

HELICOPTER-SUPPORTED
COMMERCIAL RECREATION
ACTIVITIES IN ALASKA

Prepared for
Alaska Quiet Rights Coalition

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Helicopter-Supported Commercial Recreation Activities in Alaska

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Executive Summary

This report summarizes helicopter-supported commercial recreation activities in Alaska. It discusses current information on impacts to wildlife, people, and recreation, and describes the legal authorities to manage and control these activities. The report is intended to be a factual study which communities, land managers, and even the tourism industry can use to manage this type of recreation and its effects on the surrounding environment.

Summary of Helicopter-Supported Recreation

Winter Activities. Winter helicopter-supported recreation is primarily heli-skiing: use of helicopters to access untracked ski runs outside of ski areas. It occurs between February and May, depending on the area and permit conditions, with most use coming in April. One operator provides winter flightseeing tours out of Girdwood.

Eleven companies operate heli-skiing tours at four locations in Alaska: Girdwood, Haines, Thompson Pass (outside of Valdez), and Homer. The first three have the vast majority of use. Haines and Thompson Pass, in particular, market internationally as a destination for heli-skiing. Girdwood both attracts people as a heli-skiing destination as well using Alyeska Resort for clients.

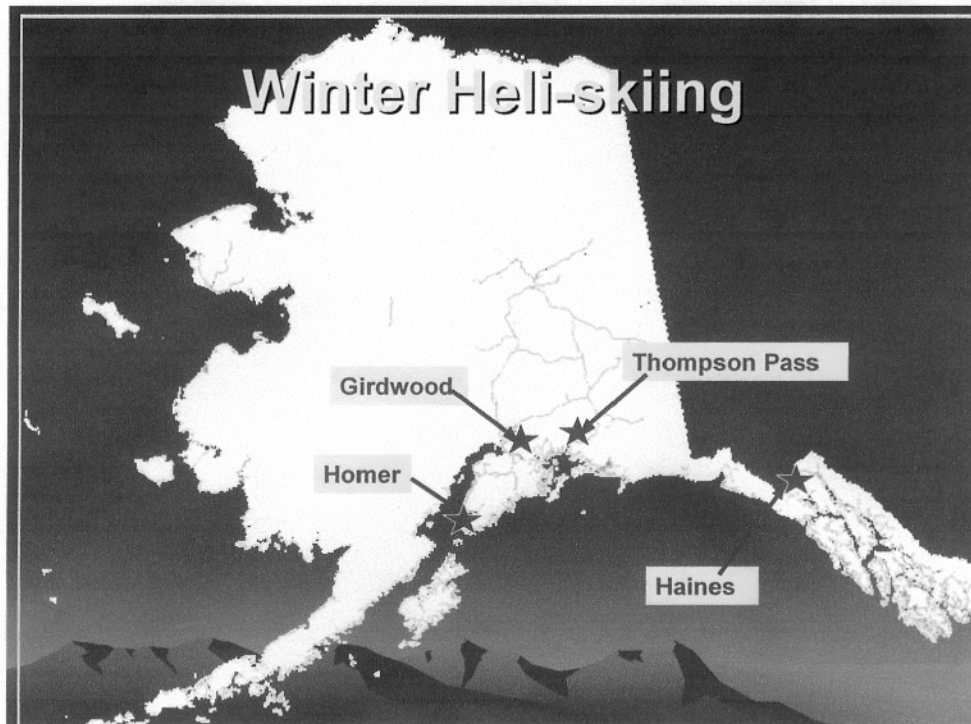
Map 0-1 shows the location of winter heli-skiing activities in Alaska. Table 0-1 shows the land manager (for the locations on which the skiing occurs) the permitting authority, and the number of clients that the operators are authorized to take.

Summer Activities. Summer activities occur in more locations throughout Alaska and support a broader set of activities. Summer heli-tours include flightseeing, hiking, glacier travel, dog mushing, raft trips, and some custom heli-supported fishing and hunting. All told, 17 operators use 11 locations to conduct significant heli-supported summer operations. The major operators use the large-volume cruise-ship passengers and tours as their client base. The vast majority of clients are taken from cruise ships in Juneau. Other large-volume operations are located in Seward, Skagway, and the Denali Area using mostly cruise ship passengers or, in the case of Denali and Girdwood, a continuation of those tours on land.

Map 0-2 shows the location of summer helicopter-supported commercial recreation activities in Alaska. Table 0-2 shows the land manager, the permitting authority and the amount of use for which the operators are authorized. The table also shows what services are authorized.

There may be some additional activities not shown on the map and the table. A permit is not required for aircraft landings on most general state land, although registration is required for commercial operations. Therefore, a few low-volume summer operations may exist beyond that shown on the map and table. A list of registered operators and the game management units in which they operate is given in Appendix C.

Map 0-1 Winter Helicopter Recreation Activities in Alaska



Map 0-2. Summer Helicopter Recreation Activities in Alaska



**Table 0-1. Winter Helicopter-Supported Commercial Recreation
(Heli-Skiing only)**

Location	No. of Operators	Land Owner	Permitting Authority	Authorized Clients	Notes
Girdwood	1	USFS & DNR	USFS	1,200	Number of clients authorized includes summer activities
Haines**	3	DNR & BLM	Haines Boro & BLM	540	Haines Boro has comprehensive law that allows the Boro to specify flight paths, areas, time of day, and limit client-days.
Homer	1	DNR State Park	DNR Parks	77	No set client limit; actual reported numbers include winter activities.
Thompson Pass	6	1-BLM only	BLM	250	Within Thompson Pass Special Use Area; DNR permit required because operators have base camps on state land.
		1-DNR only	DNR ***	381	
		4-BLM, DNR, and USFS*	BLM, DNR ***, and USFS	7,310	

* Another operator has authorization for a fuel cache from DNR. It is unknown whether it is a separate operation on non-Forest land.

** The third operator has a heli-ski permit for filming only; not included in this report.

*** Number of clients includes actual clients reported in 2005 for DNR.

Table 0-2. Summer Helicopter-Supported Commercial Recreation

Location	No. of Operators	Land Owner	Permitting Authority	Service Offered	Authorized Use Data		Notes
					No.Landings	No. Clients	
Bristol Bay	1	Unknown	None	Flightseeing	Not available		Probably not a large-volume operation
Denali Area	1	Denali State Park and fly-over of Denali National Park	DNR Parks (for state land only); Mat-Su Borough for take-off locations.	Tours of Mt. McKinley, guided Heli-hiking, or exclusive glacier landings and glacier trekking tours. Landings are in Denali State Park.	3,000		Have two locations near Denali National Park; one near the park entrance, and one near the Denali Princess.
Girdwood	4	State and USFS	USFS	Flightseeing; glacier landing; dog mushing, heli-hiking, rafting		1,200	No. clients authorized includes winter activities
Haines	1	State and BLM	Haines Borough (state and BLM managed lands); BLM	Based out of private land, including cabins. Offers heli-hiking on nearby state land	16		Not a large-volume operation; passengers likely from cruise ships
Homer	1	Unknown; Probably mostly state land	DNR Parks for state park land.	Glacier Tours; Augustine Island tour; heli-fishing; flightseeing		77	No set client limit; actual reported numbers include winter activities.
Juneau	4	USFS	USFS	Icefield excursion; dog sled; glacier walkabout, trek & adventure; flightseeing	19,991	119,946	Most passengers from cruise ships.
Kodiak	1	Unknown	Unknown	Hunting	Not available		Probably not a large-volume operation
Petersburg	1	USFS	USFS	Flightseeing, glacier landing		1,300	Use is about half the authorized amount
Seward	1	USFS and flyover of Kenai Fjords National park	USFS	Flightseeing, glacier landing and glacier walk; dog sled tour; and overnight stay.	1,500	4,000	
Skagway	1	USFS	USFS	Flightseeing		4,460	Most passengers from cruise ships.
Talkeetna	1	State Land	None	Heli-rafting	Not available		Probably uses helicopters from the Denali-area company

Authorities to Oversee Helicopter Supported Recreation

In general, governments regulate helicopter-supported commercial recreation primarily to: protect residential areas and cabin owners from impacts of helicopter noise; minimize noise and use conflicts with other people who use recreation areas, and protect wildlife. There are generally three authorities that governments may use to accomplish these purposes:

- *Landowner authorities.* Government land management agencies may regulate helicopter activities when they occur on federal, state, or municipal land;
- *Planning and Zoning Powers.* Local governments may regulate the activities through the authority of their zoning and planning powers;
- *Authorities that Prohibit Wildlife Harassment.* Wildlife agencies may regulate activities through authorities that authorize them to prevent wildlife harassment.

