local communities because it would exclude any potential increased investment and/or management by the BLM within the area, preventing increased competition with similar visitor services and recreation opportunities currently available in Skagway and Haines.

Retention of the Monitoring and Control Area could potentially preserve the experience of backcountry users seeking adventure and nature through independent remote backcountry access in this area.

Permit 2,400 Landings Annually
Maintaining 2,400 landings permitted annually would have minimal direct and indirect impacts on permitted helicopter activities and recreationists. Operators would continue to conduct business at their current level, and the minimal numbers of backcountry recreationists would still experience the occasional noise disturbance.

The primary access to the area is by aircraft therefore, there is a reasonable expectation that aircraft would be encountered during recreational outings. Nevertheless, encountering aircraft could temporarily change the recreational setting for some individuals.

Due to this limited access and the expectation of, even reliance on, air-support for access, it is reasonable to conclude that this would not displace recreationists or permanently alter the recreational experience in the Planning Area. At the current level of landings (2,400 annually), the No Action Alternative would not alter the existing primitive ROS classification of the area.

Positive benefits, such as use of other business support sectors in the communities of Skagway and Haines, including restaurants, stores and shops, hotels, and transportation, would continue. Permitting 2,400 landings annually would maintain existing recreational access for the general public. People without the specialized knowledge, skill, and equipment would continue to have the opportunity to take advantage of the services of commercial recreation providers on public lands.

Tables 14 and 15 illustrate current permitted helicopter use during summer and winter periods within the Planning Area on both BLM and State lands.

Table 14. Maximum Permitted Helicopter Use – Summer (Alternative A)

Activity	*Current Visits/Landings
Guided trekking – BLM	2,500/500
Glacier landing tours - BLM	11,400/1,900
TOTAL	13,900/2,400

*Denotes currently authorized, but not actual use.

Table 15. Maximum Permitted Helicopter Use – Winter (Alternative A)

Activity	Current Visits/Landings
Heli-skiing - BLM	n/a
Commercial Filming - BLM	n/a
Heli-skiing - State	1,300/260
Commercial Filming – State	100/20
TOTAL	1,400/280

Cumulative Impacts
Cumulatively, limiting helicopter operators to 2,400 landings annually over the next 10-15 years would restrict potential growth in local employment and business opportunities, and would limit opportunities for guided tour activities within the Planning Area. This alternative may also limit the expansion of winter helicopter/aviation-based tourism, and the potential for business in an otherwise slow time of the year for the local tourism industry would be lost.

ALTERNATIVE B

Maintain SRMA Designation
The direct, indirect, and cumulative impacts of maintaining the SRMA designation would be the same as described in Alternative A but would also apply to BLM-managed lands in the south block.

Eliminate Monitoring and Control Area
As explained in Alternative A, for the purposes of this analysis it is assumed that commercial helicopter tour operators would use the Monitoring and Control Area if it were opened. It is within a reasonable flight range of tour operators, should they choose to operate from the Haines Highway, and has snowfields that could be of interest to heli-skiers, back country trekkers, and commercial filming.

Lifting the Monitoring and Control Area would open 98,000 acres of terrain previously closed to helicopter use. This could result in increased availability of operating areas and thereby potentially benefit local employment, business support opportunities, and tax revenues. With the lifting of the Monitoring and Control Area, visitation to the area could be more dispersed.

Since potential expansion of glacier landing tours within the Monitoring and Control Area during summer months is low, direct and indirect impacts to the tourism industry during this time period would be minimal. Due to the fact that the communities of Skagway and Haines currently have a summer seasonal tourism economy, eliminating the Monitoring and Control Area would have a

greater effect on the tourism industry during the off-season (winter). An increase in winter-time commercially guided trips within the Monitoring and Control Area could affect other business support sectors within Skagway and Haines.

Direct impacts, such as noise, to backcountry users of eliminating the Monitoring and Control Area would increase due to potential helicopter landings. Evidence of humans and user density would likely increase, from encountering less than six parties per day on trails to up to 15, and less than three parties at developed recreation sites to up to six. Indirectly, the experience of remote backcountry use would change from primitive to semi-primitive, non-motorized and potential increase in investment and/or management could also modify the natural setting.

Direct impacts to local residents from eliminating the Monitoring and Control Area could potentially increase noise to local communities as a result of increased takeoff and landing to and from the Monitoring and Control Area from Skagway and Haines.

Permit 7,500 Landings Annually
Permitting 7,500 landings permitted annually would allow operators to increase current business, as well as expand into year-round activities. Backcountry recreationists not using some form of aviation to access the area may have an increased chance of encounter with other users. The positive benefits, such as support to other business sectors in the communities of Skagway and Haines, would increase with the increased amount of aviation-supported tourism.

The primary access to the area is by aircraft therefore, there is a reasonable expectation that aircraft would be encountered during recreational outings. Nevertheless, encountering aircraft at this maximum landing level could temporarily change the recreational setting for some individuals.

As described for the No Action Alternative, due to the limited access and the expectation of, even reliance on, air-support in the Planning Area, it is reasonable to conclude that this would not displace recreationists or permanently alter the recreational experience in the Planning Area. Given the expanse of public lands in the Planning Area and sites suitable for and desirable for landings, at the maximum level of 7,500 landings annually, Alternative B would not alter the existing primitive ROS classification of the area.

Permitting 7,500 landings annually, which is approximately 212% more than the current authorized level, would enhance recreational access for the general public. People without the specialized knowledge, skill, and equipment would have an enhanced opportunity to take advantage of the services of commercial recreation providers on public lands.

Cumulative Impacts
Cumulatively, allowing operators up to 7,500 landings annually over the next 10-15 years would allow for potential growth in local employment and business opportunities, and increase opportunities for quality guided tour activities within the Planning Area. This alternative also allows the development of winter helicopter/aviation-based tourism, and the potential for business support in an otherwise slow time of the year for the local tourism industry would be increased.

As discussed under Alternative A, there are few other recreational users in the area, but the increased number of landings has the potential for increased conflicts with other users, as well as increased noise that could impact local residents. Reasonable permit terms and conditions would mitigate many of these impacts, but there would still be increased noise levels associated with increased flight volumes.

ALTERNATIVE C

Change SRMA to ERMA Designation
The very development of this RMP Amendment due to concerns over wildlife in the area and efforts to further study wildlife, in order to mitigate recreational impacts, demonstrates that recreation is not the sole or predominant resource concern in the area.

Updated BLM recreation management guidance and policy suggest that designating the Planning Area an ERMA is more appropriate than an SRMA.

The Planning Area is not considered unique with respect to recreation activities, experiences, and benefits, as compared to other areas of the region. The Planning Area does not contain developed recreation facilities, and the lands currently have a low concentration of recreation use as compared to other areas in the region. The area has low annual visitation, as compared to visitation occurring off BLM lands within the Haines Planning Area, which indicates that recreation demand does not justify the establishment or continuance of an SRMA. Low demand makes it unnecessary to implement management actions that sustain or enhance recreation objectives, protect the desired recreation setting characteristics, or constrain uses on non-compatible recreation activities that are detrimental to meeting recreation or other critical resource objectives. Finally, since the signing of the Ring of Fire ROD in 2008, land conveyances from BLM to the State of Alaska have resulted in a decrease in the number of commercial recreation operations on BLM land, which has correspondingly reduced the need for increased management of the area.

Changing the SRMA to an ERMA and not providing a higher level of investments and/or management to the Planning Area would be better aligned with the BLM's *undeveloped* tourism market strategy for the Haines area. The Haines Planning Area is not considered unique in terms of recreation resources, where recreation is the predominant focus, as required of SRMA designations. Many similar activities are found on nearby lands. Additionally, a higher level of investments and/or management to administer a designated SRMA isn't feasible on BLM lands within the Planning Area for many reasons. The steep terrain and lack of access to physically manage the desired recreation setting and preferred visitor experience to the area, logistics involved, and distance from a BLM administrative facility to provide any visitor amenities, operations, and maintenance activities would make such efforts infeasible, cost-prohibitive, and a poor use of taxpayer dollars.

The ERMA designation and associated *undeveloped* tourism strategy could indirectly benefit the tourism industry by ensuring less investment and/or management on BLM lands into the future. This could in turn retain visitors closer to the existing visitor amenities and recreation

developments in the Skagway and Haines areas. Potential opposition from the local business community from adding new BLM visitor amenities would no longer be an issue.

The ERMA designation and associated *undeveloped* tourism strategy could indirectly benefit local dispersed/independent backcountry users who seek out primitive to semi-primitive, non-motorized experiences in undeveloped natural settings with low user densities.

The ERMA designation and associated *undeveloped* tourism strategy could indirectly affect local residents that may benefit from a higher level of investments and/or management on BLM lands as a result of new access, added facilities, and potential associated labor. The number of local people who would benefit would be limited due to the small number of residents living near the Planning Area.

Table 16 describes the objectives, management actions and allowable use decisions, and implementation decisions for the Haines ERMA.

Table 16. Haines Extensive Recreation Management Area

ERMA Objective(s) Decision
Objective Statement: By 2013, the Haines Planning Area ERMA shall offer a maximum number of permitted helicopter landings to commercial recreation providers who provide professional guided services and opportunities to visitors in a primitive and undeveloped natural setting.
Management Actions and Allowable Use Decisions
Recreation and Visitor Services Program: Administer and monitor special recreation and land use permits and collect fees to ensure visitor safety, resource protection and use and user conflicts; establish permitted operating areas and use restrictions; maintain primitive recreation setting and Class IV Visual Resource Management prescriptions. Other Programs: Administer goat collaring program; develop stipulations for helicopter activities for wildlife resources; practice adaptive management actions for changes in resource conditions or new data.
Implementation Decisions
Implementation Decisions: Designate no landing zones for permitted helicopter landings; maintain one-half mile of horizontal and 1,500 feet vertical distance from goats and sheep; apply day of time and seasonal flight restrictions; allocate total number of landings authorized for each permittee annually; issue one year permits to allow for adaptive management and adjustment to permit stipulations.

Retain Monitoring and Control Area for Five Years, then Abolish

The direct, indirect, and cumulative impacts to recreation and permitted helicopter activities if the Monitoring and Control Area were retained for a period of five years from the signing of the ROD and then opened to helicopter use would be similar to those described in Alternative A for the five-year period during which the area restrictions are retained and then similar to Alternative B once the area restrictions are lifted.

Permit 4,000 Landings Annually

Permitting 4,000 landings annually would allow operators to increase current business, as well as expand into year-round activities. Backcountry recreationists not using some form of aviation to access the area may have an increased chance of encounter with other users. The positive benefits, such as support to other business sectors in the communities of Skagway and Haines, would increase with the increased amount of permitted helicopter activities.

The primary access to the area is by aircraft therefore, there is a reasonable expectation that aircraft would be encountered during recreational outings. Nevertheless, encountering aircraft at this maximum landing level could temporarily change the recreational setting for some individuals.

As described for the No Action Alternative, due to the limited access and the expectation of, even reliance on, air-support in the Planning Area, it is reasonable to conclude that this would not displace recreationists or permanently alter the recreational experience in the Planning Area. Given the expanse of public lands in the Planning Area and sites suitable for and desirable for landings, at the maximum level of 4,000 landings annually, Alternative C would not alter the existing primitive ROS classification of the area.

Permitting 4,000 landings annually, which is approximately 66% more than the current authorized level, would enhance recreational access for the general public. People without the specialized knowledge, skill, and equipment would have an enhanced opportunity to take advantage of the services of commercial recreation providers on public lands.

Cumulative Impacts
The cumulative impacts of changing the SRMA to an ERMA over the next 10-15 years include: decreased BLM needs and associated funding to administer a special area; an increased ability to maintain the primitive and natural setting; decreased potential impacts to resources from increased use; maintenance and enhancement of employment opportunities and tax revenue for local communities from existing visitor amenities; and decreased recreation opportunities for local residents on nearby public lands.

Though not to the same extent as Alternative B, allowing operators up to 4,000 landings annually over the next 10-15 years could allow for: potential growth in local employment; new business opportunities; and increased opportunities for guided tour activities within the Planning Area. This alternative also allows the development of winter helicopter activities, and would increase the potential for business support in an otherwise slow time of the year for the local tourism industry.

As discussed under Alternative A, there are few other recreational users in the area, but the increased number of landings has the potential for increased conflicts with them, as well as increased noise that could impact local residents. Reasonable permit terms and conditions would mitigate many of these impacts, but there would still be increased noise levels associated with increased flight volumes.

ALTERNATIVE D

Change SRMA to ERMA Designation
Direct, indirect and cumulative impacts to helicopter operators, the tourism industry, backcountry users, and local residents from changing the SRMA to an ERMA are the same as those described in Alternative C.

Maintain Monitoring and Control Area for Five Years, then Lift
Direct, indirect, and cumulative impacts for lifting the Monitoring and Control Area is the same as those described in Alternative C.

Authorize 6,000 Landings in the Planning Area Annually
Permitting 6,000 landings annually would allow operators to increase current business, as well as expand into year-round activities. Backcountry recreationists not using some form of aviation to access the area may have an increased chance of encounter with other users. The positive benefits, such as support to other business sectors in the communities of Skagway and Haines, would increase with the increased amount of aviation-supported tourism.

The primary access to the area is by aircraft therefore, there is a reasonable expectation that aircraft would be encountered during recreational outings. Nevertheless, encountering aircraft at this maximum landing level could temporarily change the recreational setting for some individuals.

As described for the No Action Alternative, due to the limited access and the expectation of, even reliance on, air-support in the Planning Area, it is reasonable to conclude that this would not displace recreationists or permanently alter the recreational experience in the Planning Area. Given the expanse of public lands in the Planning Area and sites suitable for and desirable for landings, at the maximum level of 6,000 landings annually, Alternative D would not alter the existing primitive ROS classification of the area.

Permitting 6,000 landings annually, which is approximately 150% more than the current authorized level, would enhance recreational access for the general public. People without the specialized knowledge, skill, and equipment would have an enhanced opportunity to take advantage of the services of commercial recreation providers on public lands.

Cumulative Impacts
Cumulatively, allowing operators up to 6,000 landings annually over the next 10-15 years would allow for slightly less growth in local employment and business opportunities than Alternative B. It would increase opportunities for quality guided tour activities within the Planning Area slightly less than Alternative B. This alternative also allows the development of winter permitted helicopter activities, and the potential for business support in an otherwise slow time of the year for the local tourism industry would be increased.

As discussed under Alternative A, there are few other recreational users in the area, but the increased number of landings has the potential for increased conflicts with them, as well as increased noise that could impact local residents. Existing permit terms and conditions, as well as future adjustments to the permit terms and conditions, would mitigate many of these impacts. There would, however, still be increased noise levels associated with increased flight volumes.

4.3 Wildlife

In addition to the planning assumptions listed at the beginning of this chapter, the following assumptions are made for the purpose of this analysis of impacts to wildlife:

- Ground-based recreational users impact goats differently than aviation-supported activities. In a hunted population, ground users may be perceived by goats as predators.

Impacts common to all alternatives
Under all of the alternatives, including the No Action Alternative, BLM would continue to permit summer helicopter tour landings.

The following is a general overview of the current research on aviation-related impacts to mountain goats:

Mountain goats in southeast Alaska preferentially use steep, rugged cliff habitats to avoid predators, but are also dependent on forage-rich alpine meadows in summer and forested areas in winter (White, 2006) (Schoen & Kirchoff, 1982). The use of these habitats is key to goat survival, especially during winters when snow depth further limits habitat availability. (See Section 3.3.1, for a full description of mountain goat habitat and populations in the Planning Area.) Research in the western U.S. and Canada indicates that mountain goats and other alpine ungulates are sensitive to disturbance (Canfield & et al., 1999) (Frid, 2003) (Wilson & Shackleton, 2001) particularly from helicopters (Foster & Rahs, 1983) (Cote S. , 1996). Mountain goats may be especially vulnerable to disturbance associated with helicopter tour activities compared to other alpine ungulates because they have small home ranges, limited habitat use (Cote & Festa-Bianchet, 2003), and in summer, use habitats along flight paths and near glacier landing sites in the Planning Area. However, factors such as the type of activity, season, terrain, proximity to escape cover, and the population's past experience with aircraft overflights may influence their response to helicopter activity (Goldstein & et al., 2005) (Wilson & Shackleton, 2001). In addition to direct effects from helicopter flights, animals may also experience indirect effects that are more difficult to measure, such as increased physiological stress that may affect survival or reduce productivity (Foster & Rahs, 1983) (Cote S. , 1996) (MacAurthur, Geist, & Johnson, 1982).

Cote (1996) compared mountain goat responses to helicopter traffic during mineral exploration activities at Caw Ridge in Alberta, Canada from June to August. A population of 109 animals that included all ages was observed as helicopters overflew groups. Overall, 42% of the groups were lightly disturbed, 26% were moderately disturbed, and 32% were greatly affected by the overflights. The area was characterized by alpine tundra and open subalpine spruce, with little or no steep escape terrain.

The U.S. Forest Service conducted observations of mountain goat reactions to helicopter overflights in 1999, 2000, and 2001 on the Juneau Icefield (USDAFS, 2002b). From these observations, the U.S. Forest Service (USDAFS, 2002a) concluded that goats on the Juneau Icefield, an area 75 miles south of the Planning Area, did not react as dramatically to helicopters as reported in published studies of mountain goat/helicopter interactions in Canada (Foster & Rahs, 1983) (Cote S. , 1996). The U.S. Forest Service also noted that goat habitat directly under flight routes on the Juneau Icefield continued to be used, and that aerial surveys within the earlier (1995) EIS project boundary indicated that the population was stable or increasing, despite a gradual increase in helicopter activity along most flight routes (USDAFS, 2002a). Productivity

(measured as number of kids/100 adults) did not differ in data comparisons between the icefield areas adjacent to helicopter activity and those with no helicopter tour activity (USDAFS, 2002a).

Goldstein et al. (2005) used data collected during the Juneau Icefield surveys to compare goat responses to helicopter activity in three other areas on U.S. Forest Service land, where goats had been exposed to a range of helicopter tour and helicopter skiing activity. These areas included Eastern Prince William Sound (EPWS), the Kenai Peninsula (KP), the Chilkat Range (CKT) on the west side of Lynn Canal, and the Juneau Icefield (ICE). Based on permitted activity and known flight corridors, the areas ranked from least to most heli-tour exposure were EPWS, KP, CKT and ICE, respectively. The study recorded the behavioral responses of 122 groups of mountain goats from 347 helicopter flights, and used modeling to predict the probability of disturbance. They found that goat responses correlated closely with the level of helicopter activity to which the goats had been previously exposed. The probability of a goat being disturbed (goats becoming alert, vigilant, or fleeing) at 500 meters was 62 percent in EPWS, 52 percent on the KP, 38 percent in the CKT, and 25 percent in the ICE. At 1,000 meters, the probability of disturbance decreased to 45 percent in EPWS, 25 percent on the KP, 18 percent in the CKT, and 10 percent in the ICE. Through GIS modeling, Goldstein et al. (2005) found that many of the goats surveyed were either in or close to steep escape cover. Goldstein et al. (2005) did not evaluate indirect effects of helicopter activity on goats. However, helicopter disturbance can cause physiological stress, and if it causes interruptions to foraging, it may increase vulnerability to predation and disease and reduce productivity and overwinter survival of goats (Hurley, 2004).

To evaluate effects of helicopter activity on mountain goat numbers, response behavior and reproductive rates, TEMSCO, a heli-tour company operating in the Skagway area and permitted by BLM, contracted with Galena Wildlife Consulting (GWC) to survey mountain goats in the Skagway area in 2003. Surveys were conducted on both BLM and U.S. Forest Service lands where helicopter tour flights and landings are permitted. GWC identified nine drainages where goats had been documented, including one drainage where no helicopter use occurs (control route), and eight drainages that receive varying levels of tour activity. Baseline counts were made along all nine flight routes in 2003. The routes were monitored in June and July from 2004 through 2007. Data collected included number of goat groups, the age of individuals (kids, yearlings, adults), and behavioral responses to the survey helicopter (GWC, 2008).

GWC recorded the behavior of 124 individual goats, 122 groups of goats with kids, and 122 groups without kids over the 4 years of survey. Fifty percent of all groups observed were classified as “not disturbed” (no change in behavior) or “lightly disturbed” (got up from reclining) by the survey helicopter’s approach and hovering within 1,500 feet. Groups that showed a “moderately disturbed” response (most individuals in the group began walking away from the helicopter) totaled 37 percent. Groups that showed a “greatly disturbed” response (most individuals in the group began running away) totaled 11 percent. The study found that goat numbers had varying trends across survey routes, with some routes showing increases, others showing decreases over the study period. GWC compared reproductive rates (estimated as number of kids per 100 adults) between tour areas and the non-tour drainage, and also between data obtained in the Skagway area and data obtained during surveys in other, similar habitats (Ketchikan area, British Columbia). GWC found that reproductive rates were

approximately the same as those reported for other surveyed areas in British Columbia, Ketchikan and the Skagway area that experience helicopter tourism.

All of the above research investigated the impacts of helicopter overflights, but did not address the impacts of helicopter or fixed-wing aircraft landings or the transport of recreational users (skiers, hikers, climbers) that are delivered to alpine goat habitats. For the purposes of this analysis, the planning assumption is made that these ground-based recreational users impact goats differently, especially in a hunted population, as they may be perceived by goats as predators. In addition, mountain goats are more physiologically stressed, have fewer escape cover options, and are less mobile in winter (Cote S. , 1996) (Hurley, 2004) (Cote & Festa-Bianchet, 2003). Goats have smaller home ranges when deeper snow at higher elevations causes them to move to lower forested elevations (Fox, Smith, & Schoen, 1989) (Herbert & Turnbull, 1977) associated with steep broken terrain (White, 2006) (Schoen & Kirchoff, 1982). Helicopter skiing and trekking activities, with helicopters picking up skiers and flying near mountain goat winter habitats, may be operating at these lower elevations, where animals are more susceptible to disturbance (White, 2006) (Hurley, 2004).

Ongoing Research in the Planning Area

In August 2010, ADFG began a three-year collaborative study with the BLM to assess mountain goat survival and habitat selection in the Haines/Skagway area. In cooperation with BLM staff, 23 mountain goats were captured and equipped with GPS and VHF radio collars to study their seasonal distribution and utilization of habitat types throughout the year. Goat capture sites were distributed on both Federal and State managed lands within the Planning Area, and included 13 male and 10 female animals. In September and October of 2011, 10 additional mountain goats were captured and fitted with radio collars by ADFG, resulting in 26 active collars (as of October 2011).

In addition to goat survival and habitat selection, the marked goats will assist ADFG in determining rates of goat detection during aerial surveys, and improve the ability to provide correction factors for more accurate population estimates. Snow depth monitoring devices were also deployed in the Chilkat Valley to provide data to understand how snow depth varies in different areas and elevations, and between years. Data from the devices will be manually downloaded every one to two years, and used as a factor in the analysis of winter goat habitat use (White, Crupi, Scott, & Seppi, 2011).

Wintering Strategies

Preliminary analysis of the elevational distribution of goats from collar data in the Haines-Skagway area indicate that goats winter at high, moderate, and low elevations in response to geography and local climate variation. Animals close to the coast tended to winter at low elevations, and animals furthest from the coast tended to winter at higher elevations, while animals at moderate distances from coastal maritime influence tended to winter at moderate elevations (White, Crupi, Scott, & Seppi, 2011).