Government may implement relatively comprehensive oversight through the first two authorities — landowner authorities and zoning powers. The last mechanism, authorities prohibiting wildlife harassment, prevents actions in specific locations, but does not provide comprehensive regulation of helicopter recreation.

There is at least one important limitation on the ability of land management agencies and local government to regulate helicopter-supported recreation. The FAA has complete regulatory authority over airspace classification and use within the territorial limits of the U.S. Neither federal or state land management agencies nor local government have the jurisdiction to independently regulate airspace. The land management agencies gain their jurisdiction over the industry when the helicopter lands or takes off outside of a designated airport on federal, state, or municipal land. If there is no take-off or landing outside a designated airport, there is no permit requirement. If there is no permit, there is no mechanism to require hours of operation, designated flightpaths, etc. Thus, the authorities outlined above cannot be used by land management agencies to regulate helicopter flightseeing (with the possible exception of flightseeing that occurs wholly within the boundaries of a municipality).

Methods to Minimize Conflicts with People. The methods that the governments use to avoid or minimize conflicts with helicopter recreation are outlined below.

Methods of Minimizing Impacts from Helicopter-Supported Recreation

Regulating Areas

- Designating Landing Areas
- Designating Flight Paths
- Requiring Minimum Altitude
- Designating Take-off Areas

Regulating Schedule

- Time of Day
- Time of Year

Limiting Use

- Limitations on Clients or Visitor-days
- Limitations on Landings

Noise Limits

Voluntary Requests

Combinations of Any or All of the Above

The same methods may be used by local governments or land management agencies. However, the only local government with a comprehensive oversight ordinance is the Haines Borough.

Table 0-3 describes the authorizations methods used by various permitting authorities in Alaska. It describes each of the authorized operations, the permitting authority, and which of the strategies in the list above is a part of the permit.

Methods to Minimize Conflict with Wildlife. For alpine skiing and helicopter tours of backcountry and glaciated areas, the species most likely to be affected are mountain goats. This is primarily due to the proximity of their habitat to flight routes and tour landing sites. Preferred winter habitat of mountain goats is often steep and rocky, south-facing slopes, exposed to sun and wind which are confining in terms of forage and movement. Because mountain goats are sensitive to loud noises (such as that a helicopter produces), their behavior may be affected based on duration and proximity.

In their 2004 position paper, members of the Northern Wild Sheep and Goat Council recommended that helicopter activity should not occur within 1.5 km (roughly 1 mile) of occupied/suspected nursery group or critical winter range habitats during critical periods.

In a study of military noise on wildlife, wildlife biologists report that reaction to helicopter noise is species specific and cannot be generalized. (Larkin, 1996)

The state and federal permits all take their assessment of impacts primarily from a 1995 study of helicopter affects on goats in Alberta and a 2001-2002 study in four areas of southeast and southcentral Alaska. The Alaskan study recommended no-fly zones for known mountain goat locations and recommended specific approach distances as well. The recommended distances were based on decreasing the risk of disturbance to less than 25%. That is, the recommended distances were those which did not disturb 75% of the animals. The recommended distances are:

1,000 meters (2/3 mile) for the Kenai Peninsula-Turnagain Arm; 1,234 meters (3/4 mile) for Eastern Prince William Sound; 771 meters (1/2 mile) for the Chilkat Mountain Range; and 500 meters (1/3 mile) for the Juneau Icefield.

Other species of concern include black bear, brown bear, wolverines, gray wolf, bald eagle, Steller sea lion, trumpeter swan, moose, and harbor seal. Mitigation measures include avoiding sensitive habitat, minimum distances, and sometimes scheduling.

Table 0-4 summarizes the stipulations used to protect mountain goats, bald eagles, and other wildlife.

Table 0-3. Human Stipulations Summary

Operator	Location	Permitting Authority	Designated Landing Areas	Set Flight Paths/Altitudes	Time of Day	Season	Client/Landing Limits	Other User Mitigation Measures	Noise Limits
Points North	Cordova	DNR				X			
ERA Helicopters	Denali	DNR	X	X	X	X	X	X	
Glacier City Snowmobile Tours	Girdwood	USFS						X	
Chugach Powder Guides	Girdwood	USFS	X	X	X	X	X	X	
Chugach Powder Guides	Girdwood	DNR				X			
Alaska Cross Country Guiding	Haines	BLM	X	X		X	X	X	
Out of Bounds Adventures	Haines	BLM		X	X	X	X		
Southeast Back Country Adventures	Haines	BLM		X	X	X	X		
Maritime Helicopters	Homer	DNR	X	X		X		X	
Coastal Helicopters	Juneau	USFS	X	X	X	X	X	X	
ERA Helicopters	Juneau	USFS	X	X	X	X	X	X	
NorthStar Trekking	Juneau	USFS	X	X	X	X	X	X	
Temsco Helicopters	Juneau	USFS	X	X	X	X	X	X	
Godwin Glacier Dog Sled Tours	Seward	USFS	X	X	X	X	X	X	
Temsco Helicopters	Skagway	USFS	X	X	X	X	X	X	
Alaska Backcountry Adventures	Valdez	BLM			X	X	X	X	
Alaska Backcountry Adventures	Valdez	DNR				X			
Alaska Rendezvous Guides	Valdez	BLM			X	X	X	X	
Valdez H2O Guides	Valdez	BLM			X	X	X	X	
Valdez H2O Guides	Valdez	DNR				X			
Valdez H2O Guides	Valdez	USFS		X	X	X	X	X	
Valdez Heli-Camps	Valdez	DNR				X			
Valdez Heli-Ski Guides	Valdez	BLM			X	X	X	X	
Valdez Heli-Ski Guides	Valdez	DNR				X			

Table 0-4. Wildlife Mitigation Stipulation Summary

MOUNTAIN GOATS						
Agency/Action	Location	Avoidance	Observed Animals	Vertical Limit above habitat	Horizontal Limit from habitat	Notes
BLM	Haines		1,500 ft; 1 mi on rock islands	1,500 ft	1,500 ft	5,000 ft min flight corridors to drop off sites passing over habitats
BLM	Valdez		1/2 mi	1/2 mi	1/2 mi	
DNR MLW	Girdwood		1/2 mi			
DNR MLW	Valdez		1 mi	1/2 mi	1/2 mi	
DNR Parks	Denali					
DNR Parks	Homer					
USFS (Chugach)	Girdwood	no fly zones	1/2 mi horizontal or 1,500 AGL	1,500 ft		
USFS (Chugach)	Seward	Flight paths				Follow 4th of July Ck drainage to max distance between heli's and animals on slope; maintain 1,500 ft. AGL
USFS (Chugach)	Valdez	Flight paths avoid goats & habitat	1/2 mi	1,500 ft		No landing w/in 1/2 mile of known or potential goat habitat; no landings after April 30 to avoid goat kidding
USFS (Tongass)	Juneau					Facilities, etc. located \geq 1 mi from wintering and kidding habitat; flight paths avoid known kidding areas May 15-June 15
USFS (Tongass)	Skagway		1,500 ft	1,500 ft	1,500 ft	Only 100 landings at Laughton Glacier; flight paths avoid kidding areas May 15 - June 15
USFS (Tongass)	Petersburg		1,500 ft	1,500 ft.	1,500 ft	

BALD EAGLES						
Agency/Action	Location	Avoidance	Observed Animals	Vertical Limit above habitat	Horizontal Limit from habitat	Notes
BLM	Haines		1,500 ft.	1/4 mi of nests	1/4 mi of nests	(winter) 1,500 ft min AGL courtship & nesting territory
BLM	Valdez		1/2 mi	1/2 mi of active nests	1/2 mi of active nests	
DNR MLW	Girdwood		1,500 ft.			
DNR MLW	Valdez		1/2 mi			No ski runs or heli-hikes in any habitat or buffer areas
DNR Parks	Denali			1,500 ft raptors nesting sites	1,500 ft. raptors nesting sites	
DNR Parks	Homer					
USFS (Chugach)	Cordova		1/2 mile		330 ft of nests	
USFS (Chugach)	Girdwood		1/2 mile horizontal or 1,500 AGL	330 ft of nests (skiers); 1,500 active nest (heli)	330 ft of nests (skiers); 1/4 mi. active nest (heli)	
USFS (Chugach)	Seward					Flight patterns at Seward airport to protect habitat near runway
USFS (Tongass)	Juneau			1/4 mi of nests	1/4 mi of nests	
USFS (Tongass)	Skagway		1,500 ft	1/4 mi of nests	1/4 mi of nests	
USFS (Tongass)	Petersburg		1,500 ft	1,500 ft	1,500 ft	

OTHER WILDLIFE						
Agency/Action	Location	Avoidance	Observed Animals	Vertical Limit above habitat	Horizontal Limit from habitat	Notes
BLM	Haines		1,500 ft	1,500 ft	1,500 ft	
BLM	Valdez		1/2 mi	1/2 mi active Osprey nest and bear or wolverine dens	1/2 mi active Osprey nest and bear or wolverine den	
DNR MLW	Girdwood		1,500 ft			
DNR MLW	Valdez		1/2 mi			
DNR Parks	Denali			1,500 ft waterfowl & raptors nesting sites and active bear & wolf denning sites	1,500 ft waterfowl & raptors nesting sites and active bear & wolf denning sites	1,500 ft altitude restriction above Tokositna River valley traditional waterfowl nesting area, otherwise 500 ft AGL.
DNR Parks	Homer					Commercial fishing periods: 100 yds above saltwater terminus of Head End and Island Creeks
USFS (Chugach)	Cordova		1/2 mile		330 ft of osprey nests and 660 ft of goshawk nests	
USFS (Chugach)	Girdwood	No fly zone Dall's sheep	1/2 mile horizontal or 1,500 AGL	1,500 ft Dall's sheep		
USFS (Chugach)	Seward					Follow 4th of July Ck drainage to max distance between heli's and animals on slope; maintain 1,500 ft. AGL
USFS (Tongass)	Juneau			3,000 ft Steller sea lion haulout Benjamin Is.	3,000 ft Steller sea lion haulout Benjamin Is.	
USFS (Tongass)	Skagway					
USFS (Tongass)	Petersburg		1,500 ft	1,500 ft	1,500 ft	

Measurement of Helicopter Sound

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 a 2004 report to Congress, the Federal Aviation Administration reported that there may be heightened community response to helicopter sounds when compared to other aircraft sounds at the same decibel level.

Section 4 of the report describes methods of measuring sound. It describes some of the typical measurements, provides examples of noise control ordinances (and their utility or lack thereof), and summarizes the impacts of helicopter noise on wildlife, residences, cabin owners, and recreation. It also provides a more complete summary of the FAA report.

Trends in Helicopter-Supported Commercial Recreation

Predicting the future of helicopter-supported commercial recreation for any particular location is dependent on the specifics of that location and market. However, a number of general trends are apparent. Other information specific to particular locations is contained in Chapter 6.

Summer. Summer heli-tours and winter heli-skiing are very different – they rely on very different clientele. The largest-volume heli-tours during the summer rely on a system that generates a large volume of tourists, primarily cruise ships. The operations at Juneau, Skagway, and to a great extent the Denali National Park area and Seward rely on cruise ships for their clientele. With respect to the operation at Denali National Park, it is the land-based tours, many of which are associated with cruise ships or cruise-ship companies. To the extent that cruise ship visitors to Alaska rise or fall, the client base for the tours will grow or shrink.

In Juneau, the helicopter industry is using very close to the number of landings allowed by the U.S. Forest Service. Unless the U.S. Forest Service increases the landing limit or opens significantly new areas, Juneau-area tours are not likely to increase. Skagway, Seward, and the Denali area are not close to the limits imposed by the respective land management agency, so operations at these locations have the capacity to grow.

Other more specialty locations such as operations at Bristol Bay and Homer have the capacity to increase slowly as more tourists visit the location or the tours increase their marketing. It is also possible that as helicopter tours become more common, tours will expand to new locations as well. In addition, tourists' appetite for helicopter tours may increase with increasing national income, or fall with increasing oil prices, but the extent to which this occurs is beyond the scope of this study.

Winter. Currently, heli-skiing in Alaska occurs in the Thompson Pass Area (Valdez and to some extent Cordova), Haines, and Girdwood/Kenai Peninsula. Unless some additional area is identified and marketed, these areas will remain the focus of the heli-skiing industry in Alaska. This industry, like other Alaskan tourist destinations, has the capacity to grow, but is also affected by other factors: oil prices, terrorism scares, etc.

1. Introduction

Helicopter-supported tourism is one of the fastest growing activities on federal and state-owned land in Alaska. (BLM, 2006a)

Summer activities include flightseeing the majestic Mt. McKinley, visiting Juneau's nearby glacial icefield, experiencing dog mushing, and hiking glaciers and mountainous areas that would not normally be accessible without the benefit of helicopters (or other aircraft). Juneau is by far the highest use area, primarily a function of a large tourist base from cruise ships and proximity to the Juneau Icefield.

As evidenced by use reports, winter activities have increased in numbers. For the last decade, heli-skiing and backcountry skiing/snowboarding in extreme conditions have received international interest. For instance, the World Extreme Skiing Championship has been held in the Thompson Pass area between 1991 and 2000, along with considerable media coverage. (Hamby, 2006) Many alpine areas in Alaska provide sufficient snow and light conditions that create a stable environment for heli-skiing, which is attractive to a variety of clients and skill levels.

1.1. Purpose of this report

This report summarizes helicopter-supported recreation activities in Alaska. It discusses current information on impacts to wildlife, people, and recreation, and describes the legal authorities to manage and control these activities. The report is intended to be a factual study which communities, land managers, and the tourism industry can use to manage this type of recreation and its effects on the surrounding environment. It does not presume a certain outcome nor is it intended to critique any decisions that have been made by agency personnel on permitted activities. Moreover, the report is not exhaustive and only contains information that was readily available to us.

1.2. What is *not* covered by this report

Private Land Activities. There are helicopter-supported recreation activities that begin and end on private land. We did not interview private landowners (such as Native Corporations, lodges, or individual landowners) or commercial providers about the uses that may occur on these lands. We limited our search to information that was generally available to the public or considered part of the agencies' public records.

Snowcats. Because the weather does not always cooperate with heli-skiing, some companies have resorted to snowcats as an alternative transportation on "no-fly" days. This report does not cover the impacts or benefits of snowcats versus helicopters, the number of ski-runs or client use days (unless the number is mixed in the aggregate number of reported client days), or the potential cumulative effects in terms of noise.