Movement Patterns

GPS location data from the radio collars have shown that goats have distinct seasonal variation in activity and movement patterns. Activity and movement rates are highest in June through

August, and reduce significantly during the winter months (October-April), when deep snow is prevalent on mountain goat winter range and animals must conserve energetic resources to survive the winter period (White, Crupi, Scott, & Seppi, 2011).

Population Abundance and Composition

Aerial surveys to estimate mountain goat population abundance and composition were also conducted by ADFG in September 2010 and September 2011 in 10 areas covering both state and Federal lands between Takhinsha Ridge and the Nourse Glacier (Appendix 4 in White et al. 2011). Preliminary population data suggests that most of the survey areas have moderate to high levels of kid productivity relative to other areas surveyed in southeast Alaska, with the exception of the area between the Ferebee and Nourse Glaciers, which were characterized by very low proportions of kids (White, Crupi, Scott, & Seppi, 2011).

Reproduction and Survival

Radio marked adult female goats were monitored to determine mountain goat productivity. Overall 65% of the collared females had kids at heel during 2010-2011, which is similar to estimates from collared goats in the nearby Lynn Canal area (White, Crupi, Scott, & Seppi, 2011). The survival rates of the initial 23 collared goats were 70%+/- 10%, with all mortalities occurring in the winter months. Male and female survival rates did not differ in the first year of the study (White et al. 2011). Seven collared goats died overall, four due to avalanches and the remainder due to unknown causes.

In addition, since 2005, ADFG has conducted extensive mountain goat research along eastern Lynn Canal in the Berners Bay area, using radio-collared goats to determine ecology and habitat use (White, 2006) (White & Barten, 2009). This data has given preliminary information on seasonal habitat use, survival and movements of mountain goats in an area directly adjacent to the Planning Area, and provides additional information on habitat use that can be applied to the Planning Area.

Future Foreseeable Use and the Adaptive Management Strategy

Forecasts for future proposed permitted helicopter activities are estimated to be as high as 17,000 helicopter landings and over 14,000 visitors within the next fifteen years (estimated from recently submitted special recreation permit applications). Current operator requests for the 2011-2012 winter season have not been approved as of December 2011 and no winter activities are currently authorized on BLM lands.

Future requests for winter season use will be considered with the best science available at the time of the request. As previously stated, data for winter goat habitat and movement patterns is limited for the Haines area. BLM intends to use future mountain goat seasonal habitat use and movement data to validate the current summer habitat use model (Griswold, Nielson, & Swayer, 2009), and determine critical summer and winter habitat use by goats in the Planning Area. Additional long-term goals of the mountain goat telemetry project include the use of GPS location data from radio marked goats combined with remote sensing GIS layers to develop a Resource Selection Function (RSF) model for both winter and summer periods. This model would be used to predict areas that are most important to mountain goats in the Haines-Skagway area. Mountain goat RSF models could then be used to quantitatively determine areas of

important goat habitat and any overlap with currently authorized or future proposed helicopter activities.

The ADFG has developed a preliminary mountain goat RSF winter habitat model in the Kelsall Valley, near Takhin Ridge, in the southern portion of the Planning Area (White et al. 2003). The RSF winter habitat model was developed to provide baseline information on the winter distribution of mountain goats in areas likely to be affected by proposed winter helicopter-skiing activities. The RSF model is based on radio telemetry data from 12 collared mountain goats in the upper Chilkat valley during the winter of 1981-1983 (Hundermark et al. 1983). These data, combined with GIS-based habitat and covariate information (slope, elevation, aspect and distance to cliffs), were analyzed using logistic regression to create a resource selection model that can reliably predict mountain goat habitat use across the landscape (White et al. 2003).

BLM and ADFG are working cooperatively to apply this RSF winter habitat model from the Kelsall valley to BLM and surrounding lands in the Haines/Skagway Planning Area (Map 6, see Section 7.0). The same GIS-based habitat variables (slope, elevation, aspect and distance to cliffs) will be used to create a resource model that predicts mountain goat habitat use across the Planning Area. This model will be used to produce a map of predictions of relative probability of mountain goat habitat selection based on the resource selection function from the Kelsall valley area, showing high, medium and low probability of use by mountain goats. The map will be modified with new information annually as part of the adaptive management strategy and utilized to create new, or modify existing, mitigation measures to protect high probability winter mountain goat use areas from disturbance. As such, this winter habitat model is considered to be preliminary and based upon the best available current data with which BLM is able to make management decisions.

As discussed in Section 2.2, Management Common to All Alternatives, Ring of Fire RMP ROP # 16, has been modified as well as SRP stipulations, or terms and conditions, for all authorized aviation operations on BLM land within the Haines Planning Area. Both the ROP and the SRP stipulations are mitigation measures the BLM uses to reduce or eliminate the effects that authorized activities may have upon wildlife populations or local community residents.

Through the adaptive management strategy, into the future, new mitigation measures may be created and existing mitigation measures modified as new goat collar data and other information continues to inform and improve confidence in the tools (maps and/or models) used by decision makers. BLM and ADFG's on-going research in the Planning Area will continue to support creation changes to the existing mitigation measures covered in Section 2.2, Management Common to All Alternatives.

ALTERNATIVE A

Retain SRMA Designation

The average annual visitation to BLM lands within the Planning Area in the past 18 years is approximately 14,000 people, but a higher level of recreation investment and/or management could increase or extend the duration of visitation. Increased or extended visitation also has the potential to increase impacts to wildlife. Greater investment and/or management could enable

visitors to travel farther and easier into currently remote alpine habitats. This activity could increase encounters with mountain goats, bears, wolverines, eagles and wolves in their habitats. If increased investment and/or management of the area occurred, it would require use of helicopters, and subsequently, increase potentially negative encounters with alpine wildlife.

The administration of the SRMA could increase the potential for people to recreate in goat habitat by providing them with aircraft access and facilities to accommodate easier recreational use farther into alpine habitats than currently exists. Mountain goat populations are at higher elevations in the summer months (June-August) in the Haines/Skagway area (Denton J. , 2006) (White, 2006). If the administration of the SRMA provided the recreating public access to higher elevations in the area, with access to potentially new visitor amenities at higher elevations and the use of helicopters to get to amenity sites, or ski plane access for summer ski trekkers and mountaineers, there is a potential for conflicts with mountain goats in kidding areas in May and June, and later on summer alpine habitats. Existing mitigation measures and development of new mitigation measures could address such issues.

People trekking and hiking near goat groups may cause goats to move away from spring and summer habitats (Wilson & Shackleton, 2001). Currently, access to goat habitat would be possible on foot, but would involve covering distances over 10 miles, with vertical gains in excess of 3,000 feet, making it unlikely that people would venture into mountain goat habitats. Existing mitigation measures appear to protect mountain goats and their habitats in the Planning Area, as goat populations have remained stable in the portion of the game management subunit within the Planning Area (Scott 2008, Scott 2006), although goat population trend counts are not a complete population census. Mitigation measures currently keep helicopter activities a minimum distance of 1,500 feet from mountain goats and their habitats, and a minimum of ½ mile from kidding areas.

In 2009, the BLM contracted with WEST, Inc. to develop a resource selection function (RSF) model using data from BLM mountain goat surveys conducted in June of each year from 1995 to 2005 (Griswold, Nielson, & Swayer, 2009). A map of predictions of the RSF was developed to show high-use, moderate-use and low-use mountain goat habitats on BLM lands in the Haines/Skagway area (Map 3, see Section 7.0). High-use goat habitat is typically in high elevation, steep terrain that is inaccessible to hikers. Moderate-use mountain goat habitat was predicted between 1,500 and 3,500 feet elevation, which can be more accessible to hikers than high-use habitat. Data from 22 GPS collared mountain goats in a study by ADFG in the Berners Bay area (White, 2006), to the south and adjacent to the Skagway area, showed most mountain goats used habitat at around 1,500 feet in early May, and moved to higher elevations during the summer. By the end of September, the average elevation was about 3,250. Goats began moving down slope to winter range in early October. Impacts to goats could therefore occur if people used trails and associated facilities at higher elevations, and if associated aviation use increased. Additional data received from on-going collar studies would help to refine goat habitat use that could in turn be used to determine locations for facilities that would have less impact on mountain goats and their habitats.

Summer recreational helicopter tours with glacial landings have been permitted within the Planning Area from May through September annually since 1993. A total of 91 miles of flight

routes are currently permitted by operators in the Planning Area. A GIS analysis of the flight route reveals five points along the routes where tour helicopters are potentially flying less than the required stipulation of 1,500 feet minimum distance from high use mountain goat habitat (Map 4, see Section 7.0), as determined by the current RSF mountain goat habitat model (Griswold, Nielson, & Swayer, 2009). The reduced flight distance from goat habitat at these five points is due to the narrowing of canyon corridors or the narrow passes at higher elevations along flight routes. The flight route distance from high use mountain goat habitat in these five areas is still an average of 1,201 feet, with the closest distance of 1,072 feet on the Grand Canyon route. The GIS analysis further reveals that, over the entire flight route distance, only 11.6% of the route is less than 1,500 feet from high-use mountain goat habitat. Assuming that maintaining helicopter flight routes at least 1,500 feet from mountain goat summer ranges minimizes negative effects, continued summer helicopter tour activities are not likely to have negative effects on mountain goat populations in the area.

Digital elevation models (DEM) were used as part of this analysis and a key constraining factor for these distance calculations was the source data being used to calculate them, the National Elevation Dataset (USGS). While this raster dataset is the USGS's improved refinement of the older DEM, its accuracy (pixel size) is still limited to the original sources that helped derive the DEMs for a given local area. For the Haines area, that pixel resolution is approximately 60 meters. In other words, each pixel that represents an elevation value has a dimension of 60 x 60 meters, or 3,600 square meters. When this raster data is used for Euclidean Distance calculations in the GIS software, each pixel is treated as a point on the surface, and a row of pixels (the flight path) is treated as a line on the surface. When sums, squares, and square roots are applied to these values along the surface to calculate Euclidean distance, any elevation inaccuracies could be exaggerated (USGS, 2011).

The administration of an SRMA could increase the amount of human activities within winter goat habitats by increasing the number of people using higher elevations for heli-skiing and heli-trekking activities. Mountain goats can be affected by the heli-ski and heli-trekking operations if they are disturbed in winter habitats when foraging, resting, engaged in breeding activities, or if they are displaced from winter habitats (Hurley, 2004). Stress, disturbance and displacement from helicopter activity may also affect both their overall health and reproductive success (Cote S. , 1996) (Foster & Rahs, 1983) (Hurley, 2004). Mitigation measures already in place would be utilized for authorized winter ski activities. These measures would discourage flight or activities within ½-mile of mapped and identified critical winter range. Incidental entry into critical winter range could occur due to poor visibility, flight operator misjudgment, and a skier's misjudgment or inability to negotiate terrain away from identified critical winter range.

Current mitigation measures require aircraft to maintain 1,500 feet distance from visible mountain goats as well as areas identified as important habitat (to include future designated winter habitat). Winter recreational activities would also not be permitted in critical winter ranges, nor would aircraft land within ½ mile of critical winter habitat.

These mitigation measures would manage for winter trekker and skier drop off and pick-ups that may occur in proximity to some individuals or groups of goats as well as fixed-wing aircraft glacier landings for ski-trekking, mountaineering, and outdoor leadership expeditions along ski

traverses. There is still a chance of incidental occurrences or potential close contact with individual goats or goat groups. Such activities could potentially disturb goats at a time when they are confined into smaller winter habitats and are stressed from lack of available forage and deep snows. Nannies in particular could be impacted, as they are under the additional physiological demands of reproduction.

Potential impacts could occur to other wildlife species from noise or close visual approach near flight routes or landing sites in both summer and winter. Species to which potential impacts could occur include black bear, brown bear, wolverine, moose, gray wolf, bald eagle. Black bear, brown bear, and moose are more likely to be found at lower elevations in summer along the various flight paths of aircraft permitted for recreational activities in the Planning Area. These species use open muskegs, wetlands, and beach fringe, as well as forested habitats in summer. Wolves travel extensively in alpine areas in summer and winter in search of prey, including mountain goats (White & Barten, 2009). Brown bears and wolverines den at higher elevations in winter, and could be affected if helicopters landed nearby as dens would not be easily detectable for conscious aviodance. Population levels and trends of both wolverine and brown bears are poorly known for the area. Wolverines exist at very low densities throughout their range (Aubrey, Mckelvey, & Copeland, 2007) and are known to be intolerant of human activities (Krebs, Loforth, & Parfitt, 2007). Brown bears den at higher elevations in southeast Alaska (Schoen & Beier, 1989) where heli-skiing and trekking activities occur, but move to lower elevations in spring (Porter, 2003). While helicopter overflights and landings near denning areas may disturb wolverine and bears, the effects are not likely to cause population declines if mitigating terms and conditions (minimum flight distances) are followed. Wolves use mountainous terrain in winter, and may be temporarily affected or displaced at winter helicopter and landing sites. Moose in the Planning Area use lower elevation forested areas in both summer and winter (Hundermark, Eberhardt, & Ball, 1983). Helicopters in flight over lower elevation and open areas could cause disturbance and temporarily interrupt foraging and care of young in summer. Trumpeter swans found in summer months breeding in the Chilkat River valley, and Steller sea lion, humpback whale and harbor seal may use coastal areas in upper Lynn Canal in summer. Implementation of the SRP terms and conditions common to all alternatives would likely prevent disturbance to these species. Helicopters would fly at a minimum elevation of 1,500 feet above ground level, would not divert from their flight paths for wildlife viewing and would not hover over or harass wildlife.

Bald eagles nest and forage along the shorelines of upper Lynn Canal, and also nest in the Planning Area. Management guidelines outlined by the USFWS (USFWS, 2007) specify that helicopters should maintain a minimum distance of 1,320 feet (1/4 mi) from all bald eagle nests between March 1 and May 31, and from all active nests (those containing eggs or young) between June 1 and August 31. With permit stipulations, including USFWS buffer requirements, in place, none of the alternatives would adversely affect bald eagles.

Permit 2,400 landings in the Planning Area annually
Under Alternative A, tour operators would be allowed the same number of landings on BLM lands within the Planning Area that is currently allowed, with a total for all operators in all seasons of 2,400. By applying the ROPs and SRP permit terms and conditions, this alternative would have negligible effects on mountain goats and other wildlife. All helicopter use will be

restricted from the Nourse Glacier area and any other important mountain goat kidding areas as they are determined, from May 1st to June 15th. All operations will maintain a 1,500 foot vertical and horizontal clearance from key mountain goat areas, mountain goats, and all other wildlife; maintain a ¼ mile buffer around eagle nests; and avoid hovering or harassing wildlife in any way. Although this level of helicopter flights and landings has the potential to stress mountain goats and other wildlife, the terms and conditions applied to BLM-issued permitted authorizations are expected to mitigate these impacts, and no population level responses are expected.

Retain Monitoring and Control Area
If the Monitoring and Control Area is retained, no permitted helicopter activity would be allowed within the 98,000-acre area in either summer or winter. This would benefit mountain goats and other alpine wildlife by potentially lessening or eliminating noise and disturbance caused by tour aircraft overflights and landings, and thereby reducing any stress and negative effects to wildlife associated those activities on both summer and winter ranges. In addition, the Monitoring and Control Area would remain available for future research on the effects of aircraft disturbance on wildlife, particularly mountain goats, compared to the portions of wildlife populations in surrounding areas that have not been excluded from aircraft use.

Cumulative Impacts
Recreational opportunities are currently confined by rough, steep terrain and glaciers on the area, but the potential higher level of investment and/or management and associated aviation access could increase the accessibility to wildlife habitats. In addition, other land management agencies with large areas of land directly adjacent and surrounding the Planning Area, which include the U. S. Forest Service and the Haines Borough, also permit the same recreational activities that use helicopter access. While it is unknown specifically what cumulative impacts these activities would have on wildlife, they could bring a growing number of people into wildlife habitats at higher elevations across the region, which would cumulatively affect neighboring land owners. If, over the next fifteen years, the number of recreationists using the Planning Area increases due to increased investment and/or management associated with an SRMA designation, potential impacts to wildlife could also be expected to increase accordingly.

ALTERNATIVE B

Retain SRMA Designation
The effects would be the same as described for Alternative A.

Lift the Monitoring and Control Area
If the Monitoring and Control Area is abolished, permitted helicopter activities would be allowed within the area in both summer and winter. This would affect mountain goats and other alpine wildlife by increasing noise and disturbance caused by tour aircraft overflights and landings, and thereby potentially increasing stress and negative effects to wildlife associated those activities on both summer and winter ranges. The populations of mountain goats and other wildlife in the Monitoring and Control Area would be subjected to helicopter overflights and landings, and increase the total area of wildlife habitats within the Planning Area that experience aircraft noise and disturbance.

Additionally, the Monitoring and Control Area would no longer be available as a control area for current and future research on the effects of aircraft disturbance on wildlife, particularly mountain goats, as it will experience the same effects of aircraft compared to the portions of wildlife populations in surrounding areas. Tour operators and other SRP permit holders would benefit from opening the Monitoring and Control Area to helicopter tours, heli-skiing, and commercial filming because users would expand or move their operations into this portion of the Planning Area, thereby increasing their potential to expand operations or offer tours to clients in this area. This would potentially increase the overall number and the distribution of overflights and landings in the Planning Area by tour operators, and subsequent effects on wildlife, as demand for helicopter tours and heli-skiing increases. Flights in the Monitoring and Control Area would be subject to the same minimum 1,500-foot restrictions and other SRP terms and conditions designed to minimize impacts to wildlife.

Increase permitted landings to 7,500

This alternative represents a 212% increase in annual authorized landings. Permitting 7,500 landings annually would allow for the current operator to expand its operations, and also leaves room for additional operators to conduct heli-tourism and heli-skiing activities, including filming, in the Planning Area. This increase would involve additional flight and landing zones which would increase disturbance to mountain goats and other wildlife that would be more wide spread and involve more wildlife habitats in the Planning Area. The increased number of overflights and landings has a greater potential to impact mountain goats, particularly landings at periods of time and in places where goats are on winter ranges, when they are most vulnerable to disturbance, as would be the case during heli-skiing operations. Existing mitigation measures (as described in Section 2.2) would still apply to any increases in authorized landings.

Cumulative Impacts

Regardless of operator or landing zone jurisdiction, helicopter landings are the main disturbance/effect mechanism to wildlife populations in the Planning Area. Given this, the types of cumulative impacts under Alternative B would be the same as described for Alternative A. However, with a 212% increase in the number of landing (approximately) authorized on BLM-managed lands, the BLM's incremental contribution to cumulative effects would be substantially larger under Alternative B.

ALTERNATIVE C

Change SRMA to ERMA

In this alternative, the area would remain essentially in its current state and would not be further developed. An increase in recreation investment and/or management would not occur in order to administer a designated ERMA in the area and BLM would anticipate that approximately 13,000 visits would continue annually. With no additional ERMA-related investments and/or management, access to alpine wildlife habitats would remain difficult. Mountain goats and other alpine wildlife would be least impacted during all seasons from this alternative, as fewer recreationists such as skiers and hikers dependent on visitor amenities would use the area and recreate less in alpine wildlife habitats.

Retain Monitoring and Control Area for Five Years, then Abolish
This alternative would eventually expose mountain goats to more helicopter overflights than if the area was retained indefinitely. It will, however, also allow for current mountain goat research to be completed before helicopter and other aircraft use is allowed in the area. This will allow research on habitat use and movements of radio-collared goats to be completed, and comparisons made between portions of the Planning Area where permitted helicopter activities are allowed, and the Monitoring and Control Area, where it currently is not allowed. This information can be used by all land managers in the Planning Area to determine the location of habitats that need protection from disturbance, especially mountain goat winter ranges and kidding areas, and to revise mitigation measures as needed.

Permit 4,000 Landings Annually
This alternative represents a 66% increase in annual authorized landings. Permitting 4,000 landings annually would allow for current operators to expand operations, and also leaves capacity for additional operators to conduct heli-tourism and heli-skiing activities, including commercial filming, in the Planning Area. This increase would involve additional flight and landing zones which would increase disturbance to mountain goats and other wildlife and would be more wide spread and involve more wildlife habitats in the Planning Area. Disturbance includes possible increases in number of overflights and landings that would have a greater potential to impact mountain goats, particularly landings at periods of time and in places where goats are on winter ranges, when they are most vulnerable to disturbance, as would be the case during heli-skiing operations. Existing mitigation measures (as described in Section 2.2) would still apply to any increases in authorized landings.

Cumulative Impacts
The types of cumulative impacts of Alternative C would be the same as described for Alternative A. However, with a 66% increase in the number of landing (approximately) authorized on BLM-managed lands under Alternative C, the BLM's incremental contribution to cumulative effects would be larger under this alternative.

ALTERNATIVE D

Change SRMA to ERMA
The impacts would be the same as described for Alternative C.

Lift the Monitoring and Control Area after Five Years
The impacts would be the same as described for Alternative C.

Increase permitted landings to 6,000
This alternative represents 150% increase in annual authorized landings. Permitting 6,000 landings annually would allow for the current operator to expand its operations, and also leaves room for additional operators to conduct heli-tourism and heli-skiing activities, including commercial filming, in the Planning Area. Disturbance to mountain goats and other wildlife would be more wide spread and involve more wildlife habitats, but to a lesser extent than in Alternative B. The increased number of overflights and landings has a greater potential to impact mountain goats, particularly landings at periods of time and in places where goats are on

winter ranges, when they are most vulnerable to disturbance, as would be the case during heli-skiing operations. New flight routes and landing sites would be evaluated in relation to mountain goat habitat models, radio telemetry information from collared goats and ADFG population monitoring to determine potential impacts. Existing mitigation measures (as described in Section 2.2) would still apply to any increases in authorized landings to mitigate potential impacts to goats.

Cumulative Impacts
The types of cumulative impacts of Alternative D would be the same as described for Alternative A. However, with a 150% increase in the number of landings (approximately) authorized on BLM-managed lands under Alternative D, the BLM's incremental contribution would be substantially larger.

4.4 Acoustical Environment

Impacts to the acoustical environment associated with all four alternatives would be from the noise associated with helicopter or fixed-wing flights originating in Skagway and Haines. This section discusses potential impacts to the residents of Skagway and Haines resulting from the different numbers of annually permitted landings in each alternative. Potential impacts to recreation users and wildlife along the flight paths and at the landing areas are discussed in the Recreation and Wildlife sections of this chapter.

This analysis focuses on helicopter noise, without much emphasis on fixed-wing aircraft. Helicopter noise was an issue raised in scoping, and, as stated below, helicopter noise is considered a greater disruption to the acoustical environment than noise from fixed-wing aircraft.

Resource-specific Planning Assumptions
The following assumptions are made for the purpose of this analysis of impacts to the acoustical environment:

- As stated above, this section assumes impacts to the acoustical environment connected to the proposed action result only from helicopter and fixed-wing flights into the project area. Therefore, each alternative considers the number of landings permitted.
- The designation of an SRMA or ERMA, the maintenance or lifting of the Monitoring and Control Area, and changes to the Required Operating Procedures and Special Recreation Permit terms and conditions as described in the management common to all alternatives (see Section 2.2) will have no substantial impact on the acoustical environment, and will not be considered further in this section.
- Noise impacts can either be physiological, and measurable in terms of physical harm to residents, or psychological, which is a subjective measurement of level of annoyance.
- If another operator begins operations, they will use helicopters similar to those used by TEMSCO in terms of decibel levels generated.
- The noise from helicopter flights will be limited to 8:00 a.m. to 5:00 p.m., seven days a week, in summer, and daylight hours during the winter.
- Noise is considered more disturbing in the summer than in the winter, since during the summer, windows are likely to be open and recreational activities taking place out of doors (FAA 1985).

- Noise from rotary-wing aircraft (helicopters) is considered more irritating than that from fixed wing aircraft (FAA 2004).
- Weather, maintenance, and passenger demand can limit the number of flights.

Impact Common to All Alternatives

Physiological Impacts Common to All Alternatives

One of the helicopter models used by TEMSCO is the A-star 350. The measured decibel level of an A-star 350 helicopter at takeoff and landing is around 90 dB, which is the level at which hearing damage can occur after eight hours of exposure. Therefore, hearing protection would be required for an individual standing within a few feet of the helipads for a full eight-hour day. Impacts to the acoustical environment in town are reduced from this level by the fact that the helipads are located on the edge of town near the cruise ship docks, more than 1,000 feet from the nearest residence (www.maps.google.com), and TEMSCO has no flights that pass directly over any residential area. Flying at 500 feet, an A-star produces 75 dB, a level associated with possible hearing damage. Flying at 1,000 feet, sound levels drop to 70 dB, which is considered annoying but not physically harmful (Table 3). The only time any helicopter would fly less than 1,500 feet for permitted activities is on takeoff and landing. Additionally, during an August 2010 visit by BLM personnel, it was determined that an individual standing on First Street in town, during TEMSCO's operating hours, cannot distinguish helicopter noise from the any of the other ambient noise in town. The noise from the cruise ships, road traffic, and crowds of people are the dominant sounds in town. In winter, these activities would not be present, which could result in the helicopter activity being more noticeable, although, as stated above, windows will be closed which may dampen sound.

Psychological Impacts Common to All Alternatives

The following excerpt from the Alaska Quiet Rights Coalition report on Helicopter-Supported Commercial Recreation Activities in Alaska provides a discussion of how helicopter noise is perceived, and how this perception impacts the listener (Welch-Rodman & Loeffler, 2006, pp. 4-4 through 4-6). This discussion explains the difficulty of pinpointing the severity and impacts of noise from helicopter-related tourism.

"There is some evidence that people notice helicopter sounds more than other aircraft sounds or, more accurately, that they believe helicopters are more annoying than other aircraft sounds. In 2004, the FAA investigated this issue in response to a directive from Congress concerning helicopter noise effects in urban areas," (FAA, 2004). The FAA report summarizes the potential physiological effects of excessive noise on people. In general, significant sustained physiological effects require sustained exposure to high levels of sound, which is rarely the issue with respect to helicopter-supported recreation. The study also summarized the differences between the level of annoyance from helicopter sounds as compared to other sounds.

Helicopters cause a "Blade-Slap" phenomenon sometimes called Blade Vortex Interaction (BVI). This phenomenon occurs during descent conditions for landing, which "is the result of interaction by a rotor blade with previously shed tip vortices. These interactions generate a complex unsteady pressure field that propagates below the rotor as high impulsive noise." (FAA, 2004).

Blade-Slap did not adequately capture the unique annoyance of helicopter sound, as evidenced by other work referenced by the FAA. Low-frequency energy generated by helicopter blades contributed to a higher-than-expected level of annoyance. Still other studies were unable to find a physical explanation for the increased annoyance, but still concluded that there is heightened reaction to helicopter sounds, as compared to those from fixed-wing aircraft. One portion of the report referenced two studies in England, and one community's response in particular:

> The contribution of fixed-and rotary-wing aircraft to the overall noise exposure was about equal. However, the percentages of people who considered helicopters more disturbing than fixed-wing aircraft were 2 to 2.5 times as large as the percentages that considered helicopters less disturbing. In the communities of Esher and Epson, [in the United Kingdom] where the numbers of helicopters and fixed-wing aircraft were about equal, the disturbance due to helicopter noise was 2.5 times as large as that due to fixed wing aircraft noise. People were more annoyed by helicopters even though on average, the fixed-wing aircraft were 5.0 dB louder. (FAA, 2004).

The FAA provides a number of possible explanations for this heightened community response. They note that the explanations are not mutually exclusive (FAA, 2004):

- "A subsection of the population may be more sensitive to the low-frequency helicopter noise than is the majority of the population." While the size of the subset is not known, this group may be very sensitive to low-frequency sound and "is quite bothered and disturbed by this noise almost as soon as it crosses the threshold of audibility."
- "A-weighting is possibly not the most appropriate metric with which to assess helicopter noise because the A-weighting attenuates the low-frequency noise component." It may be that the A-weighting scale (dBA) understates the effect of low-frequency sound that is characteristic of helicopters.
- "Noise-inducing building vibration and rattle has been shown to significantly increase noise annoyance and helicopter sound is rich in low-frequency content."
- As described above, "there is some evidence that suggests helicopter noise is slightly more annoying than fixed-wing aircraft noise at the same sound exposure level."
- Helicopter noise may be more noticeable because of the impulsive blade-slap sound. That is, it may be that helicopters, whether or not they are more annoying, are just more noticeable because of their distinctive sound.
- "There is the possible phenomena of 'virtual noise' in which a set of non-acoustical factors, such as bias (a personal judgment that the helicopter does not need to fly here) and the fear (of crashes/injury/death), greatly enhances people's negative attitudes." The FAA reports the perception to some people that "helicopters used for transportation of corporate executives, flightseeing, or ENG [electronic news gathering] are unimportant. There is the perception that helicopters could fly higher than they do and over less noise-sensitive areas." The report goes on to suggest that some people feel "that the helicopter is 'a rich man's toy'." While helicopter-supported recreation was outside the scope of the FAA report, it is very possible that people's attitudes about helicopter recreation affect their perception of annoyance.

- The way helicopters are operated can influence reactions. A fixed-wing aircraft just cannot stay in the area that long. It must move on. Helicopters have the capacity to hover and can operate close to the ground and on much smaller or remote land sites.

In summary, the FAA concluded that there appear to be some distinct characteristics of helicopter sound that make the equivalent sound level from a helicopter more disturbing — to some or many people — than similar sound levels from fixed-wing aircraft.

Cumulative Impacts Common to All Alternatives
In addition to flying to BLM–permitted landing sites, TEMSCO is permitted for 2,800 landings on the nearby Meade Glacier, managed by the U.S. Forest Service, and these flights also originate in Skagway. As noted above, the measureable disturbance to the acoustical environments of the communities of Haines and Skagway from helicopter noise is not significant in terms of physiological impacts. Therefore, even when the additional landings on U.S. Forest Service land and an expanded timeframe are considered, no significant cumulative physiological impacts to the acoustical environment are anticipated. However, as many of the impacts associated with helicopter noise are a matter of perception and individual psychology, this alternative could impact individuals that perceive any helicopter noise to be upsetting. For these individuals, the cumulative impact of these disturbances over the course of a year, or over the course of many years, could increase.

ALTERNATIVE A

Impacts to the acoustical environment with the No Action Alternative would be those associated with 2,400 glacier landings from the helicopter flights that originate in Skagway annually.

Physiological Impacts
Impacts to the acoustical environment of the community of Skagway include those listed in Impacts Common to all Alternatives.

Under Alternative A, the duration of helicopter noise disturbance that exceeds 75 dB is limited to each cycle of takeoffs and landings, when helicopters are returning from the field, dropping off and loading passengers, and taking off again. Each cycle takes less than 10 minutes, and the number of cycles in a day is determined by weather, maintenance, and demand, but under this alternative would not exceed 20 a day on the busiest summer day (Whedon, 2010).

Impacts to the acoustical environment of the community of Haines associated with Alternative A are those associated with any helicopters or other aircraft that fly the lower route along the Taiya and Chilkoot Inlet to the Upper and Lower Ferebee glaciers (Map 2, see Section 7.0). Section 3.2.1 states that the noise level that could be attributed to TEMSCO's flights along Chilkoot Inlet (at over three miles distance), would be a maximum of 56-58 dBA at their closest point to Haines. This is a noise level associated with a clothes dryer, or normal conversation, but on any given day could be reduced by wind. Additionally, when safety considerations allow, TEMSCO pilots can further dampen noise impacts to Haines by staying close to the forested hillsides when flying this route (Whedon, 2010). In light of these considerations, any impacts to Haines'

acoustical environment from this alternative are a matter of perception and psychology, and not of physiological concern.

Psychological Impacts
The psychological impacts associated with Alternative A are described in Impacts Common to All.

From a psychological standpoint, the current level of helicopter/aviation-supported activities in the Planning Area is considered unacceptable by some individuals, and acceptable by others. In the absence of a formal survey, there is no way to determine whether the population as a whole is being positively or negatively impacted psychologically by the continuation of current management.

Cumulative Impacts
See cumulative impacts under Impacts Common to All Alternatives.

ALTERNATIVE B

Direct and Indirect
The number of landings permitted under this alternative is 7,500 annually, a figure that allows both for TEMSCO and AMG to expand their operations, or for other heli-tour operations to start in Skagway or Haines. This number is 992 more than the historical average of annual authorized landings (from 1993-2011) and 4,847 more than the historical average actual reported annual landings (Table 7). Historical use also demonstrates that the reported actual landings have always been less than the number of annually authorized landings. Hours of operation would remain the same as described in Planning Assumptions. Additional flight routes would be subject to the same Special Recreation Permit stipulations listed in Section 2.2.

This alternative assumes TEMSCO and AMG would be operating at high capacity all year, or that more than two heli-tour operators would also be in business. Impacts to the acoustical environment associated with this alternative would be similar to those described in Impacts Common to All Alternatives, but the disturbance to the acoustical environment could be more consistent.

Assuming summer use only at 7,500 landings, turnaround times could decrease, with potential for more frequent takeoffs and landings. Under this alternative, there is potential for a helicopter to be taking off or landing in Skagway as frequently as every 15-20 minutes on the busiest summer day (Whedon, 2010).

Turnaround times and frequency of flights would differ with use that is distributed across both winter and summer seasons as well as across the Planning Area, where additional operations in Haines or points along the road system are possible. With winter daylight operations a possibility under this alternative, the number of landing/takeoff cycles is much harder to predict due to snow conditions and flight safety and landing concerns. As stated above, the decibel levels associated with this activity are approximately 70 dB at 1,000 feet, which is a level considered potentially annoying but not harmful.

Cumulative Impacts
See Cumulative Impacts Common to All Alternatives. The loudest point of takeoff and landing, 70-75 dB, could increase in frequency with this alternative, since helicopter/fixed wing departures and arrivals in Skagway, Haines, or other bases of operations will increase by approximately 66% from Alternative A (due to the increase in number of authorized landings). Operations based in Haines or at points along the local road system are also a possibility with this alternative, which would further disperse the concentration of takeoff/landing cycles.

ALTERNATIVE C

Direct and Indirect Impacts
The number of landings permitted under this alternative is 4,000 landings annually. This number is 2,508 landings less than the historical average of annual authorized landings (from 1993 to 2011) and 1,347 more than the historical average actual reported annual landings (Table 7). Historical use also demonstrates that the reported actual landings have always been less than the number of annually authorized landings. Under this alternative, the potential disturbance to the acoustical environment would be less slightly less than described in Alternative B.

Cumulative Impacts
See Cumulative Impacts Common to All Alternatives. Under this alternative, 4,000 landings annually would be permitted, and the impacts to the acoustical environment would be less than the magnitude described in Alternative B, since there would be a 47% decrease in the number of landings from Alternative B. As explained in Alternative A, no significant cumulative physiological impacts are associated with this alternative. Certain individuals may still find the presence of any helicopter tourism unpleasant. Operations based in Haines or at points along the local road system are also a possibility with this alternative, which would further disperse the concentration of takeoff/landing cycles.

ALTERNATIVE D

Direct, Indirect, and Cumulative Impacts
Under this alternative, 6,000 landings annually would be permitted. This number is 508 landings more than the historical annual authorized landings (from 1993-2011) and 3,347 more than the historical average actual reported annual landings. Historical use also demonstrates that the reported actual landings have always been less than the number of annually authorized landings. The impacts to the acoustical environment would be less than those described in Alternative B and of somewhat greater magnitude than those described in Alternatives A and C. An increase of 150% and 50% over the number of landings from Alternatives A and C, respectively, does not however, directly translate into more flights. During winter operations, for example, one flight may land several times in dropping off or picking up skiers, without returning to town. Operations based in Haines or at points along the local road system are also a possibility with this alternative, which would further disperse the concentration of takeoff/landing cycles.

4.5 Lands with Wilderness Characteristics

ALTERNATIVE A

Retain Special Recreation Management Area Designation
The No Action Alternative does not propose to alter the BLM land base such the area would fail to contain more than 5,000 acre of contiguous, roadless BLM lands. The No Action Alternative does not propose any installation of human artifices or man-made works of any kind.

A higher level of investment and/or management to protect and enhance recreation activities, experiences, benefits, and recreation settings that would be added to administer an SRMA would not substantially affect a visitor's opportunities for solitude. The tremendous scale of the lands in the Planning Area make it possible for a person willing to make the effort to find solitude; a trek into a drainage with no improvements would most likely separate a visitor from any other activities or recreationists.

Retain Monitoring and Control Area
Retention of the Monitoring and Control Area may contribute slightly to opportunities for solitude, as it would preserve an area where no aircraft associated with BLM-permitted recreation activities would be present. Other aircraft may occasionally use this area, but for planning purposes it is assumed that flights not associated with BLM SRPs would be infrequent.

Permit 2,400 landings in the Planning Area annually
Up to 2,400 landings annually could impact opportunities for solitude along the certain proposed flight paths of permitted helicopter activities. Under certain weather conditions, Burro Creek, Ferebee River, or other lower routes may be more heavily used, as they are more likely to retain visibility than some of the upper routes. There is potential for one or more helicopters to be passing overhead every hour in some of these areas, but there are several factors which limit the extent of this impact. The sound of helicopters or other aircraft is transitory in nature, and between flights, full silence returns to an area.

Given the temporary duration, intermittent use, dispersed landing areas, the expanse of public lands in the Planning Area, and the permit stipulations, the No Action Alternative can be implemented in a manner that does not permanently impair existing wilderness characteristics.

Cumulative Impacts
The only Lands with Wilderness Characteristics criterion that this alternative has potential to affect - directly, indirectly, or cumulatively - is the area's ability to offer outstanding opportunities for solitude or a primitive and unconfined type of recreation. The area currently exhibits wilderness characteristics with 2,400 landings permitted annually. Although solitude may be intermittently affected by the sound of helicopters, as described above, the sound is transitory and continued flights under the No Action Alternative are not anticipated to have a cumulative impact on the wilderness characteristics of the area.

ALTERNATIVE B

Retain Special Recreation Management Area Designation
The effects would be the same as described for Alternative A but would also apply to the BLM-managed lands in the south block.

Abolish the Monitoring and Control Area and allow helicopter/aviation supported tourism
As aircraft begin to use this previously unused area, opportunities for lengthy periods of solitude in the former Monitoring and Control Area would diminish. Solitude, as defined above, would still be possible to achieve.

Increase total landings permitted in the Planning Area to 7,500 annually
Impacts to solitude would be similar to those associated with 2,400 landings, although the reduction in turn-around time could reduce the interval of silence between flights along the permitted routes. There is potential for one or more helicopters or fixed-wing aircraft to be passing overhead every hour in some of high-use areas, but once the aircraft has passed out of hearing range (see Acoustical Environment, Section 4.4) full silence returns to an area. Solitude, as defined above, is achievable under this alternative.

Given the temporary duration, intermittent use, dispersed landing areas, the expanse of public lands in the Planning Area, and the permit stipulations, Alternative B can be implemented in a manner that does not permanently impair existing wilderness characteristics.

Cumulative Impacts
See Cumulative Impacts described for Alternative A.

ALTERNATIVE C

Change Special Recreation Management Area Designation to an Extensive Recreation Management Area (ERMA)
As described in detail in Section 3.2.5, the current level of little to no recreation infrastructure development in the Planning Area would remain the same as it is now under this alternative. Access and visitation would remain low, and opportunities for solitude would remain at their current high levels.

Retain Monitoring and Control Area for a period of five years
As described above, retention of the Monitoring and Control Area would contribute to opportunities for solitude within the Monitoring and Control Area, as it would preserve an area where no aircraft associated with BLM-permitted activities would be present. However, once the Monitoring and Control Area was opened and aircraft begin to use this area, opportunities for lengthy periods of solitude would diminish. Solitude, as defined above, would still be possible to achieve, but for shorter periods of uninterrupted time than prior to the Monitoring and Control Area being opened.

Permit 4,000 landings in the Planning Area annually
Impacts to solitude would be similar to those associated with 2,400 landings, although the reduction in turn-around time could reduce the interval of silence between flights along the permitted routes. There is potential for one or more helicopters or fixed-wing aircraft to be passing overhead every hour in some high-use areas, but once the aircraft has passed out of hearing range (see Acoustical Environment section, Section 4.4) full silence returns to an area. Solitude, as defined above, is achievable under this alternative.

Given the temporary duration, intermittent use, dispersed landing areas, the expanse of public lands in the Planning Area, and the permit stipulations, Alternative C can be implemented in a manner that does not permanently impair existing wilderness characteristics.

Cumulative Impacts
See Cumulative Impacts described for Alternative A.

ALTERNATIVE D

Change Special Recreation Management Area Designation to an Extensive Recreation Management Area
The effects would be the same as described for Alternative C.

Retain Monitoring and Control Area for a period of five years
The effects would be the same as described for Alternative C.

Increase total annual permitted landings in the Planning Area to 6,000 landings.
Impacts to solitude from this alternative are similar to those associated with 2,400 landings. 6,000 landings could impact opportunities for solitude along the certain proposed flight paths of the heli-tour operators, though the increase in number could mean more frequent aircraft passes along flight routes. The sound of helicopters or other aircraft is transitory in nature, and between flights, full silence returns to an area.

Given the temporary duration, intermittent use, dispersed landing areas, the expanse of public lands in the Planning Area, and the permit stipulations, Alternative D can be implemented in a manner that does not permanently impair existing wilderness characteristics.

Cumulative Impacts
See Cumulative Impacts described for Alternative A.

4.6 Climate and Environmental Change

Impacts Common to All Alternatives
“Climate change” represents the cumulative aggregation of all worldwide greenhouse gas emissions and other climate drivers. The current state of climate change science makes the association of specific emissions with specific impacts impossible. Therefore, the following analytical assumptions are made for the purpose of this analysis:

- The tools necessary to quantify incremental climatic impacts of specific activities are presently unavailable
- Specific levels of significance have not yet been established
- For the reasons above, climate change analysis for the purposes of NEPA is limited to accounting and disclosing factors that contribute to climate change
- This analysis uses greenhouse gas emissions from helicopters as a basis to illustrate the scale of aircraft operations in the Planning Area

Greenhouse Gas Emissions and Aviation

Aviation activities will be the major factor contributing to greenhouse gas emissions for this EIS. Aircraft produced about 9% of U.S. transportation greenhouse gas emissions in 2003 (173.1 Tg CO2 Eq.) and were the largest source of non-road transportation GHGs. The aircraft used by operators in the Planning Area can be considered commercial aircraft, which are, generally, certificated air carriers. Certificated air carriers are those aircraft holding a certificate issued by the Federal Aviation Administration to conduct scheduled and/or non-scheduled (charter) services and may carry passengers and/or freight. Commercial aircraft produced 72 percent of U.S. aircraft GHGs in 2003 (124.0 Tg CO2 Eq.), which was 4.7 percent greater than in 1990. GHG emissions from aircraft in 2003 were 99 percent CO2, about 1 percent N2O, and less than 1 percent CH4 (EPA, 2006).

GHG emissions vary according to the flight distance, since the greater proportion of the emissions is at takeoff which requires higher fuel consumption (Ross, 2009). Therefore, there is a theoretical difference in GHG emissions associated with each alternative due to the varying numbers of landings permitted, but this difference is so small it is not practical to attempt to quantify.

ALL ALTERNATIVES

The factors contributing to climate change associated with each alternative include:

Burning one gallon of jet fuel (Jet A, JP-8) results in 9.57 kg CO2 produced.

In 2009, TEMSCO logged 925 landings under their BLM Special Recreation Permit. Approximately 4 landings can be completed on one hour of fuel, and 1 hour of fuel = approximately 40 gallons. (Herbig, 2010).

40 gallons x 9.57 kg CO2 = 382.8 kg CO2

Therefore, if every hour of fuel = 40 gallons, which = 382.8 kg CO2 produced, which = 4 landings, the figure “1 hour of fuel = 382.8 kg CO2” will be used for the purpose of calculating how GHG emissions vary between alternatives.

Alternative A, with 2,400 landings: 2,400/4=600 hours x 382.8 = 229,680 kg CO2 annually
Alternative B, with 7,500 landings: 7,500/4=1875 hours x 382.8 = 717,750 kg CO2 annually
Alternative C, with 4,000 landings: 4,000/4=1000 hours x 382.8 = 382,800 kg CO2 annually
Alternative D, with 6,000 landings: 6,000/4 =1500 hours x 382.8 = 574,200 kg CO2 annually

GHG Emissions and Context
By comparison, a 747-400 that flies 3,500 statute miles (5,630 km) and carries 126,000 pounds (56,700 kg) of fuel will consume an average of five gallons (19 L) per mile (www.Boeing-747.com).

Using this figure, and not attempting to account for variables such as wind speed, ground taxi, payload, air temperature, etc., the amount of CO2 generated from a one way flight on a 747 from Anchorage, AK, to Seattle, WA can be calculated. The distance of this flight is 1,438 miles, multiplied by 5 gallons/mile, which = approximately 7,190 gallons of fuel.

7,190 gallons of fuel x 9.57 kg CO2/gallon = 68,808 kg CO2.

Therefore, a one-way flight from Anchorage to Seattle on a Boeing 747 generates approximately 68,808 kg CO2.

The CO2 production associated with the Alternative D, the preferred alternative is approximately 574,200 kg CO2. Divide this number by the CO2 produced from a one-way flight from Anchorage to Seattle (68,808 kgCO2), and the result is that the CO2 production associated with Alternative D = approximately 8.3 one-way flights to Seattle annually. On a typical day in June, Alaska Airlines operates approximately nine one-way flights from Anchorage to Seattle (www.alaskaairlines.com).

Therefore, using the same process for each alternative, the following comparisons can be made:

CO2 production associated with Alternative A = approximately 3.3 one-way flights from Anchorage to Seattle

CO2 production associated with Alternative B = approximately 10.4 one-way flights from Anchorage to Seattle

CO2 production associated with Alternative C = approximately 5.6 one-way flights from Anchorage to Seattle

4.7 Special Status Species

Current numbers and population trends of special status species on BLM lands in the Planning Area are unknown, and no specific management goals have been established for any of these species. It is not known whether Kittlitz's murrelets are present within the Planning Area, however current and proposed permitted activities are not expected to affect the species.

4.8 Vegetation Resources

Much of the Planning Area is ice and rock, with very little to no inventory of the vegetation resource. Impacts to vegetation resources would remain the same as they are now, under the current management scenario described in the Ring of Fire Analysis of the Management

Situation (BLM 2008). Impacts to forestry resources would be the same for all alternatives considered in this analysis.