Regulatory Framework. Helicopter-supported recreation activities occur in other states and some countries (such as New Zealand and Canada). The scope of work did not include a comprehensive survey of practices to regulate this activity in non-Alaskan locations.

However, some information, such as impacts on wildlife and management practices have been reviewed and included in this report.

Non-Recreational Helicopter Use. We recognize that there are other helicopter-supported activities, such as geophysical surveys, emergency response, or commercial charters, that occur in the same locations covered in this report. While these activities may contribute to the economy or to cumulative effects, they are not considered in this report.

Biological Literature. The documents referenced in this report included certain scientific studies on adverse effects of helicopter presence and noise on wildlife. We noted the reports that were reviewed. However, the scope of work did not include a thorough assessment of the biological literature on the subject nor are we qualified to make a judgment as to the validity of the information contained in the biological reports. Instead, we relied on the written documentation of state and federal biologists that reviewed the specific actions and provided input in the particular agency's decision-making process.

2. Laws, Regulations and Policies

There are generally three authorities by which governments may regulate helicopter recreation activities:

- **Landowner authorities.** Government land management agencies may regulate these activities when they occur on federal, state, or municipal land;
- **Planning and Zoning Powers.** Local government may regulate the activities through the authority of their zoning and planning powers;
- **Authorities that Prohibit Wildlife Harassment.** Wildlife agencies may regulate activities through authorities that authorize them to prevent wildlife harassment and certain disturbances.

Government may implement relatively comprehensive oversight through the first two authorities — landowner authorities and zoning powers. The last mechanism, authorities prohibiting wildlife harassment, prevents actions in specific locations, but does not provide comprehensive regulation of helicopter recreation.

This chapter provides an overview of the legal authorities by which federal, state, and local governments may regulate helicopter recreation. It provides an overview of the methods they use to exercise that authority. Finally, the chapter describes the limitations on those methods — what activities *do not* get regulated.

2.1. Legal Authority to Regulate

2.1.1. Landowner Authorities

The federal and state government are the major landowners in Alaska. By virtue of their authority as the representative of the owners of the land, the governments have broad authority to regulate activities that may occur on that land. On Native Corporation land, these authorities may be exercised by the Native Corporations.

Land ownership in Alaska and the managing agency is shown in Table 2-1. The state or federal government manages most of the land on which helicopter recreation occurs. While Native Corporations own 45.6 million acres, the land is generally selected for purposes other than recreation and, to date, there is no significant helicopter recreation known on those lands. Subdivisions of the State — the Mental Health Trust, University of Alaska, and municipalities — have selected substantial acreage, but the land is not generally attractive for helicopter-supported recreation. Finally, non-native private landowners hold approximately a half-million acres, but that land is widely scattered and, for the most part, unsuited to large-scale helicopter recreation.

Table 2-1. Land Ownership

Figures in Millions

Federal Lands	Acres¹
National Park Service	54.7
Fish and Wildlife Service	77.1
National Forest Service	22.8
Bureau of Land Management ²	57.9
Department of Defense	2.5
Subtotal:	215.0
State & Municipal Lands	
State Parks	3.2
Fish and Game Special Areas	3.0
Municipalities ³	1.1
Mental Health Trust	1.0
University of Alaska	0.3
Other ⁴	97.3
Subtotal:	105.9
Private Land	
Native Corporations ⁵	45.6
Other Private	0.5
Subtotal:	46.1
TOTAL:	367.0

Note 1. The acreage is shown after taking into account all federal conveyances to the state and to Native Corporations, some of which are not completed.

Note 2. The BLM also manages all land selected by either the State of Alaska or Alaska Native Corporations which has not yet been conveyed. These lands are included in the table under their eventual owner, not BLM. Also, 23.0 million acres of this land is within the National Petroleum Reserve on the North Slope.

Note 3. This number is current as of 2006; more will be transferred in the future.

Note 4. Approximately 14 million acres of this total remains to be conveyed to the state. Until it is conveyed it is managed by BLM.

Note 5. Approximately 8.4 million acres of this total remain to be conveyed to Native Corporations. Until it is conveyed, it is managed by BLM.

Each land management agency has different rules and permit requirements, but each has broad authority to regulate all activities that occur on the land. Quite simply, to land a helicopter and operate a commercial recreation tour on the land, you must have permission of the landowner, whether that is a private owner or a federal or state government agency. Every agency but one requires a permit for a commercial recreation operation on the land, including helicopter-supported recreation. When a permit is

required, the land management agency retains the authority to allow, prohibit, or control the operations to minimize impacts.¹

The exception is the Alaska Department of Natural Resources (DNR) for operations on most general state land. For most general state land, DNR has granted permission in regulation for aircraft landing on state land without a permit. There are some exceptions to this rule. DNR's policies and regulations are described below.

2.1.2. State Land

A permit is required for commercial recreation operations, including helicopter-supported recreation on most subdivisions of state land: University Land, Mental Health Trust Land, and on State Parks.² However, for general state land, permits are required for helicopter-supported recreation operations only if they have facilities on the land or are within certain Special Use Areas, defined in regulations. (See Appendix E for two such areas.)

On general state land, the list of uses that may occur without a permit are given in 11 AAC 96. Landing an aircraft on state land is one of those generally allowed uses [11 AAC 96.020(a)(1)(F)]. Therefore, except for land within Special Use Areas described below, helicopter supported recreation may occur without a permit or other authorization from DNR.

There are some conditions to this generally allowed use. First, there must be no facility left overnight on the land. The operator cannot leave a tent camp, landing beacons, etc. If the operation has some facilities on the land, a permit is required. Second, a commercial operator must annually register with the Department under 11 AAC 96.018. Registration means the operator must annually pay a \$50 fee (\$25 if completed on-line), and provide the department with the geographic area they are operating in by subunit of DF&G game management unit, and provide the number of clients served, number of visitor days, and number of days in operation. Registration is just that – registration; approval by DNR is not required and the regulation does not provide DNR the ability to attach operation-specific conditions. Third, the operator must comply with a set of best

¹ Where a permit is required, it must be consistent with the agency's land management plan. Many federal land management plans and some state management plans, especially within State Parks, address helicopter supported recreation. Also, federal permits are preceded by the analysis required by the National Environmental Policy Act. NEPA has three levels of analysis. In order of increasing complexity, these are: a categorical exclusion, environmental assessment (EA), and Environmental Impact Statement (EIS). If the applicant requests a significant number of landings, federal agencies typically require an EA and sometimes an EIS before they will grant a permit.

² On Special Fish and Game Areas — State Game Refuges, Critical Habitat Areas, Wildlife Sanctuaries, and the Bison Range — the land is jointly administered by DNR, Division of Mining, Land and Water and the Alaska Department of Fish and Game, Division of Wildlife Conservation. While there may be an expectation, perhaps on the part of Fish and Game managers as well as the public, that heli-supported recreation would require a permit within special fish and game areas, it is unclear whether established regulations actually require it. To date, there has been no identified significant interest in helicopter-supported recreation on these lands and so the joint management has not been tested for this use.

operating practices (e.g., minimize disturbing vegetation, wildlife, etc.). See 11 AAC 96.025.

Certain Special Use Lands provide an exception to this no-permit-required policy for commercial helicopter landing. DNR has designated 24 locations as “Special Use Lands.” These are areas where some special value warrants additional protection or requirement not provided for general state land. Twenty-four of these Special Use Lands are in regulation at 11 AAC 96.014. Each Special Use Area includes in regulation a list of the DNR generally allowed activities that require a permit in that area. Examples of Special Use Areas include the Hatcher Pass, the Alyeska Ski Resort, Thompson Pass, Kenai Special Management Area Additions, and the entire North Slope. Some of these special use areas prohibit motorized use; others require permit for commercial uses such as heli-skiing or flightseeing. For still others, no additional permit requirements are applied.³

2.1.3. Planning and Zoning Powers

Within Alaska, home rule municipalities have planning and zoning powers on subjects that do not violate or interfere with federal or state authority. The line between where federal or state authority ends and local authority begins is ambiguous. Usually this ambiguity is unimportant. Most subjects of local zoning (residential, commercial, etc.) are not the subject of state action. If the state were to take the lead in regulating helicopter-supported recreation in a particular location on state land, the extent of local jurisdiction on the same subject may be unclear. Where the state has not decided to exercise jurisdiction — which is everywhere outside of state parks and some special use areas — home rule municipalities have the ability to enact and permit ordinances that regulate the industry.

The only example of comprehensive local regulation is the Haines Borough. Haines has adopted an ordinance that implements comprehensive local oversight for heli-skiing within its municipal boundaries and prohibits summer heli-tours (with one exception). While the route to local regulation was somewhat torturous, it demonstrates the ability of local government to use planning and zoning powers to implement a comprehensive scheme for regulation of helicopter supported recreation.

The Haines Borough Ordinance regulating heli-supported recreation is attached in Appendix D. It is further described in Section 6.4

³ The Thompson Pass Special Use Area [11 AAC 96.014(b)(13)] was adopted in part in anticipation of the need to manage recreation activities in the area, including heli-skiing. However, the regulation does not impose permit requirements beyond those of general state land. Similarly, the Glacier/Winner Creek Special Use Area near the Alyeska Ski Resort was adopted, in part, for management of downhill skiing and future resort expansion of Alyeska [(11 AAC 96.014(b)(16)]. The regulation for the Special Use Area limits snowcat operation to a single operator, but does not reference heli-skiing. (See Appendix E for more detailed information about these two Special Use Areas.)

2.1.4. Authorities that Prohibit Wildlife Harassment

The previous two authorities provide a means to closely regulate helicopter-supported recreation. Laws that allow fish and wildlife agencies to prevent or prosecute wildlife harassment may place certain small areas off-limits to helicopter-supported recreation and they prevent hovering over wildlife and other obnoxious practices; however, they do not prevent noise impacts to local residents or other people recreating in the area.

2.2. Strategies to Regulate Impacts

The purposes for which agencies impose limitations on the helicopter-supported recreation industry are generally three-fold:

- To protect residential areas and cabin owners in the flight path from the impacts of helicopter noise.
- To minimize noise and use conflicts with other people who use recreation areas. That is, other individuals who use an area may object to both the presence of significant number of people landing and also to the helicopter noise at the landing site and in the flight-path of the helicopter. Typically, it is the noise impacts that create more wide-spread conflict.
- To protect wildlife. Typically, the noise impacts create more wide-spread effects on wildlife than do the actual landing areas and people.

The strategies that agencies use to accomplish these purposes are briefly summarized below.

2.2.1. Regulating Areas of Use

Agencies designate areas where companies may and may not operate as a way of minimizing conflicts. This may include the following:

- *Designating Landing Areas.* Agencies may designate specific areas where companies may land and areas where they may not land. Areas may be selected or prohibited to preserve other recreation opportunities that would conflict with the helicopter-supported recreation, or to protect wildlife.
- *Designating Flight Paths.* Agencies may designate specific flight paths to minimize the amount of noise affecting the area beneath and surrounding the helicopter flights. Typically, agencies route the flights away from residential areas, important recreation areas, or sensitive wildlife habitats. Permits or ordinances that designate specific flight paths almost always have a “safety exemption” by which applicants are allowed to deviate from the specified flight-path if safety reasons require it (such as inclement weather).
- *Minimum Altitude.* Minimum altitude requirements are a variant of designating flight paths. That is, a particular flight path may require a minimum altitude in some areas, or it may designate a minimum altitude without a specific flight path as a means of minimizing noise impacts on the recreation, wildlife, or residences below. There is usually an exemption to this permit requirement for inclement weather or other safety considerations.
- *Designating Take-off Areas.* Agencies may designate specific take-off areas. However, it is difficult for governments to restrict helicopters from using existing

airports, though in some instances (Haines), agencies have done so. In other locations, they provide incentives for helicopter operators to move operations from an actual airport (i.e., more lenient limits if the operator limits effects on residential areas by moving the take-off site; or a competitive advantage in seeking limited permits).

2.2.2. Regulating Schedule

- *Time of Day.* A permit may minimize noise impacts by limiting hours of operation. For example, the Haines ordinance limits operation to the hours between 8 AM and 6 PM.
- *Time of Year.* A permit may prohibit operations during certain times of year. The Haines ordinance allows helicopter-supported recreation only from February 1st through May 3rd (with certain exemptions). In effect, this ordinance is tailored for heli-skiing, but prohibits summer tours (with one exception).

2.2.3. Limitations on Use

- *Limitation on Clients or Visitor Days.* Some permits limit the impacts by limiting the number of clients. These client limits are typically stated in visitor-days, client-days, or skier days. In this vocabulary, any day in which a client is transported is one visitor day. Thus, a helicopter which carries four skiers in a single trip for one ski-run uses four visitor-days. The same helicopter that takes one skier on 10 runs during the day uses a single visitor day. A large helicopter that takes 8 clients on one run uses eight visitor days.
- *Limitation on Landings.* The first permits issued by the U.S. Forest Service in Juneau included a client-day limit. In the mid-1990s, the USFS added landing limitations. The rationale is that a helicopter run creates the same impacts no matter if it carries one or a dozen clients. Thus, this limit is more directly tied to actual impacts. It also may cause operators to tend to use helicopters that carry more passengers over the long term.

2.2.4. Noise Limits

A direct method to control impacts from noise is to create noise standards that a permittee must meet. One pitfall to this approach is that noise impacts at or near a designated airport may already be regulated by the state or federal government and not subject to additional regulation from other state or federal agencies or the local government. However, providing direct noise standards that a permittee must meet may be done outside of the area covered by airport regulation. More on this approach is discussed in Section 4 Impact of Sound.

2.2.5. Wildlife Stipulations

Most permits also have wildlife protection and anti-harassment stipulations. These are further discussed in Section 4.5.1 Impacts on Wildlife .

2.2.6. Voluntary Information or Requests

In some instances, agencies have made voluntary requests a part of a permit or a part of general information to the aviation community or helicopter-supported recreation industry. For example, Togiak National Wildlife Refuge has been identified as a “Wildlife Sensitive Zone,” where pilots are requested to fly above 2,000 AGL (above ground level) from April 1 through October 1 because of heavy concentrations of migratory waterfowl, sea birds, and marine mammals. (NPS, 2003)

Another example, not from the helicopter-supported recreation industry, involves helicopters and the 40-Mile caribou herd. Biologists were concerned about helicopters over specific areas where caribou calving was occurring. Unfortunately, the caribou move around frequently within a large region and do not calve in the same area every year, or even from day-to-day. This made it difficult to specify areas that helicopters should avoid. Instead, the Alaska Miners Association worked with Department of Fish and Game biologists to maintain a website and updated it based on (sometimes daily) briefings from the biologists. Exploration companies chartering helicopters were asked to look at the website before flying in the region.

Voluntary agreements or requests work best where there are a small number of operators who can easily be informed of the requests. Operators may comply because of their concern to minimize the impacts or in some cases to avoid the public or agencies demanding more stringent required measures.

2.2.7. Combinations

Typically permits use a combination of these techniques. For example, the Haines ordinance uses every one of these techniques except direct noise limits. (It also uses skier days rather than landings).