4.9 Cultural Resources

None of the alternatives propose ground disturbance. Permitted recreation activities would occur on rock and ice. It is not anticipated that the actions proposed in this amendment will have any impacts on cultural resources, including historic sites, historic landscapes, prehistoric sites, or sites or landscapes of traditional or religious cultural importance to Native Americans. All cultural resources will be managed in compliance with Section 106 of the National Historic Preservation Act, its implementing regulations, and all ROPs in the approved Ring of Fire RMP (BLM, 2008). The Alaska State Historic Preservation Office will review and comment on this Plan Amendment, as required by the BLM's Alaska State *Protocol Agreement,* prior to plan implementation.

4.10 Geology / Natural Hazards

None of the alternatives propose ground disturbance or development in areas of natural hazards; therefore, no impacts to geologic resources or natural hazards are anticipated.

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5.0 CONSULTATION AND COORDINATION

5.1 Federal and State Government Agencies

Following publication of the Notice of Intent (NOI) to Prepare a DEIS on March 26, 2009, all of the agencies listed below received a general scoping letter inviting them to participate in the scoping process.

- National Park Service
- State of Alaska, Coastal Zone Management
- State of Alaska, Department of Fish and Game
- State of Alaska, Department of Natural Resources
- U.S. Fish and Wildlife Service
- U.S. Forest Service

These agencies have had opportunities to provide input throughout the planning process. A representative of the State of Alaska Department of Natural Resources and the State Planning Liaison attended the Anchorage scoping meeting.

5.2 Government-to-Government Consultation

Federally recognized Tribes have a special, unique legal and political relationship with the Government of the United States as defined by the U.S. Constitution, treaties, statutes, court decisions, and executive orders. These definitive authorities also serve as the basis for the Federal Government's obligation to acknowledge the status of Federally-recognized Tribes in Alaska. As such, it is the policy of the BLM to formally consult with Federally-recognized Tribes in Alaska prior to taking action or undertaking activities that will have a substantial, direct effect on the Tribes, their assets, rights, services, or programs.

To this end, on April 6, 2009 a letter inviting the opportunity for government-to-government consultation was sent to the only Tribe within the Planning Area, Chilkat Indian Village Council. Follow-up phone calls were made to John Brower with Chilkat Indian Village Council prior to the scoping meetings held in Haines and Skagway. The letter and phone calls invited Tribal representatives and their community members to the scoping meetings. Additionally, BLM offered to visit the community to conduct government-to-government consultation either before or after the Haines public scoping meeting, however Chilkat Indian Village Council did not accept that invitation. To date, the tribe has not responded to the BLM's invitation to enter into government-to-government consultation, nor have they identified any sites of traditional or religious cultural importance within the Planning Area. The BLM is available for consultation should Chilkat Indian Village Council request it at a later date. Consultation will continue to take place with Federally-recognized traditional governments throughout the planning process in order to identify and consider Tribal concerns with regard to all BLM resource management programs.

5.3 Adjacent Landowners and Land Managers

The following land owners and managers were informed about the Ring of Fire RMP Amendment/DEIS planning process by mail shortly after the NOI was published.

- Glacier Bay National Park and Wilderness
- Haines Borough
- Klondike National Historic Park
- Klukwan, Inc.
- Municipality of Skagway
- State of Alaska
- Tongass National Forest

Public announcements about upcoming scoping meetings were made via public radio and ads in the local newspapers in both Haines and Skagway for two weeks prior to both meetings. Adjacent land owners and managers will continue to be kept up-to-date regarding the ongoing planning process to ensure coordination across land management boundaries and to ensure consistency with other planning efforts. Opportunities for input have been provided during the scoping period and at public meetings. Opportunities for input will continue to be available throughout the planning process. These land owners and managers include:

5.4 Regional and Village Native Corporations

The Regional Native Corporation, Sealaska Corporation, was informed by mail of the start of the Ring of Fire RMP Amendment/DEIS project and initial scoping period shortly after the NOI was published in the Federal Register. The Village Native Corporation, Klukwan, Inc. was notified by mail that the Ring of Fire Amendment is taking place and asked to comment. No comments have been received to date, but opportunities to participate will be afforded throughout the planning process.

5.5 Community Participation

In addition to their participation in the scheduled scoping meetings, RMP Amendment team members have continued communicating with community members from Haines and Skagway. Individuals from these and other communities within the Planning Area may provide additional data needed for planning purposes. Chilkat Indian Village Council may provide additional data on Traditional Cultural Properties and subsistence uses. Opportunities for their participation was provided at scoping meetings and during the public comment period, and will continue to be afforded throughout the planning process.

5.6 Resource Advisory Council

The BLM Alaska Resource Advisory Council (RAC), which advises the BLM Alaska State Director and may make recommendations to the BLM Anchorage District managers, provides a broad spectrum of input from various interests. The RAC has been informed of status of this

planning effort since February 2009; most recently, the RAC was provided with a status update at their April 18-20, 2012, meeting.

5.7 Media

Use of local media is essential in providing adequate public notice for the varying stages of the planning process. Radio and print media of local and statewide circulation were used to disseminate information concerning the scoping meeting schedule. The BLM has utilized the following radio stations and newspapers for announcements of public scoping meetings:

- KHNS Public Radio (Haines, Klukwan, and Skagway)
- The Anchorage Daily News
- The Skagway News
- Chilkat Valley News (Haines, Klukwan)

5.8 Other Parties Consulted

Dave Herbig	Base Manager	TEMSCO Helicopters
John Whedon	Lead Pilot	TEMSCO Helicopters
Paul Reichert	Tour Manager	TEMSCO Helicopters
Ryan Scott	Wildlife Biologist	Alaska Dept. of Fish & Game
Kevin S. White	Wildlife Biologist	Alaska Dept. of Fish & Game
Anthony Crupi	Wildlife Biologist	Alaska Dept. of Fish & Game
James Griswold, Ryan Nielson, and Hall Sawyer	Contracted Goat Habitat Selection Model Developers	WEST, Inc.

5.9 List of Preparers

The AFO formed an interdisciplinary team of resource specialists for this planning effort (listed below). The following resource specialists were involved in scoping, review and analysis of comments received, alternatives development, and impact analysis.

Geoff Beyersdorf	Former Natural Resource Specialist, Subsistence
Molly Cobbs	Planning and Environmental Coordinator
Jorjena Daly	Outdoor Recreation Planner
Melanie Hunter	Former Planning and Environmental Coordinator
Jeff Kowalczyk	Outdoor Recreation Planner
Paxton McClurg	GIS Specialist
Laurie Thorpe	Natural Resources Specialist
Bruce Seppi	Wildlife Biologist

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7.0 MAPS

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Map 5. Haines Block Topography Overview
Map 6. Winter Goat Habitat (ADFG 2011

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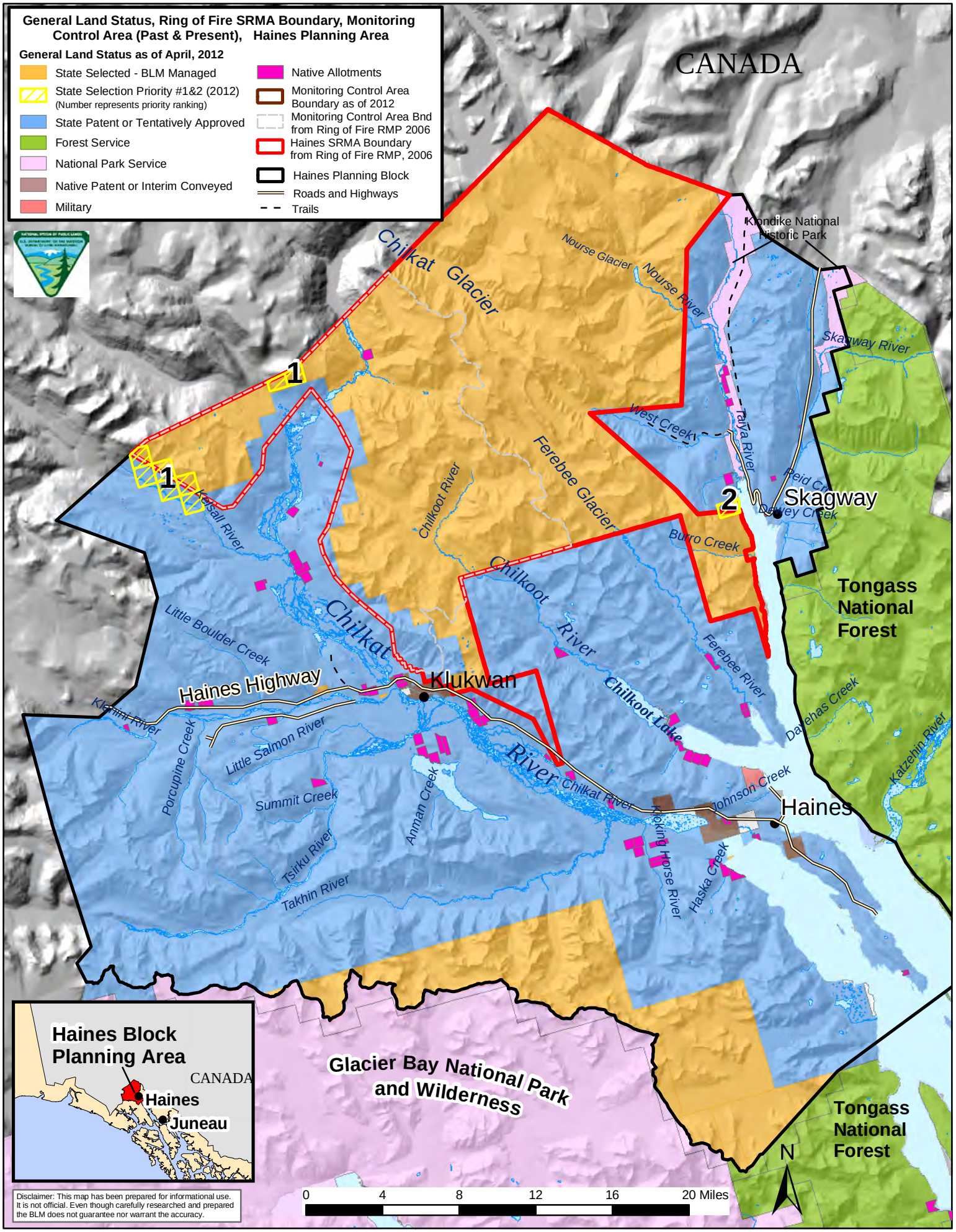

Haines Planning Area Map 1

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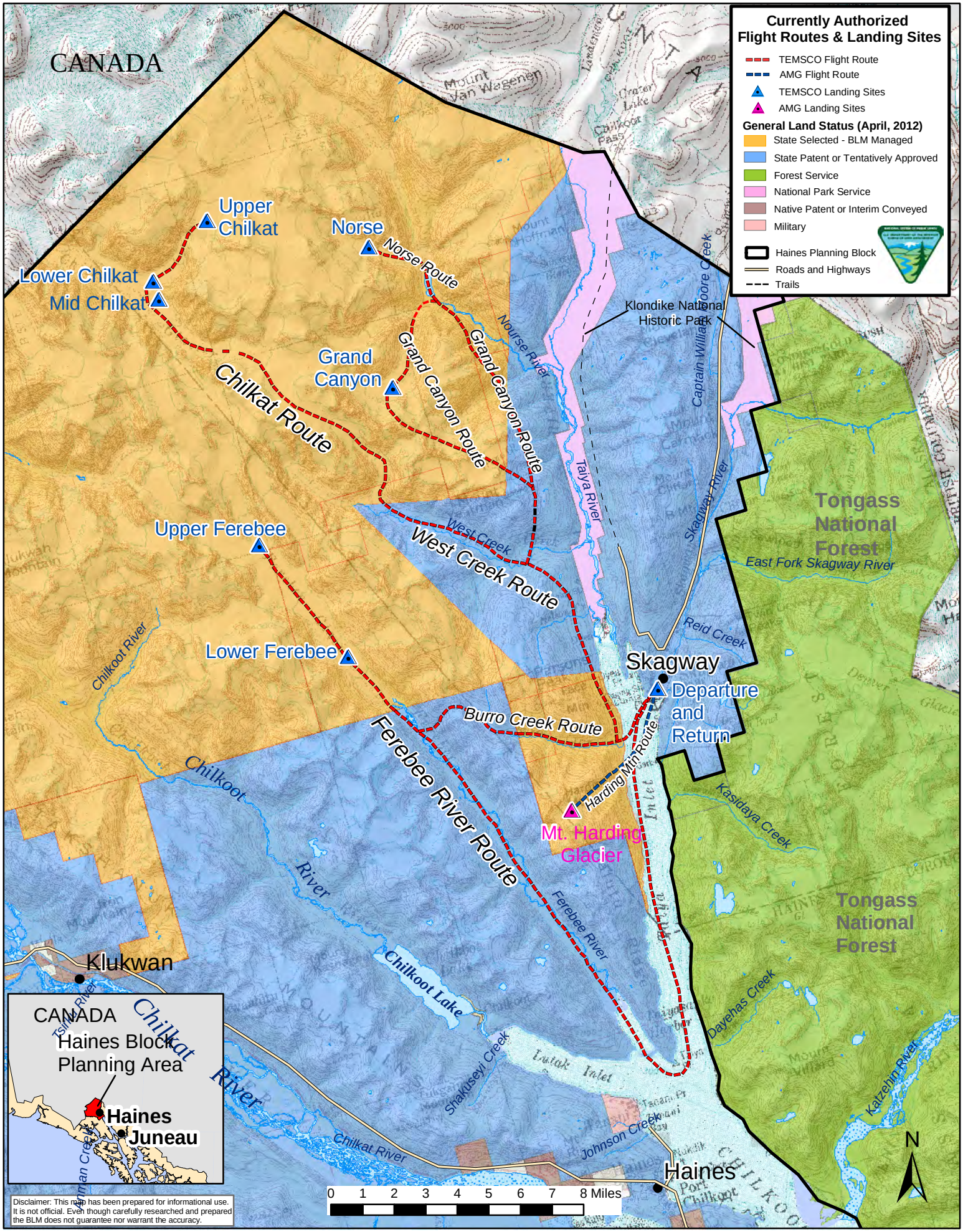

Currently Authorized Flight Routes Map 2

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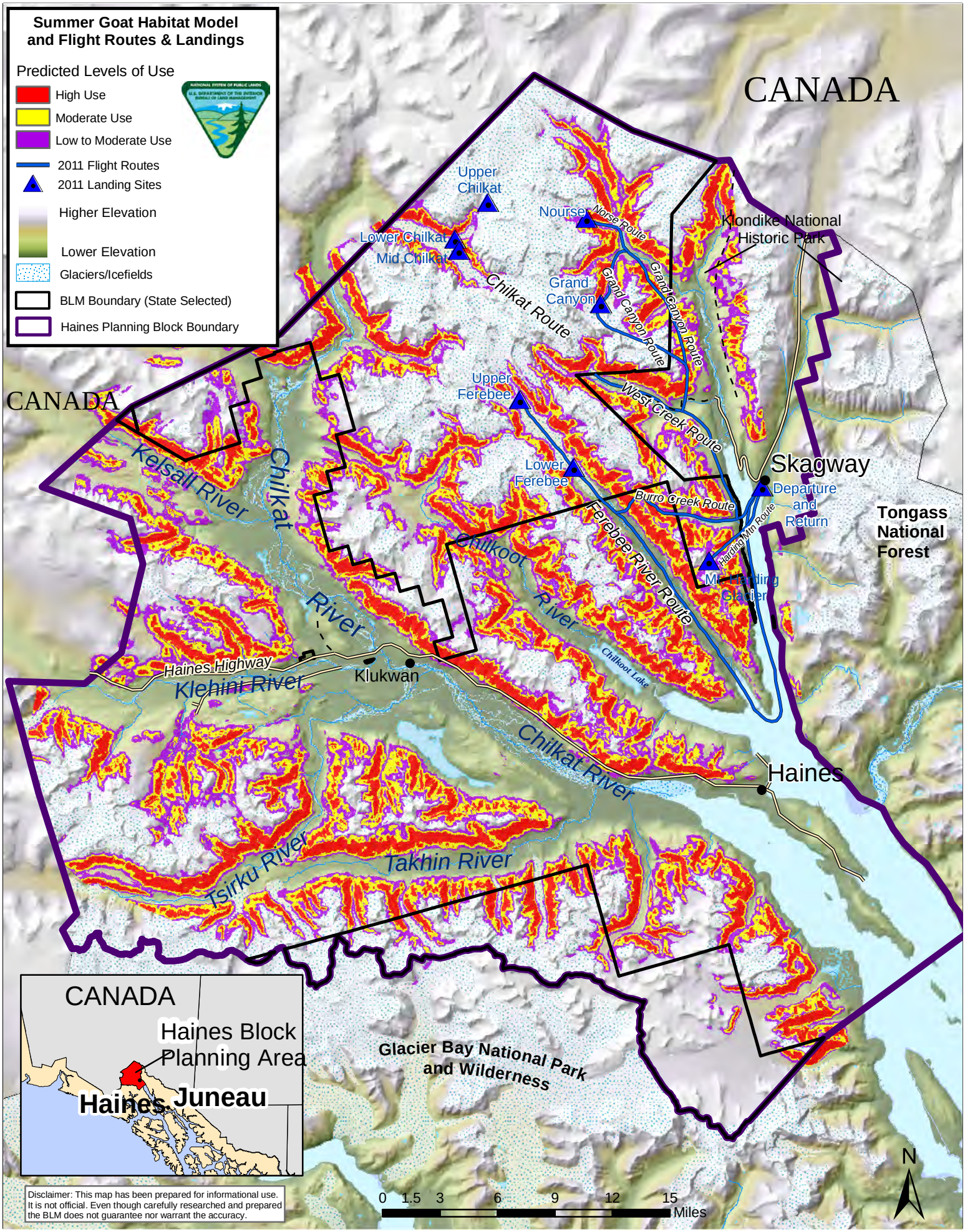

Summer Goat Habitat Areas with Flight Routes Map 3

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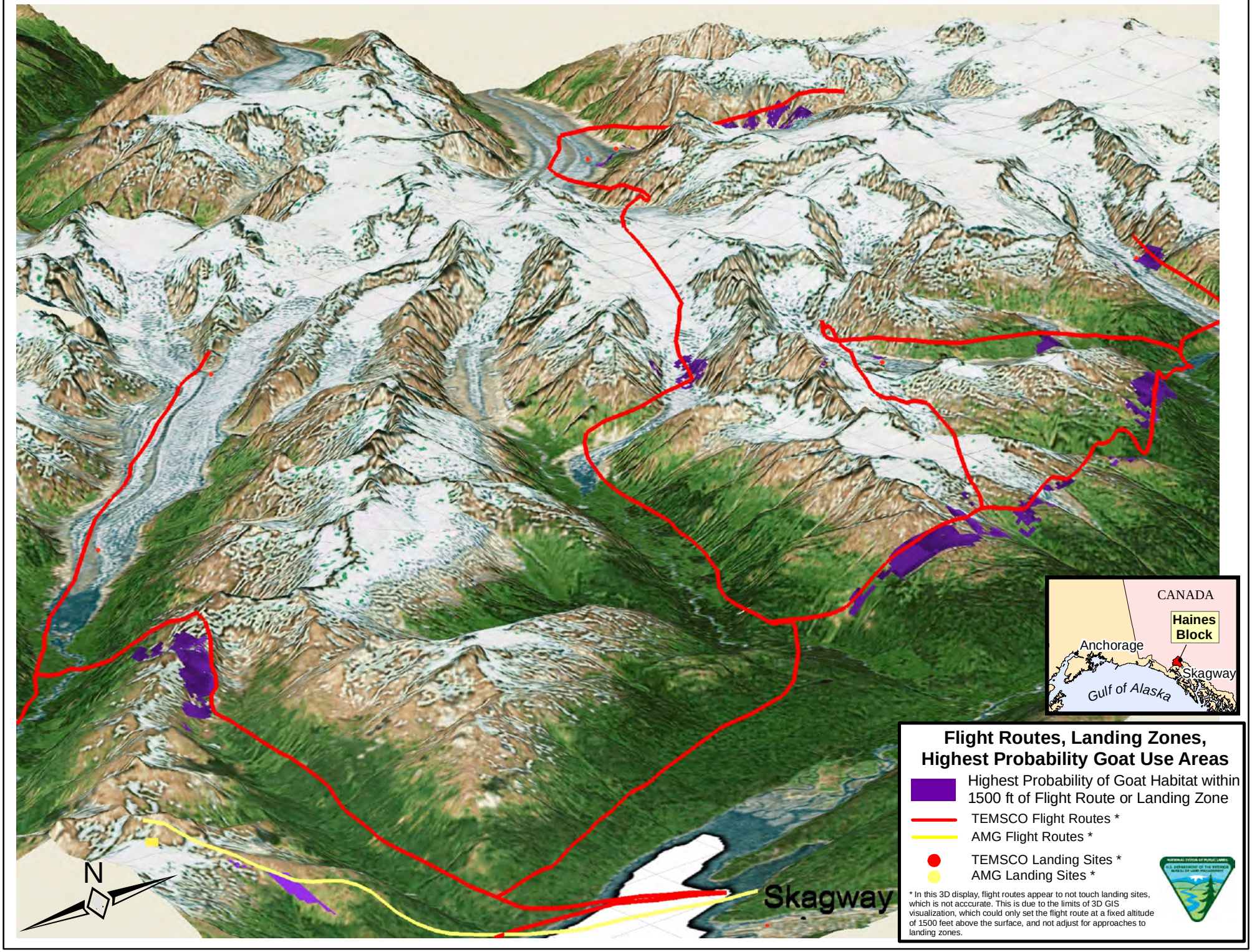

Flight Routes, Landing Zones, Highest Probability of Summer Goat Use Areas, Illustrated in 3D Map 4