2.3. Limitations on Authorities, Permit Terms, and Strategies

There is at least one important limitation on the ability of land management agencies and local government to regulate helicopter-supported recreation. The FAA has complete regulatory authority over airspace classification and use within the territorial limits of the U.S. Neither federal or state land management agencies nor local government have the jurisdiction to independently regulate airspace. The land management agencies gain their jurisdiction over the industry when the helicopter lands or takes off outside of a designated airport on federal, state, or municipal land. If there is no take-off or landing outside of a designated airport, there is no permit requirement. If there is no permit, there is no mechanism to require hours of operation, designated flightpaths, etc. Thus, the strategies outlined above cannot be used by land management agencies to regulate helicopter flightseeing.^{4,5}

⁴ There may still be opportunity for local government to regulate flightseeing activities that remain exclusively within the municipal boundary. However, it would be difficult for a municipality to regulate heli-supported recreation flights originating from a designated airport without affecting all flights from the airport flying outside the municipality.

Helicopter flightseeing may be regulated by the FAA promulgating rules governing minimum altitudes, and possibly other flight restrictions in specific locations. These restrictions would likely apply to all aircraft, and certainly apply to all helicopter flights and not just those for helicopter-supported recreation. In addition, FAA enforcement is less likely to monitor or enforce these provisions with the efficiency and flexibility of the land management agency with a mandate to oversee effects on land management.

A 2004 FAA Advisory identified 2,000 feet above ground level as the minimum recommended altitude for over flights of noise-sensitive areas on federally managed lands, such as National Parks Wildlife Refuges, recreational and cultural and historic sites “where a quiet setting is a generally recognized feature or attribute” (Federal Aviation Administration, 2004a).

For example, within Denali National Park, the FAA has requested all aircraft to maintain a minimum altitude of at least 2,000 feet above the ground surface within the park boundaries. FAA Advisory Circular 91-36C (“VFR Flight Near Noise-Sensitive Areas”) defines the surface as the highest terrain within 2,000 feet laterally of the route or the uppermost rim of a canyon or valley. More-specific guidelines are in effect in other parts of Alaska. In addition to the previously described minimum altitude, Togiak National Wildlife Refuge has been identified as a “Wildlife Sensitive Zone,” where pilots are requested to fly above 2,000 AGL (above ground level) from April 1 through October 1, and where non-emergency aircraft landing is restricted to lakes, streams, and other bodies of water on the refuge and adjacent established village airstrips that are available. In the Walrus Islands State Game Sanctuary, pilots are advised to maintain a minimum altitude of 5,000 feet above ground level within a three-mile radius of Round Island (U.S. Department of Transportation 2000a). At the Kupreanof Peninsula Area, pilots are advised to fly above 1,000 feet within two nautical miles of Kupreanof Wilderness Retreat from March 1 through June 30. (NPS, 2003)

It appears much easier to see how FAA could promulgate such rules for special areas such as National Parks and Refuges, and particularly sensitive wildlife areas. It is much harder to envision such rules for recreation on general state or federal land.

2.4. Summary

The information from this section is summarized in Table 2-2 and Table 2-3 that follow. Table 2-2 summarizes the three major authorities that give land management agencies and local government authority over helicopter-supported recreation.

⁵ With the exception of Merrill Field in Anchorage and the Juneau Airport, airports in Alaska are owned by the State. The FAA encourages voluntary agreements between operators and communities to mitigate helicopter noise. These voluntary agreements may be a useful tool to regulate flightseeing or for municipal regulation of helicopter-supported recreation where only the airport is within the municipal boundary. Agreements of this type in Alaska that involve helicopter landings or particular flight paths would also involve the Alaska Department of Transportation and Public Facilities.

Table 2-2. Summary of Authority for Oversight

Authority to Regulate Helicopter-Supported Recreation
Land Management Authorities
Planning and Zoning Powers
Protecting Wildlife from Harassment (1)

Note 1: Wildlife-related authorities do not provide broad authority over the industry, only the ability to proscribe certain practices and areas.

Table 2-3 lists the various methods that land management agencies and local governments use to minimize the impact of helicopter-supported recreation on residences, recreationists, and wildlife.

Table 2-3. Summary of Oversight Methods to Minimize Impacts

Methods of Minimizing Impacts from Helicopter-Supported Recreation
Regulating Areas
Designating Landing Areas
Designating Flight Paths
Requiring Minimum Altitude
Designating Take-off Areas
Regulating Schedule
Time of Day
Time of Year
Limiting Use
Limitations on Clients or Visitor-days
Limitations on Landings
Noise Limits
Wildlife Stipulations
Voluntary Requests
Combinations of Any or All of the Above

3. Types and Consumers of Helicopter-Supported Recreation Activities

3.1. Activities

3.1.1. Heli-skiing

Alaska heli-skiing occurs generally in late winter between February and May, depending on the area and permit conditions. (One operator indicated that 80% of his business occurs in April.) (Brownell, 2003) Helicopters take clients and guides to a drop-off point where they ski down to a designated pick-up site. The skiers are then either returned to the same point for another run or taken to another site. This is repeated as many as seven times a day, depending on the skill level of the skiers, snow conditions, and weather. Most permits require companies to operate between the hours of 8:00 a.m. to 6:00 p.m.

The Glacier/Winner Creek Special Use Area decision describes an operator management technique called “snowfarming.” Snowfarming is where a “limited number of skiers use a particularly prized run and may ski only one portion of the slope to leave untracked areas for the next group of customers. This is an important management tool for operators during periods of low snowfall or otherwise marginal weather conditions.” (Div. of Land, 1998)

All companies are required as a condition of the permit to have an operating plan, which includes, at a minimum, avalanche safety and rescue, safe helicopter operations, and wildlife mitigation. Further, companies precede any skiing operations with a client safety briefing, including avalanche rescue and use of transceivers. Alaska Mountain Safety Center (Hatcher Pass, Thompson Pass, and other Anchorage bowl sites), Southeast Alaska Avalanche Center, and Snow Dynamics (Girdwood) provide certification for guides as well as instruction for backcountry recreationists. (See Appendix B for web links.)

3.1.2. Dog Mushing

Many summer visitors desire to experience winter activities. Dog mushing/sledding is one of those activities that has increased in popularity. Helicopter-assisted tours allow users to take a short helicopter ride to the snow-covered site, take a one or two-hour ride on dog sleds, meet with mushers, and have an “Iditarod” experience. Operators have camps set up for the summer that house dog teams (one site has about 80 dogs) and handlers. These base camps are part of the authorization for helicopter-assisted tours.

3.1.3. Hiking

Operators are offering a variety of levels of glacier and backcountry hikes. One operator offers varying levels, from a one-hour trek around the glacier to an overnight package that allows hikers the option of more rugged terrain or longer hikes. Another operator has a “level three” trip that includes introduction to ice climbing and rope techniques. Most operators offer to provide necessary gear.

3.1.4. Rafting

Remote starting locations are appealing to visitors who want a “wilderness” experience. However, most don’t have the luxury of time to hike into these areas. One operator offers a float trip from a location 20 miles upriver, where the launch point is a lake accessed by fixed wing aircraft or helicopters.

3.1.5. Other Tours

Tour packages are limited only by the imagination of the operator. Most tours center on a glacier, but some provide backcountry recreation opportunities, hunting or fishing in remote areas, and tours of active volcanoes.

3.2. Consumers

The high-volume summer helicopter-recreation operations market primarily to cruise ship passengers or the on-shore extension of those tours. While there is no market profile of summer helicopter-recreation participants, for many of the large-volume operators, the consumers have the profile of cruise ship passengers. Winter heli-skiing is, by nature, different in that it draws from an interest-specific clientele.

3.2.1. Cruise Ship Shore Excursions

Cruise Line International Association sponsored a 2005 Cruise Industry Overview, a market research regarding cruise passengers:

This study was conducted among a random sample of adults over 25 years of age with minimum annual household incomes of \$40,000. These criteria were used based on prior research conducted for CLIA by TNS that demonstrated that 96 percent of cruisers meet these minimums. As a result, respondents for this study represent a very viable target market.