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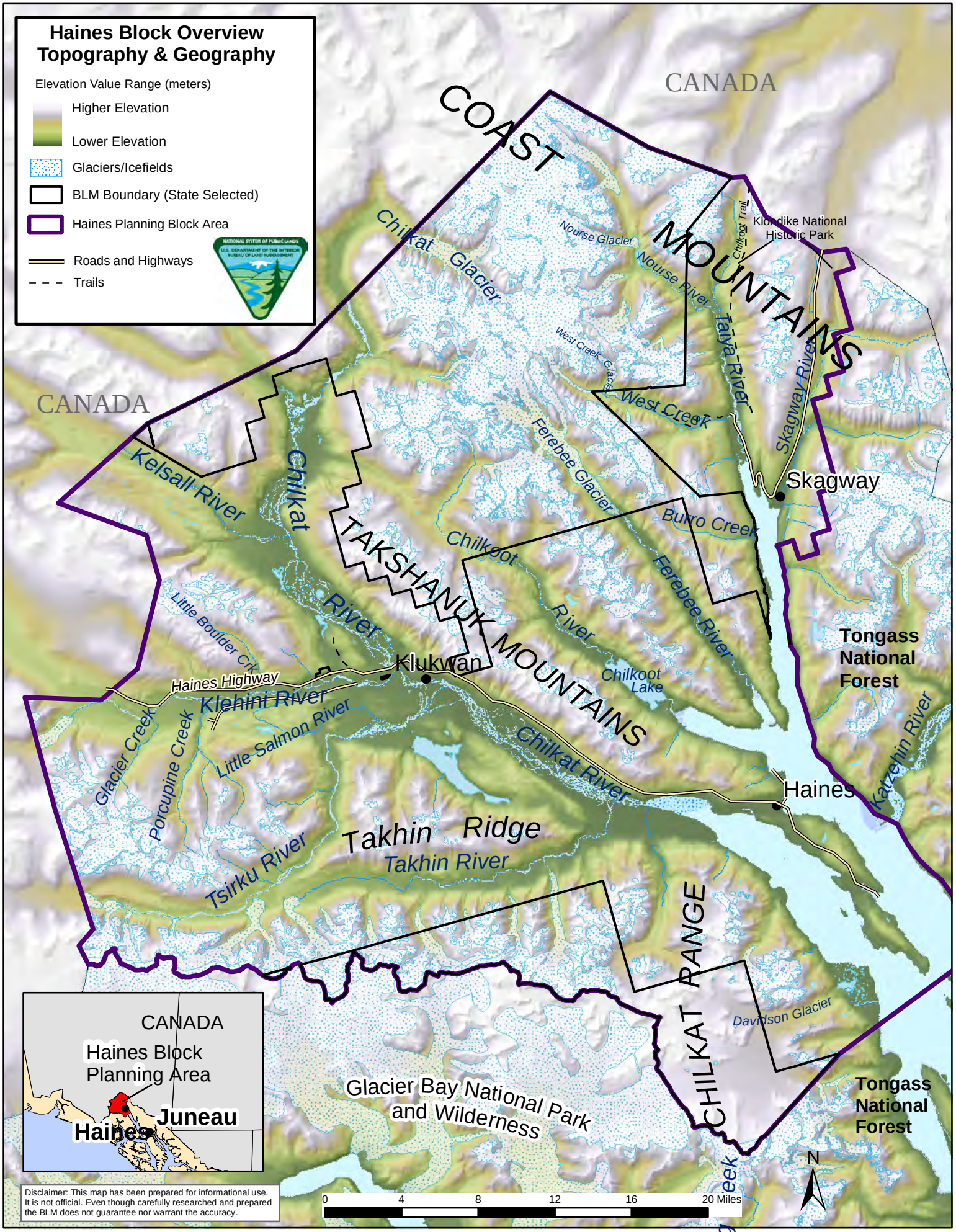

Haines Block Topography Overview Map 5

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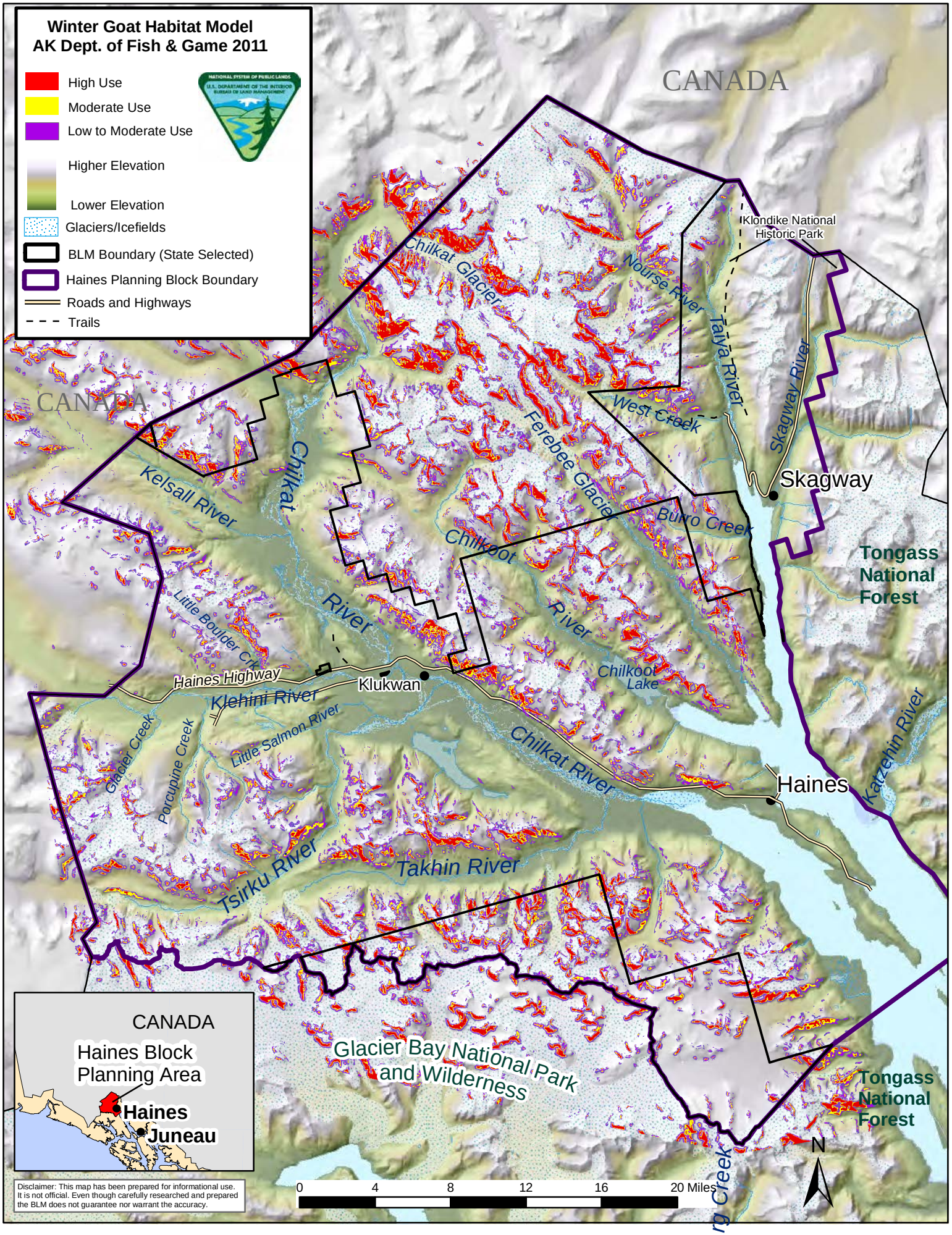

Winter Goat Habitat (ADF&G 2011) Map 6

APPENDICES

APPENDIX A: BLM RING OF FIRE RESOURCE MANAGEMENT PLAN AMENDMENT/DRAFT ENVIRONMENTAL IMPACT STATEMENT SCOPING REPORT, SEPTEMBER 2009

BLM Ring of Fire Resource Management Plan Amendment/Supplemental Environmental Impact Statement
Scoping Report
September 2009

Mountains east of Ferebee Glacier

Bureau of Land Management
Anchorage Field Office
4700 BLM Road
Anchorage, Alaska 99507
(907) 267-1246

Table of Contents

I. INTRODUCTION

A. Overview, Purpose and Need for the Ring of Fire Amendment

The Anchorage Field Office of the Bureau of Land Management (BLM) finalized the Ring of Fire Resource Management Plan (RMP) by signing the Record of Decision (ROD) in March 2008. The Ring of Fire RMP provides a comprehensive framework for managing and allocating uses of the public lands and resources within the Ring of Fire Planning Area. The Ring of Fire ROD deferred the final determination on whether or not to designate an Area of Critical Environmental Concern (ACEC) in the Haines Block. Designation of an ACEC is made through the land use planning process, therefore the Ring of Fire RMP needs to be amended in order to address the ACEC issue. In addition, land use plan decisions establish goals and objectives for resource management (i.e. desired future conditions and best management practices), the measures needed to achieve these goals and objectives, and the parameters for resource uses on BLM-administered public lands.

The Ring of Fire RMP designated a Special Recreation Management Area (SRMA) in the Planning Area when the ROD was signed. BLM is revisiting the need for this SRMA because SRMA designation criteria have changed and significant land conveyance has occurred in the Planning Area. Lands that were managed by BLM have been conveyed to the State of Alaska causing permits that were issued by BLM on those lands to be terminated. The one permittee who operates in the SRMA has indicated that their most visited landing site is no longer safe due to melting of the glacier. They are in the process of moving those landings, which equal half of all their landings on BLM lands, to Meade Glacier in the Tongass National Forest.

The purpose of the Ring of Fire RMP Amendment/Supplemental EIS is to

1. Make a final determination on the designation of an ACEC in the Haines Block.
2. Re-evaluate the need for an SRMA.
3. Evaluate terms and conditions for special recreation permits in the Planning Area.

B. Description of the Planning Area

The Haines Block consists primarily of glacially covered mountains in the Coastal Mountain Range to the northwest of Skagway and Haines and in the Chilkat Range to the south/southwest of Haines. BLM-managed lands are bordered by Canada to the north and Glacier Bay National Park and Wilderness to the south with State and private lands bisecting the two Federally-owned portions. There are no roads or trails on BLM-managed lands in the Planning Area. The only structure managed by BLM is the Dalton Cache located on the Haines Highway at the U.S./Canada Border.

Population centers in the Planning Area include Haines, Skagway and the native village of Klukwan. All three towns are accessible by road.

C. Description of the Scoping Process

A Notice of Intent (NOI) to prepare the Ring of Fire RMP Amendment/Supplemental Environmental Impact Statement (EIS) was published in the Federal Register on March 26, 2009. The NOI initiated a 90-day formal scoping period that lasted until June 24, 2009. Public meetings were held during the scoping period in the communities of Haines, Skagway, and Anchorage.

The purpose of each meeting was to introduce the public to the Ring of Fire RMP Amendment and elicit public comment. Information presented at the meetings included:

- The purpose for amending the Ring of Fire RMP
- Boundaries of the Planning Area and changes in land status since the signing of the Ring of Fire ROD
- The Planning Schedule
- Planning Criteria
- A framework for the Plan Amendment including:
    - Specific regulatory criteria for "Relevance and Importance" which relate to the Area of Critical Environmental Concern designation.
    - Criteria used to designate a SRMA.
- Specific examples of decisions that might be made in the amendment.

The format of each meeting was open house. The Anchorage Field Manager, Ring of Fire RMP Amendment Team Lead, and Anchorage Field Office Recreation Planner were on hand at each meeting to explain the purpose of the amendment, answer questions regarding the planning effort and BLM policy and regulations, and elicit public comment on the planning criterion for BLM-managed lands. Maps of the Haines Block were available at each meeting for review. A general letter to the public announcing scoping and explaining the focus of the RMP Amendment was available at each meeting as well as land status maps of the Planning Area and comment forms for the public to take with them if they preferred to make comments at their leisure.

The BLM contacted the Chilkat Tribal Council regarding their desire for a government-to-government consultation during scoping. The Chilkat Tribal Council was unavailable for consultation during scoping.

Concurrent with the beginning of the scoping period the BLM developed a Ring of Fire RMP Amendment/Supplemental EIS planning website. The website has included the schedule of public meetings, information on the planning process, links to BLM criteria for allocation decisions made through the planning effort, links to all Ring of Fire RMP documents, and information on how to participate during the planning process. All planning-related documents, including this Scoping Report, will be available for online viewing.

D. Cooperating Agencies/Invitees

Cooperating agency status provides a formal framework for governmental units whether local, state, Tribal, or Federal, to engage in active collaboration with the lead Federal agency to

implement the requirements of NEPA. BLM invited Federal, State, local and Tribal entities with interest and/or special expertise to become cooperating agencies for the Ring of Fire RMP Amendment. The Municipality of Skagway has entered into formal cooperating agency status with BLM.

The State of Alaska responded that the current developed strategy for cooperation and consultation on land use planning efforts was working well for them and that they would like to participate through that manner. As part of the strategy, the State of Alaska and the BLM jointly fund a liaison position. Consolidated scoping comments were received on June 23.

The National Park Service submitted scoping comments but declined formal cooperating agency status.

E. Special Interest Groups, Agencies, and Corporations

In an effort to reach as many groups, agencies, and corporations who may have an interest in the Haines Planning area for the Ring of Fire RMP Amendment/Supplemental EIS a general letter was sent to the entire original Ring of Fire RMP mailing list. This letter gave a brief explanation of the scope and need for the Amendment, announced the dates, time and locations for the upcoming scoping meetings and invited all stakeholders to participate in scoping by attending a meeting, visiting the website, and making comments to BLM by the deadline of June 24, 2009.

F. Federal and State Government Agencies

All of the agencies listed below received the general scoping letter after the NOI was published inviting them to participate in scoping and attend any of the three scoping meetings. These agencies have had opportunities to provide input during the scoping period, and will have additional opportunities throughout the planning process. A representative of the State of Alaska Department of Natural Resources and the State Planning Liaison attended the Anchorage scoping meeting.

National Park Service
State of Alaska, Coastal Zone Management
State of Alaska, Department of Fish and Game
State of Alaska, Department of Natural Resources
U.S. Fish and Wildlife Service
U.S. Forest Service

G. Adjacent Land Owners and Managers

The following land owners and managers were informed about the Ring of Fire RMP Amendment/Supplemental EIS planning process by mail shortly after the NOI was published. Public announcements about upcoming scoping meetings were made via public radio and ads in the local newspapers in both Haines and Skagway for two weeks prior to both meetings. Adjacent land owners and managers will continue to be kept up-to-date regarding the ongoing planning process to ensure coordination across land management boundaries and to ensure

consistency with other planning efforts. Opportunities for input have been provided during the scoping period and at public meetings. Opportunities for input will continue to be available throughout the planning process. These land owners and managers include:

Glacier Bay National Park and Wilderness
Haines Borough
Klondike National Historic Park
Klukwan, Inc.
Municipality of Skagway
State of Alaska
Tongass National Forest

H. Regional and Village Native Corporations

The Regional Native Corporation, Sealaska Corporation, was informed by mail of the start of the Ring of Fire RMP Amendment/Supplemental EIS project and initial scoping period shortly after the NOI was published in the Federal Register. The Village Native Corporation, Klukwan, Inc. was notified by mail that the Ring of Fire Amendment is taking place and asked to comment. No comments have been received to date, but opportunities to participate in the planning process will be afforded throughout the planning process.

I. Government to Government Consultation

Federally recognized Tribes have a special, unique legal and political relationship with the Government of the United States as defined by the U.S. Constitution, treaties, statutes, court decisions, and executive orders. These definitive authorities also serve as the basis for the Federal Government's obligation to acknowledge the status of Federally-recognized Tribes in Alaska. As such, it is the policy of the BLM to formally consult with Federally-recognized Tribes in Alaska prior to taking action or undertaking activities that will have a substantial, direct effect on the Tribes, their assets, rights, services, or programs. To this end, on April 6, 2009 a letter requesting government-to-government consultation was sent to the only Tribe within the Planning Area, Chilkat Indian Village Council. Follow up phone calls were made to John Brower with Chilkat Indian Village Council prior to the scoping meetings held in Haines and Skagway. The letter and phone calls invited Tribal representatives and their community members to the scoping meetings. Additionally, BLM offered to come to the community to conduct government-to-government consultation either before or after the Haines public scoping meeting, however Chilkat Indian Village Council did not have time for a meeting. They have not requested Government-to-Government Consultation to date but BLM is available for consultation should Chilkat Indian Village Council request it. Consultation will continue to take place with Federally-recognized traditional governments throughout the planning process in order to identify and consider Tribal concerns with regard to all BLM resource management programs.

J. Community Participation

In addition to their participation in the scheduled scoping meetings, Ring of Fire Amendment Team members have continued communicating with community members from Haines and Skagway. Individuals from these and other communities within the Planning Area may provide additional data needed for planning purposes. Chilkat Indian Village Council may provide additional data on Traditional Cultural Properties and subsistence uses. Opportunities for their participation was provided at scoping meetings and during the public comment period, and will continue to be afforded throughout the planning process.

K. BLM Resource Advisory Councils

The BLM Alaska Resource Advisory Council (RAC), which advises the BLM State Director and may make recommendations to the BLM Anchorage Field and District Managers, will provide a broad spectrum of input from various interests. The advisory council was informed at their last face-to-face meeting, February 19 and 20, 2009, of beginning of the Ring of Fire RMP Amendment/Supplemental EIS project. Opportunities for input will continue to be made available at advisory council meetings and throughout the planning process.

L. Media

Use of local media is essential in providing adequate public notice for the varying stages of the planning process. Radio and print media of local and statewide circulation were used to disseminate information concerning the scoping meeting schedule. The BLM has utilized the following radio stations and newspapers for announcements of public scoping meetings:

KHNS Public Radio (Haines, Klukwan, and Skagway)
The Anchorage Daily News
The Skagway News
Chilkat Valley News (Haines, Klukwan)

II. ISSUE AND COMMENT SUMMARY

A. Issues Identified During Scoping

The majority of comments received focused on two main issues, ACEC designation and SRMA designation. Issues about the effects helicopters may have on wildlife populations were used to support or oppose these potential designations and are listed under the topic they relate to. Few comments were received on issues outside of the designations. Those comments are listed below under the heading of "Other."

The following issues were raised during the Ring of Fire RMP Amendment scoping period.

1. ACEC Designation – Does area meet criteria for ACEC designation with respect to visual, wildlife and geologic hazard resources?
2. SRMA Designation

B. Summary of Public Comments

A total of 33 comments were received during the public scoping period for the Ring of Fire RMP Amendment. Comments were analyzed in detail and resulted in the identification of planning issues that will be addressed during the development of the RMP Amendment. An issue is defined as a matter of controversy or dispute over resource management activities or land use that is well defined or topically discrete, and has alternatives between which to decide.

Comments are organized by issue. For a summary of the scoping comments please see Appendix A.

1. ACEC Designation

Nominations for ACEC designation were received on all BLM lands within the Planning Area. The current goat Monitoring and Control Area within the northwest portion of the Planning Area was further nominated as a Research Natural Area (RNA), a type of ACEC. Most comments only expressed their support for ACEC designations without going into how the lands would meet the Relevance and Importance Criteria BLM uses to evaluate the lands for such designation. A few comments did give specific information that the BLM will consider when making the ACEC determination. One comment in opposition to an ACEC was received. It stated that "there is no compelling reason to nominate these areas as an ACEC."

a. Fish and Wildlife

The majority of comments discussed wildlife and their habitat, particularly goats, as the main reason to create an ACEC. Two comments contended that the "overwhelming majority of naturally occurring goat populations on BLM managed lands nationwide are located in the Haines/Skagway vicinity" thereby making them more than locally significant. Many more comments contend that goat populations around Haines and Skagway are on the decline due to helicopter-supported recreation.

While most comments focused on the direct impacts to certain wildlife, some comments focused on the predator/prey relationship and the effects helicopter supported recreation may have on that balance. As an example, a comment said "The Monitoring and Control Area is also in close proximity to the Alaska Chilkat Bald Eagle Preserve, home to the world's largest gathering of bald eagles. Eagles feed on goat carrion. Therefore, protecting goat populations from impacts associated with helicopter-supported recreation in the vicinity of the Bald Eagle Preserve is relevant, important, and more than locally significant."

Goats were also mentioned as an important species for local hunters as well as an economic species for both guiding services and tourist viewing.

In addition to goats, bears, wolverines and eagles were all mentioned as wildlife affected by helicopter-supported recreation activities in the Planning Area and suggested as meeting the importance criteria for creating an ACEC.

b. Cultural

One comment referred to the importance of goat wool as a resource for traditional blankets made by Native weavers. "The Chilkat Tlingit's are historically recognized as master weavers of

Chilkat blankets from mountain goat wool. Creating an ACEC designation to protect the existing Monitoring and Control Area from impacts associated with helicopter-supported recreation would protect an important resource that has significant historic and cultural value in close proximity to the Chilkat Indian Village of Klukwan."

c. Visual

One comment nominated two ACECs within the Planning Area because of their "significant scenic…resources." The two significant BLM-managed blocks of land in the Planning Area were the areas nominated.

d. Subsistence

Several comments discussed the importance of goats in the Haines Block as a potential food source for local residents.

2. SRMA Designation

Comments varied on whether or not the SRMA designation in the Planning Area should be kept. Many comments appeared to not know that a SRMA was already designated in the Ring of Fire RMP and that this Supplement is looking at whether or not to retain the designation.

a. Recreation and Visitor Services

Most of the comments received expressed concern about helicopter-assisted, commercially-guided landing tours and their various effects to wildlife, habitat, and lands and resources including those managed by other agencies. Many comments recommended that permitted commercial helicopter-supported tourism not be allowed on BLM-managed lands in the Planning Area. One comment recommended that "the flight corridor along the Dyea and Chilkoot Trail unit of the park not be used for helicopter assisted sight-seeing, especially if other suitable alternatives can be identified." Another suggested that no helicopter activity should be permitted until baseline studies of helicopters effects on wildlife are done.

Two comments were received in support of the SRMA designation. One comment recommended that BLM "apply SRMA status liberally throughout Haines watersheds whenever and wherever adequate baseline data is insufficient." The other comment is supportive of the existing designation because of the "high level of recreational use in the area" and that it meets the objectives and policies of the State of Alaska's Northern Southeast Area Plan.

b. Comprehensive Trails and Travel Management; Access

One comment was received on OHV use in the Planning Area. The comment focused on climate change and how it may compound the effects of OHV use on trails in the Planning Area.

3. Other

a. Water Resources/Water Quality

Several comments were received regarding water resources and quality in the Ring of Fire RMP Amendment Planning Area. Ensuring compliance with the Clean Water Act (CWA) was mentioned. Water quality degradation of water bodies is a primary concern with special emphasis on public drinking water supplies. One comment expressed concern on the effects

climate change may have on water resources. It was recommended that BLM consider the implications that landscape level change may have on the commitment of water resources and the short and long term health of aquatic systems.

b. Wetlands and Riparian Areas

One comment was received regarding wetlands and riparian areas. In particular compliance with the CWA Section 404 requirements which regulate discharge of dredge or fill material into waters of the U.S., including wetlands and other special aquatic sites.

c. Soil

Soils were mentioned in several comments. One comment acknowledged that the melting of permafrost "is known to cause significant changes in the landscape, from thermokarsts across the landscape slumping into rivers to the expansion and loss of water bodies." This comment encouraged BLM to "include plans for better understanding permafrost and soils and to seek funding for such surveys, and ultimately, to incorporate this information into land management planning." Concern about the potential impacts OHV use may have on the landscape and trails in particular was expressed.

d. Vegetation

Several comments discussed vegetation resources in the Planning Area. One comment talked about vegetation being affected by climate change and requested that BLM establish migration corridors to "allow species movement and vegetation shifts among islands of suitable habitat."

e. Wilderness Characteristics

One comment suggested that BLM evaluate lands within the Haines Planning area for potential Wilderness designation.

f. Climate Change

Two comments were received regarding climate change. One comment stated that the "problems of anthropogenic climate change must be addressed at the source if we are to preserve a physically and socially acceptable existence. No new development should be contemplated that does not anticipate zero net emissions."