Total Representative Market: The median (the point at which half of the respondents fall below and the other half places above) respondent age is 44, representing median annual household incomes of \$71,000. Nearly two-thirds (63%) hold full time jobs; one in eight (13%) is retired. Over half (58%) are college graduates; most are white (93%). Respondents are evenly split by gender (49% male and 51% female), a result of the quota imposed for the study.

Compared to Prior Study: Consistent with the higher income requirements in 2004, the average income increases and seniors and retirees comprise a larger segment of the sample.

3.2.2. Heli-Skiers

Canadian tourism has conducted research about U.S. tourists and, in particular, alpine skiing. A 2003 report stated that of about 200.4 million American adults in 2000, almost 21.4 million are Alpine Ski Tourists (11%), with heli-skiers as only 1-in-50 of those skiers. (Research Resolutions, 2003) That translates to less than one-half million skiers are interested or have participated in heli-skiing. Several operators have indicated that

their market is international. Further marketing research information is available for a fee from some of the trade associations.

3.2.3. Incidental

The balance of the consumers is other “package” tourists, special interest clients (such as fishing or hunting), and local residents.

4. Impact of Sound

4.1. Measurement of Sound

The unit to measure the loudness of sound is the A-weighted decibel scale or “dBA.”⁶ The decibel scale is a logarithmic scale of sound power or intensity. An increase of 10dBA means an increase in sound intensity by a factor of two. An increase of 20 dBA means an increase in sound intensity by a factor of 4. Conversely, a reduction of 10 dBA corresponds to a reduction in sound intensity by 1/2, and so forth.

The smallest change in sound level that a human ear can perceive is about 3 dBA, and an increase of 5 dBA is usually noticeable. Normal conversation ranges between 44 and 65 dBA when the speakers are 3 to 6 feet apart. (FGMI, 2000)

Often, transportation sounds are used to describe sound levels because people can commonly relate to them. However, the sound intensity can vary significantly depending on the situation and machinery. According to the 2004 Forest Service Final EIS on Commercially Guided Helicopter Skiing on the Kenai Peninsula (page 3-3 and 3-4):

For example, estimates of “highway traffic sound include between 70 dB for passing automobiles and 80 dB for heavy traffic as heard from a sidewalk. Another source estimated light automobile traffic at about 50 dB. Further since frequency (volume of traffic) also enters into the sound equation, as does the relative composition or proportion of commercial and noncommercial vehicles, average speed, stop-and-go traffic, and time of day, estimates of typical noise are endlessly dynamic.

Snowmobiles are reported to routinely produce sound levels exceeding 80 dB and some have been reported to exceed 100 dB.

Railroad sound levels may reach 110 dB from horns at a distance of 100 feet and the trail itself passing at 80 dB. . . .

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 take-off. In level flight at 500 feet elevation, an A-Star 350 helicopter used by [Chugach Powder Guides] produces 75 dB, at 1,000 feet produces approximately 70 dB. During power ascent and landing approaches sound are the loudest, 87.1 to 94.5 dB.

⁶ The difference between the decibel scale (dB) and A-weighting decibel (dBA) scale is that some of the A-weighted scale emphasizes the frequencies that human ear can hear. Specifically, the dBA scale de-emphasizes the high (6.3 kHz and above) and low (below 1 KHz) frequencies, and emphasizes the frequencies between 1 kHz and 6.3 kHz, in an effort to simulate the relative response of human hearing.

4.1.1. Effect of Distance on Sound Intensity

Sound level (noise) dissipates predictably as a function of distance from source and receptor (i.e., humans). In the simplest situation, a stationary point source, noise dissipates inversely as the square of the distance from the source — assuming no barriers or interference — such that sound level decreases approximately 6 dB for every doubling of distance. For a simple example, an automobile might produce 80 decibels at a distance of 25 feet. At a distance of 50, the noise level will be 74 dB; at a distance of 100 feet, the noise level will be 68 dB; and at a distance of 200 feet, the noise level will be 62 dB.

However, sound transmission also is dependent on terrain, vegetation, and temperature. Sound dissipates less in cold, dense air. Vegetation typically absorbs sound, although snow may mask the some of the vegetation's absorptive capacity. Sound may reflect in certain terrains such as canyons and valleys; intervening ridges may successfully block the sound.

4.1.2. Typical Sound Levels

In Table 4-1, below, measures of sound levels for typical noise sources found indoors and outdoors are shown.

Table 4-1. Sound Levels and Relative Loudness of Typical Noise Sources Found in Indoor and Outdoor Environments

Noise Source or Activity	Sound Level (dBA)	Subjective Impression	Relative Loudness (human judgment of different sound levels)
Jet aircraft takeoff from carrier (50 feet)	140	Threshold of pain	64 times as loud
50-hp siren (100 feet)	130		32 times as loud
Loud rock concert near stage; Jet takeoff (200 ft)	120	Uncomfortably loud	16 times as loud
Float plane takeoff (100 feet)	110		8 times as loud
Jet takeoff (2,000 ft)	100	Very loud	4 times as loud
Heavy truck or motorcycle (25 ft)	90		2 times as loud
Garbage disposal, food blender (2 feet); Pneumatic drill (50 feet)	80	Moderately loud	Reference loudness
Vacuum cleaner (10 feet); Passenger car at 65 MPH (25 feet)	70		1/2 as loud
Large store air conditioning unit (20 feet)	60		1/4 as loud
Light auto traffic (100 feet)	50	Quiet	1/8 as loud
Bedroom or quiet living room; bird calls	40		1/16 as loud
Quiet library, soft whisper (15 feet)	30	Very quiet	
High quality recording studio	20		
Acoustic Test Chamber	10	Just audible	
	0	Threshold of hearing	

Source: FGMI 2000. p.4:261

4.1.3. Measurement Metrics

There are a variety of measures that agencies and scientists use to measure instantaneous, average, maximum, and minimum sound. The vocabulary is useful to understand publications, ordinances, and stipulations. A few of the commonly used measures are explained below.

L_{eq}. (Equivalent Sound Level – a type of average sound level)

L_{eq} is the logarithmic average within a specified time period. Put another way, it is the summation of the total sound energy measured, then averaged over the entire sound period. It essentially provides an observer the average energy over that time period, given in decibels. Because it is a logarithmic average, L_{eq} is generally higher than the arithmetic average and is heavily influenced by occasional loud sounds.

L_{dn} (Day-night Level). L_{dn} is a 24-hour sound level, but with the nighttime hours penalized by adding 10 decibels to the actual noise level prior to averaging. The penalty helps account for added sensitivity to noise during nighttime hours.

L_X (Sound Level exceeded $x\%$ of the time); L_X is the sound level exceeded $X\%$ of the time over a specific period of time (such as an hour, or a 24-hour period). For example, L_{50} is the sound level exceeded 50% of the time; it is a type of “average” sound level that is easily explained to the common person. Statistically, it is the median sound level. In other words, L_{90} is the sound level exceeded 90% of the time during the time period; L_{10} is the sound level exceeded 10% of that time period. Some municipal noise ordinances are written specifying sound levels that cannot be exceeded 50% of the time, or 10% of the time, etc.

L_1 is the sound level exceeded 1% of the time. For typical sound emitters with a reasonably gradual profile — such as a helicopter or truck — the L_1 limit is effectively the upper limit of sound. For noise emitters that have a very sharp profile, such as a sonic boom, L_1 does not measure the effective upper sound limit. In fact, for sharp-profile sounds, like sonic booms, L_X does not would work very well. Sonic booms occur in a few seconds and this measure would miss the real effect of a few sonic booms per hour.

L_{max} & L_{min} (Maximum and Minimum). L_{max} & L_{min} are the maximum and minimum sound pressures for a given period given in dBA or dB.