Another comment suggested that BLM make the issue of climate change a priority and incorporate it into all planning and management strategies. Specifically, the comment stated that the following points of discussions should be incorporated into the Ring of Fire Supplemental EIS:

1) Provide training on climate change and variability for all resource managers;
2) Consider climate change and variability as a component of long-range management plans and strategies, as well as prioritizing adaptive management;
3) Implement monitoring and assessment programs for impacts to wildlife and wildlife habitats expected to be sensitive to climate change;
4) Educate the public about climate change and its effects on Alaska public lands and resources;
5) Establish and maintain migration corridors that allow species movement and vegetation shifts among islands of suitable habitat;

6) Increase buffer zones around identified important habitat in order to increase options for species under various climate change scenarios;
7) Protect riparian and wetland communities to promote resilience of these important and susceptible habitats;
8) Make the reduction and elimination of human-induced synergistic impacts a top priority for land and resource management.

g. Minerals

One comment was received regarding mineral resources. It stated that they felt the Ring of Fire RMP provided adequate resource protections and opportunities for access to state lands and mineral resources and development of BLM mineral resources.

h. Land and Realty

One comment was received regarding access to non-federal lands. It requested that this plan ensure that access is provided to non-federal lands through BLM lands.

i. Planning

Comments received about planning had to do with BLM acknowledging and/or adopting plans or management intent of other land owners surrounding BLM lands. One comment pointed out that the State of Alaska had prepared a plan for state-selected lands in the area and requested that BLM adopt the State's management intent for all state-selected lands (nearly all BLM lands in the Haines Block). Another comment requested that BLM manage lands adjacent to the Park Service lands in a manner that would provide a "buffer" to Park lands.

j. Studies and Data Gaps

All comments received regarding the need for studies focused on the effects to goats and other wildlife from helicopter supported activities. The following comment is a representative sample of that belief, "After years of issuing helicopter landing permits without understanding the ramifications to wildlife (particularly goats, brown bears, and wolverine), BLM should prioritize doing the necessary research." Many of the comments went on to identify the monitoring and control area as the "last remaining area" without impacts from helicopter supported commercial activities and how important a control area in determining "what impacts are related to helicopter disturbance vs. background environmental conditions such as heavy snowpack, predation etc."

One comment stated that an "assessment of unique plant species" is needed in the Planning Area. Because without it "there is no way of ascertaining whether or not the Monitoring and Control Area would also qualify for ACEC designation under BLM 1613.1.11A(3)."

One comment stated that BLM should seek funding for soil surveys in order to better understand permafrost and soils in the Planning Area.

C. Decisions to be Made

The Ring of Fire RMP Amendment will make the following decisions:

1. Whether to designate any BLM lands in the Haines Planning area as an Area of Critical Environmental Concern.
2. Whether to keep the Special Recreation Management Area designation within the Haines Block.
3. If the SRMA is retained, determine the Recreation Management Zones and adjust the boundary of the SRMA if necessary.
4. Whether to keep the goat Monitoring and Control Area.
5. Whether the current Required Operating Procedures and Stipulations for Special Recreation Permits is adequate.

D. Issues Raised During Scoping that Will Not Be Addressed

Wilderness Designation and access issues are outside the scope of this planning effort and will not be addressed. Both topics have been addressed in the Ring of Fire RMP.

The BLM will manage the river segments within the Planning Area which have been determined to be eligible for inclusion in the Wild and Scenic Rivers System to protect the identified Outstanding Remarkable Values pursuant to the guidance found for interim management in BLM Manual 8351.32 Classification and Protection Management. Wild and Scenic River suitability determinations were deferred in the Ring of Fire Approved RMP until the ownership patterns within the Planning Area are better defined. This effort is outside the scope of this RMP Amendment and will be determined in a future RMP Amendment.

The issue of climate change was recognized and previously addressed in the Ring of Fire RMP in Chapter IV, page 4-135. The Ring of Fire RMP says,

> Climate change is both a Reasonably Foreseeable Future Action that can result in additive and synergistic effects with BLM management actions in the Ring of Fire Planning Area, and can also be affected by management actions taken. Evidence is emerging that climate warming in Alaska can be linked to changes occurring in the structure and function of terrestrial ecosystems throughout the State. Since the 1950s, Alaska has warmed by an average of four degrees Fahrenheit (USEPA 2005).

The assessment of the impacts of climate change is in its formative phase, and it is not yet possible to know with confidence the net impact of such change. However, observed changes include warming of permafrost throughout the State, the decrease in area of closed-basin lakes in southcentral Alaska, increased water temperature affecting anadromous fish habitat, and the altering of the ranges of some bird species. Climate change has also been linked to changes in disturbance regimes like fire and insect outbreaks in southcentral Alaska (McGuire 2003).

“Development of oil and gas resources would produce some of the common greenhouse gases, primarily as a result of power requirements and fuel consumption, activities that produce CO. Because climate change must be viewed from a global perspective, the magnitude of the emissions potentially contributed by oil and gas activities in the Planning Area needs to be viewed in that context. The incremental contribution of greenhouse gases resultant from any of

the alternatives in the Ring of Fire PRMP/FEIS would be minor when compared to total greenhouse gas contributions from sources outside of BLM actions in the Planning Area."

The Ring of Fire RMP Amendment/Supplemental EIS is revisiting administrative decisions. Climate change will be analyzed in this Supplemental EIS only to the extent that it is affected by decisions that are developed in the plan. Proposed recreation decisions and possible effects that may result in climate change will be viewed in a global perspective, as directed in the Ring of Fire RMP. Considerations of effects from other uses and activities that may or may not result in climate change are outside the scope of this planning effort.

E. Valid Existing Management to Be Carried Forward

In addition to the Ring of Fire RMP that was finalized and signed in March 2008, other management policies, Federal Regulations, and guidance exist for the Ring of Fire RMP Amendment Planning Area. The Ring of Fire RMP Amendment will only amend certain parts of the Ring of Fire RMP including ACEC determinations, Special Recreation Management Area designation, and Monitoring and Control Area designation. The Ring of Fire RMP Amendment will evaluate the current Required Operating Procedures and Stipulations for Special Recreation Permit holders and may revise some or all of them.

III. PLANNING CRITERIA

The planning criteria were included in the RMP Amendment preparation plan.

Planning criteria are based on the applicable laws and regulations providing agency guidance as well as on consultation and coordination with all participating agencies and entities. The criteria are also based on the pertinent information and the professional judgment of the planning team. Planning criteria may be amended, supplemented or changed as the need dictates. The Ring of Fire RMP Amendment Planning Criteria are listed below.

1. Multiple-use by the general public is the primary function of BLM administered lands managed within the Haines Planning Area.
2. Decisions will be made for the surface lands administered by the BLM in the Haines Block.
3. Decisions will be limited to those related to recreation (i.e., SRMA/ERMA, special recreation permits), wildlife, travel management, and special designations (i.e., ACECs).
4. Valid existing rights will be protected throughout the Planning Area.
5. Plans and policies of other federal land managers, land owners and State and local governments in and adjacent to the Haines Block will be considered, and BLM's decisions will be consistent with other land manager's and owner's decisions to the degree reasonably practical within existing laws.
6. The BLM will encourage and participate in collaborative planning and management. BLM will provide opportunity for input from other federal agencies, the State of Alaska, Native governments and Tribal members, local government, adjacent private land owners, local residents and other affected and/or interested parties.

7. Identification, designation, and protection of a Special Recreation Management Area (SRMA) and ACEC (area of critical environmental concern) will receive full consideration.
8. The BLM will comply with all relevant laws, statutes, regulations, manuals, and handbooks.
9. Subsistence uses will be considered and adverse impacts minimized in accordance with Section 810 of ANILCA.
10. Resource management plans prepared by BLM will conform to the Bureau's H-1601-1 Land Use Planning Handbook, Appendix C, Program-Specific and Resource-Specific Decision Guidance and supplemental program guidance manual for ACECs
11. The plan will be consistent with the Alaska Land Health Standards.
12. Designations for Off-Highway Vehicles for all public lands within the Planning Area will be completed according to the regulations found in 43 CFR 8342.
13. Areas of proposed ACEC designation will meet the criteria found in 43 CFR 1610.7-2.

Alternatives for the use and protection of BLM administered lands will be developed in this planning process. The alternatives will reflect the issues identified and will consider a range of opportunities for:

1. recreation objectives, opportunities, and uses;
2. protection of crucial habitat for priority wildlife species; and
3. SRMA/ERMA reevaluation, designation, and delineation
4. Evaluate for potential special management areas (e.g., RNAs, ACECs)-designate and delineate boundary if applicable

IV. SUMMARY OF FUTURE STEPS IN THE PLANNING PROCESS

1. Analyze the Management Situation. Preparation of an Analysis of the Management Situation (AMS) is the next step in the process after scoping. The AMS describes the current condition and trend of resources in the Planning Area, current BLM management of those resources, and opportunities to resolve issues identified during scoping. This analysis provides the baseline reference for the development and evaluation of alternatives. The AMS for the Ring of Fire RMP Amendment Planning Area is being developed and should be completed fall 2009.
2. Formulate Alternatives. Alternatives will be formulated by identifying a range of resource objectives and management practices that will address the issues. A no-action alternative will also be included. Alternatives will be developed for the Ring of Fire RMP Amendment in the fall of 2009.
3. Analyze the Effects of the Alternatives. Once the alternatives are developed, the effects of each alternative on the biological, physical, social, and economic environment will be analyzed in the fall of 2009.
4. Issue the Draft RMP Amendment/Supplemental EIS. This step will begin with the release of the draft RMP Amendment/Supplemental EIS for a 90-day public review period. Public meetings will be scheduled during this time. A notice of availability will be published in the Federal Register. The public comment period will begin with publication in the Federal Register.

5. Issue the Proposed RMP Amendment/Supplemental EIS. Based on the information contained in the draft RMP Amendment/Supplemental EIS and public comment received, the BLM will select a proposed alternative and present it to the public as the Proposed RMP Amendment/Final Supplemental EIS. This step will include the public notices of the document's availability, the distribution of the document, and a 30-day protest period on the final document.
6. Issue the Record of Decision and Approved RMP Amendment.

Appendix A: Scoping Comment Summary

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
ACEC		I wish to strongly support an Area of Critical Environmental Concern designation for the area "Haines Block."	6, 7, 9	Yes	The lands in the planning block will be evaluated against the ACEC planning criteria and a determination of whether to designate an ACEC will be made.
		Protect the "control" area by not putting it into a SRMA, but rather an ACEC in recognition of the significance of a mt goat resource that is currently protected from helicopter landings.	2, 10, 14, 17, 19, 28, 29	Yes	See response to above comment.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		My review of the data presented indicates that there is no compelling reason to nominate these areas as an ACEC. A.) There are no locally significant qualities that give this area special concern. B.) There are no fragile, sensitive or threatened circumstances. C.) There are no topics warranting protection to satisfy national concerns. D.) No proposed management by the BLM using normal land management practices will cause a threat to human life or property.	5	Yes	The lands in the planning block will be evaluated against the ACEC planning criteria and a determination of whether to designate an ACEC will be made.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
	Scenic	The NPS supports designation of the BLM tract adjacent to Glacier Bay National Park and Preserve as an Area of Critical Environmental Concern (ACEC). This area contains significant scenic value and wildlife resources. ACEC designation would complement the park and provide an additional level of protection to lands adjacent to the park.	33	Yes	Lands within the Planning Block will be evaluated for potential ACEC designation.
		The NPS also recommends that the northern tract be considered for ACEC designation due to its scenic and wildlife resources	33	Yes	See above.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
	Cultural	Relevance: The Chilkat Tlingits are historically recognized as master weavers of Chilkat blankets from mountain goat wool. Creating an ACEC designation to protect the existing Monitoring and Control Area from impacts associated with helicopter-supported recreation would protect an important resource that has significant historic and cultural value in close proximity to the Chilkat Indian Village of Klukwan. Relevance: The Monitoring and Control Area is also in close proximity to the Alaska Chilkat Bald Eagle Preserve, home to the world's largest gathering of bald eagles. Eagles feed on goat carrion. Therefore, protecting goat populations from impacts associated with helicopter-supported recreation in the vicinity of the Bald Eagle Preserve is relevant, important, and more than locally significant.	16	Yes	Information provided will be taken into account when BLM analyzes areas for potential ACEC designation.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		Relevance: Lastly, and of particularly significant relevance, is that the overwhelming majority of naturally occurring goat populations on BLM managed lands nationwide are located in the Haines/Skagway vicinity. (See LCC's original ACEC nomination letter). Nearly all naturally occurring goat populations on BLM lands in the Lower 48 are gone; therefore, BLM is required to "consider the relative scarcity." (43 U.S.C. 1712 Section 202(c)(6)). This makes the Haines/Skagway goat population a significant wildlife resource that is more than "locally significant."	16, 31		See above.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		Importance: We contend that this resource is more than locally significant due to the decline in naturally occurring goat populations on BLM managed lands elsewhere, and the close proximity of the Monitoring and Control Area to the Alaska Chilkat Bald Eagle Preserve and the weavers of Chilkat Blankets.	16		Information provided will be taken into account when BLM analyzes areas for potential ACEC designation.
		Importance: Haines/Skagway goat populations are currently threatened by acknowledged adverse impacts of "unspecified magnitude" from the increasing use of helicopters on and over goat habitat.	16		Information provided will be taken into account when BLM analyzes areas for potential ACEC designation.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		There is also evidence that declines predicted by these studies are indeed occurring in the Haines/Skagway area: "1999: severe winter weather. Helicopter tourism/glacier landing exposure area suffered significant failure of reproduction and population decline whereas control areas stayed about the same as the previous four years. There is a possibility of cumulative stress from pre-winter tourism activities resulting in enough of a body condition deficit that harsh winter stresses resulted in at least a one season reproductive failure and adult mortality above that experienced in control areas. There appears to be declines or abandonment in use of kidding areas adjacent to landing sites in at least one situation."	16		Information provided will be taken into account when BLM analyzes areas for potential ACEC designation.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		Importance Criteria: Bald eagles are predators that rely on goat carrion and young lambs as a food source. Successful eagle nesting "is dependent, in part on available carrion and high protein intake for successful breeding and hatching success." (Id). Healthy goat populations are especially important for nesting eagles in the Haines area because of the proximity of BLM lands to the Alaska Chilkat Bald Eagle Preserve (CBEP), home to the world's largest gathering of bald eagles, with a high density of nesting eagles. Again, the proximity of the CBEP to the Monitoring and Control Area, the national significance of the CBEP, and the dependence of eagles on carrion, make the goat resource more than locally significant.	16		Information provided will be taken into account when BLM analyzes areas for potential ACEC designation.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
ACEC – RNA		Establish a RNA to do the long-term studies needed to determine impacts to the goat and other wildlife	2, 12, 17	Yes	The lands in the planning block will be evaluated against the ACEC planning criteria and a determination of whether to designate an ACEC will be made.
		The BLM lands located North of Klukwan to the Canadian Border need to be managed as an NRA (sic).	3	Yes	See above
		I further support including the goat monitoring area in a Research Natural Area (RNA) designation.	7, 24, 25, 27	Yes	The lands in the planning block will be evaluated against the ACEC planning criteria and a determination of whether to designate an ACEC will be made.
		This (RNA) designation would increase the likelihood of obtaining funding for research on the obvious impacts of landing large noise producing machines in the few remote areas the mountain goats still call home.	7	No	The likelihood of obtaining funding is not a criteria used in designating an ACEC/RNA. BLM is mandated to use the criteria set forth in 43 CFR 1610.7-2 Designation of areas of critical environmental concern.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		Establishing an Area of Critical Environmental Concern/Research Natural Area (ACEC/RNA) would be the obvious first step (to understanding ramifications to wildlife from helicopter activity).	11, 17	No	Establishment of an ACEC/RNA does not necessarily mean that the studies needed to determine ramification to wildlife from helicopter activity would be funded.
		The existing Monitoring and Control Area needs to be retained and placed in an Area of Critical Environmental Concern and managed as a Research Natural Area. My reasons for this action are as follow. The existing Monitoring and Control Area is the only significant remaining goat habitat in the Haines/Skagway area currently NOT impacted by helicopter landings. BLM has an obligation to protect it.	11, 12, 13, 15, 17, 20, 21, 22, 23	Yes	The lands in the planning block will be evaluated against the ACEC planning criteria and a determination of whether to designate an ACEC will be made.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		The current Monitoring and Control Area should be designated an ACEC and managed as a RNA… It is the perfect study area because near-by goat populations have been seasonally disturbed in varying intensities, by both summer and winter helicopter use. Since BLM continues to issue helicopter landing permits, the agency has a responsibility to determine impacts caused as a result of issuing permits. Opportunities for education are also a natural fit for the Haines Area. The Alaska Chilkat Bald Eagle Preserve has a mandate to provide continued opportunities for research and education. In addition to studying eagles in Haines, mountain goat research could occur as a result of creating a RNA. Closely situated areas created to protect goats and eagles would offer interesting and creative opportunities for public education.	16	Yes	The lands in the planning block will be evaluated against the ACEC planning criteria and a determination of whether to designate an ACEC will be made.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
	Habitat	The goat habitat is critical.	6	Yes	BLM will consider the amount and location of goat habitat during this Amendment and with any future Special Recreation Permit Applications.
		The public lands of the Upper Lynn Canal Area are both heavily used by helicopter-based recreation firms/users and are perhaps some of North America's finest habitat for mountain goats.	3	Yes	BLM will consider the amount and location of goat habitat during this Amendment and with any future Special Recreation Permit Applications.
		The Mountain Goat Monitoring and Control Area is an extremely important public lands area for the protection of habitat for mountain goats and other wildlife including wolverines and brown bears.	20	Yes	BLM is currently abiding by the Monitoring and Control Area. A determination of whether or not to keep it will be made through this planning effort.
		The mountains of Upper Lynn Canal contain some of the worlds premium mountain goat habitat.	22	Yes	Goat habitat will be taken into consideration during this amendment.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		The BLM has an obligation to enhance the habitat and populations of the Haines/Skagway goats; nationally, mountain goat populations are in decline due to a loss of habitat and increased human disturbance.1 1 1997 USDA Helicopter Landings in Wilderness EIS at 4-19	26	Yes	BLM will consider the amount and location of goat habitat during this Amendment and with any future Special Recreation Permit Applications.
		Unfortunately for the local mountain goat population they have little option in their choice of home and habitat. There is much debate about the acceptable level of noise pollution mountain goats can tolerate. This question remains unresolved even though a Monitoring and Control Area was established in 2002 to better understand mountain goat adaptability and limit landings in the Lynn Canal area.	28	Yes	BLM will consider the amount and location of goat habitat during this Amendment and with any future Special Recreation Permit Applications.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
Land, Land Use, and Access		Because ADNR Area Plans establish management intent for state-selected lands, we request that BLM adopt the management intent for state-selected lands from the area plans for these areas.	18	Yes	Noted.
		If there are any BLM lands adjacent to state land that are not state-selected, appropriate access should be maintained through these federal areas	18	No	Access is outside the scope of this planning effort.
		While helicopter-assisted recreation is increasing in our area, there are ample areas where these activities are permitted. We don't need to create more at the expense of advancing knowledge.	29	Yes	BLM is currently abiding by the Monitoring and Control Area. A determination of whether or not to keep it will be made through this planning effort.
Research/Monitoring	Data Gaps	A long term mngt plan must be based on detailed biological, physiological and economic aspects of each herd in each watershed of Haines.	4	Yes	Research needs will be identified during this planning effort.
		Not enough has been done to assess the effect of helicopters on goat habitat.	10	Yes	BLM will assess what is known about the effects of helicopters on goat habitat.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		Studies of long and short-term impacts to goats from helicopter activity are long overdue. After years of issuing helicopter landing permits without understanding the ramifications to wildlife (particularly goats, brown bears and wolverine), BLM should prioritize doing the necessary research.	11, 12, 23	Yes	Research needs will be identified during this planning effort.
		there is very little long term reliable info on what the effects of helicopters have on goats. This area seems to be one of the few places that information could be attained and it would be irresponsible to change that.	15	Yes	Research needs will be identified during this planning effort and a determination of whether or not to keep the monitoring and control area will be made.
		We have incrementally permitted more and more helicopter tours without having a baseline of protection or understanding of limits needed to protect goats and goat habitat.	21	Yes	Research needs will be identified during this planning effort.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		Without a control, it is virtually impossible to say what impacts are related to helicopter disturbance vs backgound environmental conditions such as heavy snowpack, predation etc. Such knowledge is essential to understanding where and when it may be appropriate to allow helicopter usage or similar disturbances.	22	Yes	BLM will make a decision on whether or not to keep the monitoring and control area through this planning process.
		Studies have been done to quantify the behavioral response of mountain goats to helicopter traffic, but we need studies that go beyond the temporary observation of a limited number of goats. While behavioral studies provide data about the immediate impact of helicopters, what is really needed are studies on how helicopter traffic affects the long-term survivability of mountain goat populations.	27	Yes	BLM will consider all known data during the planning process.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		The area contains glaciated landforms and to date there has been no assessment of unique plant species. Because no assessment has been done there is no way of ascertaining whether or not the Monitoring and Control Area would also qualify for ACEC designation under BLM 1613.1.11A(3).	16	Yes	All ACEC criteria will be considered.
Monitoring and Control Area		BLM's priority must include securing areas that are unused by helicopter recreationists, so that one day studies can be done to assess impacts. BLM and other state agencies will never be able to assess impacts to m. goats if it does not have sizable "control" area.	3	Yes	BLM will make a decision on whether or not to keep the monitoring and control area through this planning process.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		If you doubt that mountain goats are impacted by the unnecessary landing of helicopters in their habitat then it is even more vitally necessary for the mountain goat Monitoring area to be protected by enclosing it in an area of critical environmental concern. The goat monitoring area should absolutely not be included in the SRMA if the SRMA is to be retained. It must be kept off limits to any helicopter landings in all seasons.	7	Yes	BLM will make a decision on whether or not to keep the monitoring and control area through this planning process.
		It takes a non-impacted control area to study these effects and I see it as a mistake to give up the one already in place that can be used in future years and future studies.	15	Yes	BLM will make a decision on whether or not to keep the monitoring and control area through this planning process.
Recreation		No helicopter activity should be permitted. Baseline studies for a period of years are needed now. Without these, no consideration of disruption by helicopters should be allowed.	6	Yes	

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		I support winter heli ski industry in Haines – but not at the expense (impact, stress, disturbance, etc.) of these extremely valuable mtn goat herds.	4	Yes	BLM will re-evaluate the terms and conditions it puts on all recreation permits as part of this planning effort.
		Please apply SRMA status liberally throughout Haines watersheds whenever and wherever adequate baseline data is insufficient.	4	Yes	
		In addition to summer helicopter tours on BLM lands from Skagway, increasing levels of heli-skiing activities are currently permitted on BLM and state lands in the Haines area.	16		
		The State [of Alaska] is supportive of the existing SRMA designation because of the high level of recreational use in the area and the objectives and policies of the Northern Southeast Area Plan.	18	Yes	BLM will re-evaluate the SRMA designation in the Haines Block and will take into consideration how surrounding non-BLM lands are managed.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		The NPS is concerned about helicopter-assisted, commercially-guided landing tours adjacent to and crossing the park's boundary. NPS recommends that permitted commercial helicopter use be prohibited in this area (GLBA).	33	Yes	Noted.
		Because of the potential for impacts to park resources and values the NPS recommends that the flight corridor along the Dyea and Chilkoot Trail unit of the park not be used for helicopter assisted sightseeing, especially if other suitable alternatives can be identified	33	Yes	Noted.
Wildlife		Due to elevations of BLM lands, my principal concern for management plan by BLM concerns proper protection and management of the mountain goat populations in the Haines region.	4	Yes	Noted.
		These (mtn goat) populations are World Class.	4	Yes	

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		Helicopter recreation will impact the goat population and should not be allowed to increase in any way.	7	Yes	
		Recreational activities in this block would certainly impact wildlife populations negatively.	9	Yes	
		In other parts of the world, it's become clear that, over time, stress from helicopter tours has had negative impacts on wildlife, for example contributing to the endangerment of mountain caribou in British Columbia.	21	Yes	BLM will consider existing data regarding effects that helicopters have on wildlife in the Haines Block.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		Research and monitoring are necessary because Haines/Skagway goat populations are currently threatened by acknowledged adverse impacts of "unspecified magnitude" form the increasing use of helicopters inside and over goat habitat. Specific scientific concerns about impacts to mountain goats include: displacement from prime habitat, acute or chronic reduction in foraging efficiency resulting in nutritional deficiency, reproductive failure, and increased vulnerability to predation. (1995 BLM and USDA EA for Helicopter Landing Toursin the Skagway and Haines Area, pages 3-12 and 3-13).	31	Yes	See above.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		Wolverine populations may also be at risk: "Wolverine natal dens are typically located on the specific kind of areas proposed for heliskiing. Wolverine populations are never considered abundant and natal dens are sparsely distributed." (Id).	16	Yes	See above.
Miscellaneous		suspend all existing activity that may impact wildlife population until you acquire the needed means (to conduct studies on impacts).	19		
		require user groups to pay for the necessary comprehensive research and monitoring, analyze the results and then permit activities that pose no threat the continued health and welfare to species and habitat of concern.	19, 20		

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		These herds are enjoyed by recreationists and hunters alike. They help to support a valuable guiding industry, and though not agency listed as a subsistence specie, goats are certainly utilized as such by a number of local area hunters.	22	Yes	
		We and our neighbors depend on mountain goats as a potential food source.	29		
Climate Change		We recommend that the BLM take this opportunity to identify and remedy the inadequacies through this SEIS process for recreation, wildlife, travel, habitat management and ACEC and SRMA designations – all within the scale of review for the SEIS. (In regards to Climate Change).	26		

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		We encourage the SEIS to include plans for better understanding permafrost and soils and to seek funding for such surveys, and ultimately, to incorporate this information into land management planning.	26	No	Understanding permafrost and soils is outside the scope of this SEIS. BLM is in the process of obtaining funding for soil surveys outside of the Planning Area and agrees with the importance of such studies.
		The BLM needs to consider the impacts of climate change on subsistence resources and practices. Changes in habitat within and beyond BLM managed lands are predicted to stress all of the wildlife, waterfowl and fish populations that serve as subsistence resources. Some populations may increase in abundance within the Planning Area while others may later their migration and be unavailable. We encourage the BLM to consider Wilderness designation and National Wild and Scenic River Status as tools which can help wildlife populations adapt in a less disturbed environment during climate change while insuring subsistence access to needed resources.	26	No	There is no indication of changes to subsistence in the Planning Area. BLM will continue to monitor the effects climate change may have on subsistence issues and be responsive when they do arise. Wilderness designation and National Wild and Scenic River Status are outside the scope of this planning effort.

Resource Area	Issues	Comment	#	Addressed in EIS?	Response (does not support or refute comment)
		The problems of anthropogenic climate change must be addressed at the source if we are to preserve a physically and socially acceptable existence. No new development should be contemplated that does not anticipate zero net emissions.	30		

COMMENT NUMBER KEY

#	Name	Address
1	Jean Public	Florham Park, NJ
2	Nancy Berland	Haines, AK
3	Burl Sheldon	Haines, AK
4	Ray Staska	Haines, AK
5	Nicholas Van Wyck	Anchorage, AK
6	Peter Goll	Haines, AK
7	Sherrie Goll	Haines, AK
8	JoAnn Ross Cunningham	Haines, AK
9	Laurie Dadourian	Haines, AK
10	Bob Andrews	Haines, AK
11	Bruce Baker	Auke Bay, AK
12	Tim McDonough	Haines, AK
13	Ann Myren	Haines, AK
14	Ron Jackson	Haines, AK
15	Mardell Gunn	Haines, AK
16	Lynn Canal Conservation	Haines, AK
17	Irene Alexakos	Haines, AK
18	State of Alaska	Anchorage, AK
19	Kip Kermoian	Haines, AK
20	Patricia Kermoian	Haines, AK
21	Sue Libenson	Haines, AK
22	Mike Van Note	Haines, AK
23	Thom Ely	Haines, AK
24	Eric Holle	via email, no address
25	Katey Palmer	Haines, AK
26	Alaska Wilderness League	Anchorage, AK

#	Name	Address
27	Carolyn Weishahn	Haines, AK
28	Ben Kirkpatrick	Haines, AK
29	The Zeiger Family	Haines, AK
30	James M. Byrnes	Eagle River, AK
31	The Wilderness Socitey	Anchorage, AK
	Sierra Club Alaska Chapter	
	Defenders of Wildlife	
	Alaska Quiet Rights Coalition	
	Alaska Wildlife Alliance	
	Alaska Wilderness League	
	Alaska Center for the Environment	
	Southeast Alaska Conservation Council	
32	U.S. Environmental Protection Agency	Seattle, WA
33	National Park Service	Anchorage, AK

APPENDIX B: SPECIAL RECREATION MANAGEMENT AREA MATRIX, ALTERNATIVE A

Alternative A, Haines Block Special Recreation Management Area

Primary Market Strategy	Primary Market
Undeveloped	Tourists seeking organized/guided excursions provided by commercial recreation businesses for the purpose of sightseeing in a remote and undeveloped natural setting.

NICHE

The primary niche for this area involves organized flight excursions provided by commercial recreation businesses along with limited opportunities for independent recreation use and exploration.

MANAGEMENT OBJECTIVES

The established management objectives for the Haines SRMA includes: 1) manage the SRMA to maintain a diversity of opportunities, including designated Recreation Opportunity Spectrum classification, 2) maintain the area for designated Visual Resource Management classification, 3) develop further guidance for management of OHV use, 4) manage commercial recreation activities to maintain the quality of user experience, avoid adverse effects on wildlife resources, and minimize disturbance to adjacent communities, and 5) work collaboratively with other landowners in the area, recreation users, and adjacent communities to develop management strategies and define enforcement responsibilities.

PRIMARY TARGETED OUTCOMES

Activities

Primary:
- sightseeing
- photography

Secondary:
- hiking
- camping
- hunting
- ice climbing

Experiences

Primary:
- experience of a natural landscape
- improved appreciation of nature's splendor
- enjoying having access to natural landscapes

Secondary:
- escaping crowds
- experiencing adventure
- relishing group affiliation and togetherness
- enjoying closeness of friends and travel companions

Benefits

Personal:
- greater connection with nature
- improved mental health
- enjoy risk-taking adventure
- enjoying participating in group outdoor events
- environmental learning

Community/Social:
- heightened awareness of natural world
- reduced social isolation
- greater interaction with visitors from different cultures

Environmental:
- increased awareness and protection of natural landscape

Economic:
- improved local economic stability
- more positive contributions to local-regional economy
- increased local tax revenues from visitors
- increased local job opportunities
- enhanced ability for visitors to find areas providing wanted recreation experiences and benefits
- maintenance of community's distinctive recreation-tourism market niche or character
- increased property values

SETTING CHARACTER

Physical	Social	Administrative
Remoteness: The large remote area contains no roads or trails. The closest	**Contacts:** Concentration of users, other than organized excursions, is rare	**Mechanized Use:** Access to the roadless area occurs through fixed-wing aircraft

road access to the SRMA is at the end of a gravel road located approximately five miles away. **Naturalness:** The large area is an unmodified natural environment. Sights and sounds of any road system are non-existent. **Facilities:** None.	and evidence of other users is minimal. **Group Size:** Group size from organized excursions usually averages less than 20 people. **Evidence of Use:** Landscape alterations are generally present and may attract attention. Well-worn soils and vegetation, often gravel surfaced for erosion control.	and helicopters. **Management Controls:** Terms and conditions are developed and enforced for Special Recreation Permits authorized for organized excursions. There are no on-site controls with minimal regulatory constraints for dispersed recreation use. **Visitor Services:** The area contains for facilities or any type of visitor services. Office personnel are located over 500 miles by air and over 730 miles by road and therefore are not available.

IMPLEMENTATION FRAMEWORK

Management	• Provide users of this area with a front country experience through: o Providing readily available access by potentially constructing roads and/or trails. o Developing hiking and camping facilities such as trailheads, roads, trails, interpretive and informational signs, and camp sites. o Providing on-site visitor services by office personnel. o Providing family and group opportunities for local community. o Providing off-highway vehicle opportunities. o Developing regulatory constraints and area rules for visitor use. o Increase law enforcement presence.
Marketing	o Provide outreach to market the area to the tourism industry as well as to locals industry seeking a front country experience by ensuring accurate information supporting stated resource management area objectives. o Develop an established relationship with stakeholders with an emphasis on achieving and maintaining the primary benefits; greater connection with nature, improved mental health, enjoy risk-taking adventure, enjoying participating in group outdoor events, and environmental learning.
Monitoring	• Monitor and evaluate visitor satisfaction, including niche decisions, targeted outcomes, and setting character decisions, based on stated recreation management area objectives.
Administrative	• Apply administrative actions as needed to maintain identified outcome experiences.. o OHV designation = limited motorized use o Travel Management Restrictions Allowed Uses: • All forms of non-motorized use are generally allowed, including horses and mountain bikes. • ATV's and UTV's with a 2000 pound Gross Vehicle Weight Rating (GVWR) or less on designated roads and trails only. Travel off of designated roads/trails allowed only to retrieve legally harvested game. • Roads and trails would be added as they are identified or designed and constructed by BLM in a sustainable fashion. • Winter use of snowmachines only when there is adequate snow cover, generally 6-12 inches or more, or a combination of snow and frost depth sufficient to protect the underlying vegetation and soil. . • Aircraft are generally unrestricted, unless the activities fall within the parameters of requiring a Special Recreation Permit. Construction or improvement of landing areas by permit only. Minimal clearing of rocks, downed logs and brush is allowed. o Manage as VRM class IV o Majority of area will be managed under the ROS class of *primitive*. o Minerals will not be withdrawn from entry. o SRP's will be issued in conformance with BLM guidance o New restrictions and/or visitor amenities could be developed for the purposes of site protection, visitor safety and enhancing recreational opportunities within a special management area.

APPENDIX C: 2012 LANDS WITH WILDERNESS CHARACTERISTICS INVENTORY

Lands with Wilderness Characteristics (Haines Block Area)

Introduction

Washington Office Instruction Memorandum No. 2011-154, 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 instruction memorandum (IM) contains current Bureau of Land Management (BLM) guidance and general procedures for conducting wilderness characteristics inventories under Section 201 of the Federal Land Policy and Management Act of 1976 (FLPMA). Managing the wilderness resource is part of the BLM's multiple use mission. Lands with wilderness characteristics provide a range of uses and benefits in addition to their value as settings for solitude or primitive and unconfined recreation.

The first step in the Lands with Wilderness Characteristics (LWC) process is to inventory the lands to determine which areas have wilderness characteristics. This narrative outlines the methods used and the results of an inventory for the areas around Haines and Skagway. The results of this report are also based on information collected during a BLM Preliminary Wilderness Inventory Study performed in 2003. The following are only relevant to inventory of public lands to assess their wilderness characteristics and should not be confused with managing of lands with wilderness characteristics.

Methodology

All public lands, including State and Native-selected lands, addressed in the inventory area of the proposed action were inventoried for wilderness characteristics. The inventory evaluated wilderness characteristics as discussed in Section 2(c) of the Wilderness Act of 1964 (16 U.S.C. 1131) and incorporated into the Federal Land Policy and Management Act (43 U.S.C. 1701 *et seq.*).

The criteria for determining wilderness characteristics are established by the IM indicated above. To be identified during the inventory process as having wilderness characteristics, lands must:

- Be a roadless area with over 5,000 acres of contiguous BLM lands;
- Be roadless of less than 5,000 acres of contiguous BLM lands where any of the following apply:

  -They are contiguous with lands which have been formally determined to have wilderness or potential wilderness values, or any Federal lands managed for the protection of wilderness characteristics. Such lands include: designated Wilderness, BLM Wilderness Study Areas, U.S. Fish and Wildlife Service area Proposed for Wilderness designation, U.S. Forest Service Wilderness Study Areas or areas of Recommended Wilderness, and National Park Service (NPS) areas Recommended or Proposed for Designation.

  -It is demonstrated that the area is sufficient size as to make practicable its preservation and use in an unimproved condition.

-Any roadless island on the public lands.

- Generally appear to have been affected primarily by the forces of nature, and any work of human beings must be substantially unnoticeable, and;
- Have outstanding opportunities for solitude or a primitive and unconfined type of recreation.

Within this inventory boundary, lands were not buffered or setback from the physical edge of the imprint of man or any unnatural portions of the area. Land with wilderness characteristics may immediately abut land whose own character precludes wilderness characteristics. For example, land immediately adjacent to a road may be classified during inventory as possessing wilderness characteristics. The fact that the sight or sound of the road may detract from the wilderness experience on adjacent lands does not, in and of itself, render those lands as not possessing wilderness characteristics.

As long as the wilderness characteristics criteria listed above are met, the following man-made features, activities and uses consistent with the Alaska National Interest Lands Conservation Act (ANILCA) may occur on lands having wilderness characteristics: trails, trail signs, bridges, fire breaks, pit toilets, fisheries enhancement facilities, fire rings, historic properties, archeological resources, hitching posts, snow gauges, water quality and quality measuring devices, research monitoring markers and devices, minor radio repeater sites, air quality monitoring devices, fencing, spring developments, barely visible linear disturbances, and stock ponds. The critical question to consider is not whether these features, activities or uses exist in the relevant tract, but whether they singly or in combination with other factors have altered the character of the land from one that "generally appears to have been affected primarily by the forces of nature" and precludes the land from having "outstanding opportunities for solitude and/or a primitive and unconfined type of recreation." In general, substantial active or remnant evidence of mining or oil and gas extraction facilities, above-ground pipelines or power lines, intensive recreational developments, and similar intrusions on the land may render such lands as inappropriate for identification in the inventory stage as having wilderness characteristics. The inventory process utilized in-house expertise from staff specialists, photography from over-flights, as well as existing land use planning information (Ring of Fire Resource Management Plan, 2008) to assess whether or not specific lands possess wilderness characteristics.

Current Conditions: Presence or Absence of Wilderness Characteristics

Area Unique Identifier: Haines/Skagway Acreage: North block 251,873, South block 66, 239

1) Are the areas of sufficient size? Yes

Description: Both inventory blocks within the Haines Block Planning Area are significantly more than 5,000 contiguous roadless acres of BLM land (Map 2, Section 7.0). The Planning Area is bounded on the north and west by Canada, to the south by Glacier Bay National Park and Wilderness, and to the east by the Tongass National Forest. The inventory area consist of approximately 320,000 acres of BLM encumbered (State selected) lands within the area of

Skagway and Haines. State selections within the Planning Area are not identified with any "priority" selection ranking, with no pending land conveyance interests or actions. The inventory area contains one Native allotment on BLM lands, located near the headwaters of the Chilkat River near the Canadian Border. There is no recorded Federal or state mining claims or prospecting sites located on BLM lands within the Planning Area. There are also no BLM-managed wilderness areas or wilderness study areas within the inventory area.

2) Does the area appear natural? Yes

Description: The inventory area contains two contiguous/un-fragmented parcels of BLM lands. Both blocks area is highly natural in appearance, having been primarily affected by the forces of nature, and contains no observed substantially noticeable evidence of people's work. There are no roads or developed trails within or adjacent to either inventory area. Human activities to the inventory area include temporary/seasonal permitted helicopter landings by commercial recreation providers. There are no other human-made features observed within either area. Overall, the inventory area retains its primitive character.

3) Does the area have outstanding opportunities for solitude? Yes

Description: The nearest active airstrip or airport that a visitor to the inventory area may be affected by is located 2 miles away in Skagway. Travel into the inventory area is limited to fixed-wing aircraft, helicopter, or by foot. The BLM currently authorizes helicopter landings for two commercial recreation providers who provide professional short-term/seasonal guided services and opportunities to visitors seeking glacier landing tours and ski trekking adventures in the primitive and undeveloped natural setting. Current permitted activities are administered to ensure resource protection with several use restrictions for maintaining the area's primitive recreation setting and established visual resource management objectives. Permitted activities are not authorized for any temporary structures or facilities. There are currently no other permitted activities or man-made developments on BLM lands within the two inventory areas.

4) Does the area have outstanding opportunities for primitive and unconfined recreation? Yes

Description: The landscape within the inventory area is remote and primitive, consisting of narrow ranges that rise from the surrounding valley floors and ocean water, and comprised of rugged terrain with jagged peaks towering over large icefields. The mountain peaks within the area reach elevations over 8,000 feet above seas level. These mountain ranges have terrain that is especially suited for air tours, such as glacier landing tours and guided ski trekking activities. The current recreation activities and uses provide for primitive and unconfined recreation opportunities that do not require developed recreation amenities or facilities.

Though seasonal weather patterns consist of short cool, wet summers and long cold winters, backcountry recreation and outdoor opportunities include: hunting, skiing, photography, wildlife viewing, and sightseeing. There are several species of animals in the region that are recreationally valuable and are sought after by visitors interested in sport hunting and photography. The established Visual Resource Management objective for this area is Class IV (Ring of Fire Record of Decision and Approved Management Plan, March 2008). The overall

size, remoteness and lack of any developments or amenities in the inventory area provide users with outstanding opportunities for primitive and unconfined recreation.

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

Description:

Geology/Natural Hazards

There are several sources of existing and potential natural hazards in the Planning Area. Flooding from glacial lake outbursts is a natural hazard that has occurred in the region in recent years. In 2002, a lateral moraine of the West Creek Glacier liquefied, causing debris to slide into a glacial lake located in front of the glacier's terminus. The debris displaced a large volume of lake water into West Creek, generating a tremendous flood that poured into the Klondike Gold Rush National Historic Park (KLGO) and the community of Dyea, AK.

Climate change has increased the rate of melting and receding of glaciers in the area, and subsequently has caused an increase in size of local glacial lakes and the weakening of the glacial moraines, which typically impound these lakes, to a point of failure. These failures are often catastrophic and are known as Glacial Lake Outburst Flood (GLOF).

The Nourse Moraine in the Planning Area impounds a large icy-blue proglacial lake known as Nourse Lake. The lake is estimated to occupy a surface area of 200 acres with a depth of 95 feet and spills over the moraine at two primary locations. The Nourse and Taiya River valleys were carved out by past glacial events and form the broad U-shaped valleys. Though the glaciers remain, they have significantly receded and mainly reside high in the mountains.

Other geological features associated with the natural landscapes of the Planning Area include rugged mountain peaks, glaciers, spires, high tundra, deep valleys, and wild rivers.

CONCLUSION: The area has wilderness characteristics and is identified as Land with Wilderness Characteristics (LWC).

Jeff Kowalczyk — Name

4/16/2012 — Date

/s/ — Signature

APPENDIX D: REQUIRED OPERATING PROCEDURES FROM THE RING OF FIRE RESOURCE MANAGEMENT PLAN RECORD OF DECISION (2008)

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ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
AO	Authorized Officer
BLM	Bureau of Land Management
CFR	Code of Federal Regulation
CHA	critical habitat area
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
FLPMA	Federal Land Policy and Management Act
ft	foot/feet
FWH	Fish and Wildlife Habitat
NHPA	National Historic Preservation Act
NPDES	National Pollution Discharge Elimination System
OHV	off-highway vehicle
PRMP	Proposed Resource Management Plan
ROP	required operating procedures
ROW	right-of-way
T&E	threatened and endangered
U.S.	United States
U.S.C.	United States Code
USEPA	U.S. Environmental Protection Agency
VRM	Visual Resource Management

1.0 INTRODUCTION

These required operating procedures (ROPs) and oil and gas leasing stipulations were developed through the Ring of Fire planning process. To be necessary and effective, ROPs and stipulations are based on sound science, current land patterns and uses, resource protection requirements, and are consistent with the requirements of the land use plan, regulations, and laws.

1.1 Required Operating Procedures

ROPs are requirements, procedures, management practices, or design features that the Bureau of Land Management (BLM) adopts as operational requirements. They would apply to the action alternatives (Alternatives B, C, and D). ROPs would apply to all permitted activities, including Federal Land Management Policy Act (FLPMA) leases and permits, special recreation permits (SRPs), oil and gas operations, mining plans of operation, and right-of-way (ROW) authorizations. All vegetation management practices would be conducted consistent with these guidelines. Obviously, not all ROPs would apply to all permitted activities. ROPs have been developed to ensure that objectives identified within the Alaska Land Health Standards are met in carrying out permitted activities and management practices.

1.2 Oil and Gas Leasing Stipulations

Stipulations are specific to oil and gas exploration, development, and production. They constitute significant restrictions on the conduct of operations under a lease. For example, a stipulation that does not allow permanent facilities within one-fourth of a mile of a bird nest could result in a well being located far enough from the (lessee's) optimum site to prevent an oil reservoir from being fully developed. Such restrictions must be attached to the lease. As part of a lease contract, lease stipulations are specific to the lessee. All oil and gas activity permits subsequently issued to a lessee would comply with the lease stipulations appropriate to the activity under review.

The Authorized Officer (AO) may add additional conditions of approval as determined necessary through further National Environmental Policy Act analysis as developed through consultation with other federal and state regulatory and resource agencies.

1.3 Exceptions, Modifications, and Waivers

Surface stipulations could be excepted, modified, or waived by the AO. An exception exempts the holder of the land use authorization document from the stipulation on a one-time basis. A modification changes the language or provisions of a surface stipulation, either temporarily or permanently. A waiver permanently exempts the surface stipulation.

An environmental analysis document prepared for oil and gas development (e.g., Applications for Permit to Drill or sundry notices) would also address proposals to exempt, modify, or waive a surface stipulation. To exempt, modify, or waive a stipulation, the environmental analysis document would need to show that: 1) the circumstances or relative resource values in the area had changed following issuance of the lease; or 2) less restrictive requirements could be developed to protect the resource of concern; or 3) operations could be conducted without causing unacceptable impacts; or 4) the resource value of concern does not occur within the

lease area. The environmental analysis document would also determine the need for an RMP amendment.

1.4 Standard Lease Terms

The Standard Lease Terms are contained in Form 3100-11 (see Section 4), Offer to Lease for Oil and Gas, United States (U.S.) Department of the Interior, BLM, October 1992 or later addition (BLM 1992). Form 3100-11 is standard nationwide and is applied to every lease issued by the BLM. The Standard Lease Terms provide the lessee the right to use the leased land as needed to explore for, drill for, extract, remove, and dispose of oil and gas deposits located under the leased lands. Operations must be conducted in a manner that minimizes adverse impacts to the land, air, water, cultural, biological, and visual elements of the environment, as well as other land uses or users. Federal environmental protection laws such as the Clean Water Act, Endangered Species Act (ESA), and National Historic Preservation Act (NHPA), will be applied to all lands and operations and are included in the Standard Lease Terms. If threatened or endangered (T&E) species; objects of historic, cultural, or scientific value; or substantial unanticipated environmental effects are encountered during construction, all work affecting the resource will stop and the land management agency will be contacted.

Standard Lease Terms provide for reasonable measures to minimize adverse impacts to surface resources. These include, but are not limited to, modifications to the siting or design of facilities, timing of operations, and specifications of interim and final reclamation measures. At a minimum, measures shall be deemed consistent with lease rights granted provided that they do not: require relocation of proposed operations by more than 200 meters; require that operations be sited off the leasehold; or prohibit new surface disturbing operations for a period in excess of 60 days in any lease year (43 Code of Federal Regulations [CFR] part 3101.I-2).

2.0 REQUIRED OPERATING PROCEDURES

2.1 Soils

2.1.1 Objective

Stabilizing disturbed soil as soon as possible minimizes soil erosion. Where permitted operations result in surface disturbance, land is returned as closely as possible to its pre-disturbed condition (Soils 1 through 12).

2.1.2 Requirements

Soils 1	Ditch roadways on the uphill side and install culverts or low water crossings at suitable intervals. Spacing of drainage devices will be dependent on road gradient and soil erodibility.
Soils 2	Design roads for minimal disruption of natural drainage patterns.
Soils 3	Roads shall avoid areas with unstable or fragile soils.
Soils 4	Place water bars across reclaimed roads having grades in excess of two percent. Spacing will be dependent on road gradient and soil erodibility.
Soils 5	Save all organic material for future use in an area separate from overburden.
Soils 6	Stockpile and save all overburden for respreading over tailings.
Soils 7	Shape and stabilize all overburden piles to prevent erosion.
Soils 8	Final shape of respread tailing and overburden will approximate the shape of the surrounding terrain.
Soils 9	Recontour and revegetate roads, well pads, and other disturbed areas as per an approved reclamation plan or Plan of Operations. Revegetation will occur through seeding of native seed or by providing for soil conditions that allow the site to revegetate naturally; whichever provides the most effective means of reestablishing ground cover and minimizing erosion. Scarify the final land surface to provide seed traps and erosion control.
Soils 10	Seed and plant with native species. Where native species are not available in sufficient quantities or where they are incapable of maintaining or achieving the objective, or where non-native species are essential to the functional integrity of the site, non-native vegetation may be used with specific approval from the AO.
Soils 11	Respread vegetation removed during pipeline installation to provide protection, nutrient recycling, and seed source.
Soils 12	Operators will prevent and control noxious weed infestations. Noxious weeds in Alaska are listed under Alaska Statute 11 Alaska Administrative Code 34.020.

2.1.3 Objective

Minimize soil disturbance and compaction associated with overland moves, forestry operations, and seismic exploration (Soils 13 through 15).

2.1.4 Requirements

Soils 13	Whenever possible, overland moves that are part of permitted operations will occur when frost and snow cover is sufficient to minimize soil disturbance and compaction. For proposed operations during snow-free months, permittee will work with the AO on specifying vehicle types and methods to minimize vegetation and soil disturbance, such as use of air or watercraft, utilizing existing roads or trails, or use of low ground pressure vehicles.
Soils 14	Bulldozing of tundra mat and vegetation is prohibited unless project objectives call for scarification of the site to improve sprouting or seeding success. In situations where pipeline or electric line requires burial, use equipment designed specifically for trenching that minimizes disturbance of vegetation mat.
Soils 15	Off-highway vehicle (OHV) use associated with permitted activities will comply with trail limitations in the area. The use of OHVs associated with permitted activities will be allowed under appropriate stipulations as approved by the AO.

2.2 Fish and Wildlife Habitat

2.2.1 Objective

Maintain and protect fish and wildlife habitat (FWH) on public lands, and provide the habitat needs of fish and wildlife resources necessary to maintain or restore such populations (FWH 1 through 14).

2.2.2 Requirements

FWH 1	Utilize existing roads and trails whenever possible.
FWH 2	No road crossings are permitted in crucial spawning habitat unless no feasible alternative exists and it can be demonstrated that no adverse effects will occur.
FWH 3	Avoid stream crossings. When a stream must be crossed, make the crossing as close as possible to a 90 degree angle to the stream. Make stream crossings at stable sections in the stream channel.
FWH 4	Bridges and culverts will be large enough, or will be positioned, to 1) avoid altering the direction and velocity of stream flow, and 2) avoid interfering with migrating, rearing, or spawning activities of fish and wildlife. Bridges and culverts should span the entire non-vegetated stream channel.
FWH 5	Recontour and revegetate disturbed stream banks, or take other protective measures to prevent soil erosion into adjacent waters.
FWH 6	Roads, well pads, and other oil and gas facilities will not be allowed within 500 feet (ft) of fish-bearing rivers and lakes unless the lessee can demonstrate (through a site-specific analysis that considers species of fish present, slope, vegetation, and other conditions) that the impacts to fish habitat are minimal (Figures D-1 through D-3).
FWH 7	Exploratory oil and gas drilling is prohibited in fish-bearing rivers and streams (as determined by the active floodplain) and fish-bearing lakes except where the lessee can demonstrate on a site-specific basis that impacts would be minimal or it is determined that there is no feasible or prudent alternative (Figures D-1 through D-3).
FWH 8	Travel up and down streambeds is prohibited.
FWH 9	Water intakes will be screened and designed to prevent fish intake.
FWH 10	Timber sales will provide buffers to prevent disturbance of fish habitat and possible sedimentation into streams. Buffer widths will be dependent on harvest method, season of harvest, equipment used, slope, vegetation, and soil type. Winter operations will be encouraged in order to minimize impacts to riparian areas.
FWH 11	Prescribed burn ignition patterns will allow for stream buffers. Lighting at stream edge will be avoided.
FWH 12	Overhead powerline construction will be avoided in primary trumpeter swan breeding habitat (Figures D-5 and D-6).
FWH 13	Recreational developments, permits, or leases on lakes or lakeshores with historically active trumpeter swan nest sites or staging areas will not be allowed (Figures D-5 and D-6).
FWH 14	When possible, operations that require vegetation removal will avoid the migratory bird nesting period of April 15 to July 15. If no feasible alternatives exist, an assessment will be conducted to determine bird species present, significance of potential impacts, and possible mitigation measures.

2.2.3 Objective

Heavy concentrations of activities in sensitive wildlife and plant habitats will be avoided (FWH 15 and 16).

2.2.4 Requirements

FWH 15	Within one-fourth of a mile of bald eagle nests (Figures D-9 through D-11), the following uses will not be permitted from April 1 to August 31: a) surface disturbing activities; or b) FLPMA leases or permits. Aircraft associated with permitted activities will maintain an altitude of 1,000 ft within one-half mile of documented eagle nests. Exemptions to this ROP may be granted for mining operations where no feasible alternative exists and where mitigation measures can be identified to minimize impacts. Appropriate buffers around other raptor nests will be determined based on site-specific analysis. Stipulations regarding oil and gas exploration, development, and production are described in the Oil and Gas Leasing Stipulations section beginning on page 12.
FWH 16	In critical Dall sheep and mountain goat habitat (Figures D-12 and D-13), helicopters used in support of permitted activities will maintain one-half mile of horizontal and 1,500 ft vertical distance from goats and sheep. Heli-ski landing or skiing is not permitted in Dall sheep or goat critical ranges, as identified based on Alaska Department of Fish & Game (ADF&G) maps and refined by monitoring.

2.2.5 Objective

Fish and wildlife resources and habitat will be managed to ensure compliance with the ESA and to ensure progress towards recovery of listed T&E species (FWH 20).

2.2.6 Requirements

FWH 20	The planning area may now or hereafter contain plants or animals (or their habitats) identified as T&E or special status species. BLM may recommend modifications to proposals to further its conservation and management objective to avoid any BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activities that are likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat area (CHA). BLM will not approve any ground-disturbing activities that may affect any such species or CHA until BLM completes its obligations under applicable requirements of the ESA, 16 United States Code (U.S.C.) 1531 et seq., including completion of any required procedures for conference or consultation.

2.3 Riparian Areas and Water Resources

2.3.1 Objective

New structures will be located away from riparian or wetland areas if they conflict with achieving or maintaining riparian or wetland function. Existing structures are used so as not to conflict with riparian or wetland functions, or they are relocated or modified when incompatible (Water 1 and 2).

2.3.2 Requirements

Water 1	The design and location of permanent oil and gas facilities within 500 ft of fish-bearing waterbodies or within 100 ft of non fish-bearing waterbodies will only be approved on a case-by-case basis if the lessee can demonstrate that impacts to fish, water quality, and aquatic and riparian habitats are minimal.
Water 2	New road construction within floodplains will be avoided. Where necessary, roads will cross riparian areas perpendicular to the main channel.

2.3.3 Objective

Minimize disturbance to riparian areas and facilitate rehabilitation of riparian areas (Water 3 through 8).

2.3.4 Requirements

Water 3	Streams will be diverted around mining operations using an appropriately-sized bypass channel.
Water 4	All process waters and any groundwater seeping into the operating area will be diverted into the settling pond system for treatment prior to reentering the natural water system.
Water 5	Settling ponds will be cleaned out and maintained at appropriate intervals to comply with water quality standards. Fine sediment captured in settling ponds will be protected from washout and left in a stable condition at the end of each mining season to prevent unnecessary and undue degradation to the environment during periods of non-operation.
Water 6	Riparian areas located between a mined ore deposit and a water course will not be disturbed to serve as a buffer strip to protect integrity of stream banks, provide water temperature control, and provide filtration of sediment from surface runoff. All roads, bunkhouses, offices, equipment storage, and maintenance facilities will be sited in upland areas if possible. Overburden will be placed on the uplands if possible or on the upland side of the mine pit. Application of this ROP is not intended to preclude activities, which by nature, must occur within riparian areas, such as placer mining.
Water 7	Projects will be designed to protect water quality and comply with state and federal water quality standards.
Water 8	Streams that have been altered by channeling, diversion, or damming will be restored to a condition that will allow for proper functioning condition. Active streams will be returned to the natural water course or a new channel will be created at its lowest energy state (valley bottom) that approximates the old natural channel in shape, gradient, and meander frequency using a stable channel design. The new channel will be designed consistent with the capabilities of the reclaimed site.

2.3.5 Objective

Provide for maintenance of proper functioning condition in riparian areas and protection of water quality by minimizing impacts of other permitted activities and vegetation treatments (Water 10 through 16).

2.3.6 Requirements

Water 10	Structural and vegetative treatments in riparian and wetland areas will be compatible with the capability of the site, including the system's hydrologic regime, and will contribute to the maintenance or restoration of proper functioning condition.
Water 11	Refueling of equipment will not be conducted in riparian areas or within 500 ft of the active floodplain of any fish-bearing waterbody or within 100 ft from non-fish bearing waterbodies. The AO may allow storage and operations at areas closer than the stated distance if properly designed to account for local hydrologic conditions.
Water 12	Water withdrawal from lakes may be authorized on a site-specific basis depending on size, water volume, depth, fish population, and species diversification.
Water 13	If operations occur in winter, crossing of waterway courses will be made using a low-angle approach. Snow and ice bridges will be removed, breached, or slotted before spring break-up. Ramps and bridges will be substantially free of soil and debris.
Water 14	All permitted operations will be conducted in such a manner as to not block any stream or drainage system, and to comply with state and federal water quality standards. Application of this ROP is not intended to preclude activities, which by nature, must occur within riparian areas, such as hydropower dams or placer mining.
Water 15	Human use will be managed to meet and maintain water quality standards and avoid management problems and water quality impacts. Specific management practices will include education, construction of toilet facilities where appropriate, and encouragement in the use of portable toilet systems.
Water 16	Use of aerial fire retardant near lakes, wetlands, streams, rivers, sources of human water consumption, and areas adjacent to water sources will be avoided to protect fish habitat and water quality. If feasible, use of water rather than retardant is preferred in these areas.

2.3.7 Objective

Minimize disturbance to riparian areas from development of mineral material sites (Water 17 through 24).

2.3.8 Requirements

Water 17	When responding to a request for a material sale or identifying a source for materials on public lands, the highest priority shall be given to using existing upland material sources. Using materials from wetlands, lakes, and active or inactive floodplains will be avoided unless no feasible public upland alternative exists. Sales or permits for gravel extraction will not be permitted in known fish spawning or rearing areas.
Water 18	Where possible, braided or split stream types will be selected for material extraction. Meandering, sinuous, and straight steam channel types should be avoided.
Water 19	Generally, the largest river feasible should be selected for a gravel operation in a given area. Larger rivers have higher volumes of gravel and a wider floodplain more forgiving to in-channel disturbance. The proportionately smaller disturbance in large river systems will reduce the overall effect of gravel removal.
Water 20	Mining gravel from active channels will be avoided to reduce detrimental effects on water quality, aquatic habitat, and biota.
Water 21	When possible, avoid vegetated habitats.
Water 22	When scraping gravel in active or inactive floodplains, maintain buffers that will constrain active channels to their original locations and configurations.
Water 23	Material pits will be designed with high shorelines, water depth diversity, and islands.
Water 24	If mining in vegetated areas, all overburden, vegetative slash, and debris will be saved for use during site reclamation to facilitate vegetative recovery. This material should be piled or broadcast so that it will not be washed away.

2.4 Wetlands

2.4.1 Requirements

Involve the following land management practices to avoid or minimize adverse impacts upon the hydrological, habitat, subsistence, and recreational values of public wetlands (Wetlands 1 through 3):

Wetlands 1	Activities in wetlands will comply with federal and state permit requirements for alteration of wetlands.
Wetlands 2	Utilize winter access whenever possible and avoid road or trail construction in wetlands.
Wetlands 3	In snow-free months, if wetlands cannot be avoided, low ground pressure vehicles will be used wherever possible.

2.5 Vegetation

2.5.1 Objective

Treatments to alter the vegetative composition of a site, such as prescribed burning, seeding, or planting, will be based on the potential of the site and will (Veg 1 through 7):

a) retain or promote infiltration, permeability, and soil moisture storage;

b) contribute to nutrient cycling and energy flow;

c) protect water quality;

d) help prevent the introduction and spread of noxious weeds;

e) contribute to the diversity of plant communities and plant community composition and structure;

f) maintain proper functioning condition; and

g) support the conservation of T&E, special status species, and species of local importance.

2.5.2 Requirements

Veg 1	Vegetation treatments will be designed to achieve desired conditions clearly described in individual burn plans or timber sales. Desired conditions will be based on the ecological capability of a given site and will be expressed as cover types or seral stages within cover types, based on management objectives.
Veg2	Vegetation treatments will be designed to prevent introduction of noxious weeds. Prescribed burn plans will contain a segment on known occurrence of noxious weeds within planned burning areas and strategies for post-burn monitoring or treatment.
Veg 3	Machinery used in timber sales will be inspected for noxious weed seeds.
Veg 4	Burn plans for large burns will prescribe conditions that result in a mosaic of burned or unburned areas within the burn unit. Smaller burns may not require a mosaic, dependent on objectives.
Veg 5	Timber sales will rely, to the extent possible, on natural regeneration through proper site preparation.
Veg 6	Permitted livestock grazing will be conducted in a manner that maintains long-term productivity of vegetation. Animals will not be picketed in riparian areas. In areas of low grass production, operators will pack in weed-free hay or concentrated feed.
Veg 7	Currently there is known habitat in the planning area for special status plant species. However, no specific population locations are known. If specific populations or individual special status species are located, measures will be taken to protect these populations or individuals through site-specific buffers or management prescriptions.

2.5.3 Objective

Minimize vegetation disturbance from permitted activities (Veg 8 through 14).

2.5.4 Requirements

Veg 8	Conduct ground operations during frozen conditions when possible (12 inches frost or 6 inches average snow cover).
Veg 9	Bulldozing of tundra mat or vegetation is prohibited unless there is no feasible alternative (lode mining), as approved by the AO. If trenching is required, utilize equipment that minimizes trench width.
Veg 10	Location of winter trails will be designed to minimize breakage or compaction of vegetation.
Veg 11	When ground operations are required in snow-free months, select routes that utilize naturally hardened sites and avoid the need for trail braiding.
Veg 12	Use of tracked or OHV in fire suppression or management activities will be conducted in a manner that does not cause erosion, damage to riparian areas, degradation of water quality or fish habitat, or contribution to stream channel sedimentation.
Veg 13	Permanent oil and gas facilities will be designed and located to minimize the development footprint.
Veg 14	Rehabilitate firelines and bulldozer lines by spreading original soil and vegetation on the disturbed ground. In extreme cases where seeding or plugging may be necessary, use native vegetation and seeds. A rehabilitation plan should be developed by suppression forces working with Anchorage Field Office wildlife biologists and botanists.

2.6 Cultural and Paleontological Resources

2.6.1 Objective

Management practices will consider protection and conservation of known cultural resources, including historical and prehistoric sites (Cultural 1 through 3).

2.6.2 Requirements

Cultural 1	For oil and gas activities, cultural resource protection is covered under the standard lease terms.
Cultural 2	For other non-oil and gas permitted activities, cultural resource protection, and conservation will be consistent with: 1) Sections 106, 110, and 101d of the National Historic Preservation Act (NHPA), 2) procedures under BLM's 1997 Programmatic Agreement for Section 106 compliance, and 3) BLM's 1998 Implementing Protocol in Alaska between BLM and the Alaska State Historic Preservation Officer.
Cultural 3	If necessary, mitigation measures will be implemented according to a mitigation plan approved by the AO. Such plans are usually prepared by the land use applicant's contract archaeologist according to BLM specifications. Mitigation plans will be reviewed as part of Section 106 consultation for National Register of Historic Places eligible or listed properties. The extent and nature of recommended mitigation will be commensurate with the significance of the cultural resource involved and the anticipated extent of the damage. Reasonable costs for mitigation will be borne by the land use applicant. Mitigation will be cost-effective and realistic.

2.6.3 Objective

Avoid damage to significant paleontological resources where possible, and mitigate unavoidable damage (Cultural 4 and 5).

2.6.4 Requirements

Cultural 4	For all actions, evaluate the impacts of proposed actions to known resources and avoid damage to already-identified significant paleontological resources by avoidance.
Cultural 5	If avoidance is not possible, perform scientific examination of the to-be-impacted significant resources followed by appropriate mitigation, which may include the professional collection and analysis of significant specimens by scientists.

2.7 Visual Resources

2.7.1 Objective

Manage oil and gas, mining, and other permitted activities to meet the Visual Resource Management (VRM) class objectives I through IV:

Class I – Preserve the existing character of the landscape; change to the characteristic landscape should be very low and not attract attention.

Class II – Preserve the existing character of the landscape; change to the characteristic landscape may be seen, but should be low and not attract the attention of the casual observer.

Class III – Partially retain the existing character of the landscape; change to the characteristic landscape should be moderate and may attract attention, but not dominate the view of the casual observer.

Class IV – Provides for action that would make major modifications to the existing character of the landscape; change to the characteristic landscape can be high, dominate the view, and be the major focus of the viewer.

2.7.2 Requirements

The following land management practices will be applied to achieve VRM class objectives I through IV.

VRM 1	To the extent practicable, all permanent facilities will be located away from roadsides, rivers, or trails, thereby using distance to reduce the facility's visual impact.
VRM 2	Access roads and permanent facilities will be designed to meet the visual resource objective using such methods as minimizing vegetation clearing and using landforms to screen roads and facilities.
VRM 3	Permanent facilities will be screened behind trees or landforms if feasible so they will blend with the natural surroundings.
VRM 4	The modification or disturbance of landforms and vegetative cover will be minimized.
VRM 5	Permanent facilities shall be designed so their shapes, sizes, and colors harmonize with the scale and character of the surrounding landscape.
VRM 6	In open, exposed landscapes, development will be located in the opposite direction from the primary scenic views, if feasible.

2.8 Hazardous Materials and Waste Handling

2.8.1 Objective

Protect the health and safety of permittees, lessees, miners, oil field workers, and the general public by avoiding the disposal of solid waste and garbage near areas of human activity (Haz 1).

2.8.2 Requirement

Haz 1	Areas of operation will be left clean of all debris.

2.8.3 Objective

Minimize impacts on the environment from non-hazardous waste generation (Haz 2 through 6).

2.8.4 Requirements

Haz 2	All feasible precautions will be taken to avoid attracting wildlife to food and garbage.
Haz 3	Current requirements prohibit the burial of putrescible waste. All putrescible waste will be incinerated, backhauled, or composted in a manner approved by the AO. All solid waste, including incinerator ash, will be disposed of in an approved waste-disposal facility in accordance with United States Environmental Protection Agency (USEPA) and Alaska Department of Environmental Conservation (ADEC) regulations and procedures.
Haz 4	For oil and gas operations, all pumpable solid, liquid, and sludge waste will be disposed by injection in accordance with USEPA, ADEC, and the Alaska Oil and Gas Conservation Commission regulations and procedures. The AO may permit alternate disposal if the lessee demonstrates that subsurface disposal is not feasible or prudent and the alternative method will not result in adverse environmental effects.
Haz 5	For oil and gas operations, produced water will be disposed of into injection wells as approved by the Alaska Oil and Gas Conservation Commission under USEPA regulations and the Underground Injection Control program. The AO may permit alternate disposal methods if the lessee demonstrates that subsurface disposal is not feasible or prudent and the alternative method will not result in adverse environmental effects.
Haz 6	No disposal of domestic wastewater is allowed into bodies of fresh, estuarine, and marine water, including wetlands, unless authorized by the National Pollution Discharge Elimination System (NPDES) or state permit.

2.8.5 Objective

Minimize the impacts to fish, wildlife, and the environment from hazardous materials, oil spills, and other chemical spills (Haz 7 through 15).

2.8.6 Requirements

Haz 7	For oil and gas operations and mining plans of operation, a Hazardous Materials Emergency Contingency Plan will be prepared and implemented before transportation, storage, or use of fuel or hazardous substances. The plan will include a set of procedures to ensure prompt response, notification, and cleanup in the event of a hazardous substance spill or threat of a release. The plan will include a list of resources available for response (e.g., heavy-equipment operators, spill-cleanup materials, or companies), and names and phone numbers of federal and state contacts.
Haz 8	A plan of operations will include a disclosure of the components in any hydraulic fracturing materials to be used, the volume and depths at which such materials are expected to be used, and the volume capacity of the vessels to be used to store such materials.
Haz 9	For oil and gas operations and mining plans of operation, the operator will maintain Material Safety Data Sheet information on all hazardous substances used by the operator.
Haz 10	Before initiating any oil and gas or related activity or operation, including field research and surveys and/or seismic operations, lessees/permittees will develop a comprehensive spill prevention and response contingency plan per 40 CFR 112.
Haz 11	For oil and gas operations, mining operations, and other leases and permits, sufficient oil-spill cleanup materials (absorbents, containment devices, etc.) will be stored at all fueling points and vehicle-maintenance areas and will be carried by field crews on all overland moves, seismic work trains, and similar overland moves by heavy equipment.
Haz 12	Fuel and other petroleum products will be stored at a location approved by the AO and within an impermeable lined and diked area capable of containing 110 percent of the stored volume or within approved alternate storage containers.
Haz 13	Fuel storage will not occur closer than 100 ft from any river, lake, stream, or wetland unless approved by the AO.
Haz 14	Liner material will be compatible with the stored product and will be capable of remaining impermeable during typical weather extremes expected throughout the storage period.
Haz 15	All fuel containers, including barrels and propane tanks, will be marked with the responsible party's name, product type, and year filled and purchased.

2.8.7 Objective

Minimize impacts on fish, wildlife, and the environment from contaminants associated with the exploratory drilling process (Haz 16).

2.8.8 Requirements

Haz 16	Surface discharge of reserve-pit fluids and produced water is prohibited unless authorized by applicable NPDES and ADEC, and approved by the AO.