4.2. Helicopter Sounds

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 2004b). 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 2004b).

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, 2004b)

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

- “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 appears 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. For that reason, the report recommended that new models be developed that characterize human response to helicopter noise. Presumably, this may replace the A-weighted decibel scale (dBA). The specific recommendation is below:

Additional development of models for characterizing the human response to helicopter noise should be pursued. Civil helicopter annoyance assessments utilize the same acoustic methodology adopted for airplanes with no distinction for a helicopter’s unique noise character. As a result, the annoyance of unaccustomed, “impulsive” helicopter noise has not been fully substantiated by a well-correlated metric. Comments from both the helicopter industry and the public strongly recommended that further socio-acoustic investigations be pursued. Additional civil helicopter annoyance studies may help review current noise measurement analysis methodology that would lead to improved noise mitigation effectiveness . . . In the mean time, the FAA will continue to rely upon the widely accepted Day-Night Sound Level (DNL) as its primary noise descriptor for airport and heliport land use planning. The FAA will also continue the use of supplemental noise descriptors for evaluation of helicopter noise issues. (FAA, 2004b)

4.3. Example Noise Control Ordinances

The information below contains extracts from some representative noise control ordinances. However, the ordinances are complicated and not repeated in their entirety. They typically contain numerous definitions and exceptions. Only the most relevant parts of the ordinances are discussed below.

4.3.1. Municipality of Anchorage

Anchorage has a 12-page noise control ordinance. It has separate standards for airports, construction, power tools, motor vehicles, etc. One portion of the ordinance provides that on a person’s private property he or she may not create sounds that cross into a property boundary of another person to exceed the limits shown in Table 4-2 below.

Table 4-2. Municipality of Anchorage Noise Ordinance

Receiving Land Use Category	Time	Sound Level (dBA)
Residential Area	7 AM - 10 PM	60
	10 PM - 7 AM	50
Commercial Area	7 AM - 10 PM	70
	10 PM - 7 AM	60
Industrial Area	All Times	80

Source: Anchorage Municipal Code 15.70.080(A)

Note that louder sound levels are allowed for motor vehicles being operated on a public right-of-way and from airports.

4.3.2. Noise ordinances that include an increase above background

Some municipal ordinances combine average noise levels, like those described in the Anchorage ordinance, with maximum temporary increases. For example, Sacramento County includes the sound limits in Table 4-3 below.

Table 4-3. Sacramento County Noise Ordinance

	Allowable Increase Above Average	Decibel Limit (dBA)	
		Day	Night
Average Maximum Level	--	55	50
≤ 30 minutes/hour	0	55	50
≤ 15 minutes/hour	+5	60	55
≤ 5 minutes/hour	+10	65	60
≤ 1 minute per hour	+15	70	65
Not to be exceeded at any time	+20	75	60

Note that the time duration for an increase does not have to be consecutive. For example, the ordinance allows up to 15 minutes during any daytime hour at 50 dBA, but the 15-minutes do not have to be all during the same 15 minutes. It can be at anytime during that hour, but which cumulatively do not add to more than 15 minutes.

Also, the Sacramento County ordinance is five pages long with a number of definitions and exceptions.

4.3.3. Ordinance for Quiet Areas

The State of Oregon has a 24-page noise control ordinance with specific limits for front-engine cars, rear-engine cars, trucks, school buses, snowmobiles, airports, off-road vehicles, snowmobiles, and many other sound sources. The ordinance includes limitation for industrial and commercial noise sources for “quiet areas.”

Table 4-4. Oregon State Standards for Commercial Industrial Sources in Quiet Areas

	Decibel Limit (dBA)	
	Day	Night
L₅₀	50	45
L₁₀	55	50
L₁	60	55

This standard has some advantages – it is easily understood by the common person. Using the day-time standards for example: During each hour, a sound source must be quieter than 50 dBA for half the time and may be louder than 50 dBA for 50% of the time. However, they may be louder than 55 dBA for only 10% of the time each hour (six minutes) and for 1% of the time during each day-time hour — 36 seconds, the noise may be louder than 60 dBA. Thus, the L₁ limit is effectively the upper limit for most types of sound.

4.3.4. DNR Limits Used at True North Gold Mine

For one specific permit issue, DNR adopted noise control stipulations that are very close to the Oregon noise control standard described above. They did so to regulate sound impacts from True North Gold Mine haul trucks on nearby residences on Cleary Summit outside of Fairbanks. The sound limits that DNR imposed on True North trucking operations are those in Table 4-5 below:

Table 4-5. DNR Noise Control Limits for True North Gold Mine Road Right-of-Way

	Decibel Limit (dBA)	
	Day	Night
L₅₀	55	45
L₁₀	60	50
L₁	75	55

4.3.5. Federal Highway Administration Noise Criteria

The Federal Highway Administration has traffic noise impact criteria for federally funded road and high projects. (See Title 23 of the Code of Federal Regulations (CFR) Part 772, Procedures for abatement of Highway Traffic Noise and Construction Noise.) The criteria are applicable for residences, churches, schools, recreational uses, or commercial and industrial areas using hour equivalent sound level (L_{eq}). A summary is contained in Table 4-6.

Table 4-6. FHWA Roadway Noise Abatement Criteria

Land Use Category		Hourly L_{eq} (dBA)
Type A	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose	57 (exterior)
Type B	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences (exterior) motels, hotels, schools, churches, libraries and hospitals	67 (exterior)
Type C	Developed lands, properties or activities not included in the above categories	72 (exterior)
Type D	Undeveloped land	--
Type E	Residences, motels, hotels, public meeting rooms, schools churches, libraries, hospitals and auditoriums	52 (interior)

4.3.6. Predictors of Community Reaction Matrices

There are some criteria that may not be useable as noise control ordinances, but are able to predict community reaction for intrusive noise sources. (Von Bierke, 1993). The matrix in Table 4-7 uses the day-night sound level (L_{dn}) which assesses noise for the entire day, and has a penalty for nighttime noise to account for the increased sensitivity to noise at night and generally lower nighttime ambient sound levels.

The matrix predicts community reaction to new noise sources. Because it uses the day-night sound level (L_{dn}), the matrix includes a 10 dB penalty for night-time noise. The

matrix is helpful in determining the likely community reaction to a new, intrusive noise source such as introduction of helicopters sounds in an otherwise quiet area. It shows that it may not take a very large increase in sound levels (especially night-time sound levels) to provide significant community reaction.

While the matrix may be useful, we know of no agency or municipality that uses this matrix for its noise control ordinance. The reason may be, in part, because it is difficult for an agency to base the allowed level of noise on whether someone is likely to complain, whether those complaints are viewed as justified, or even actually occur. In addition, the 10 decibel night-time penalty that is imbedded in the metric may also be problematic. For a quiet area, where the average sound level has a decibel level between 40 and 50 dBA (between the sound level of a bedroom or quiet living room; bird calls and light auto traffic at 100 feet), the penalty may require that any new source be 10 dB less than that sound. A 30 dBA level is the sound level of a quiet library or soft whisper at 15 feet. This does not seem realistic. Alternatively, a sound emitter may be less than the allowed maximum during the day, but “save up” the margin for averaging during the night. This may also be confusing to those trying to eliminate noise during sensitive time periods. For these reasons, the matrix is probably not useful as an actual standard. It may be useful in considering community acceptance of a new sound source.

Table 4-7. Community Reaction Matrix

Community Average Reaction	Relative L_{dn} in dB (normalized intruding minus background)
None (Many residents probably do not notice the noise, but others may be somewhat disturbed)	-5
Sporadic Complaints (Some complaints, but generally not persistent)	0
Widespread Complaints (Some persistent complaints)	5
Threats of Legal Action (Large numbers of persistent complaints, organized efforts against those responsible for the noise)	14
Vigorous Action (Community reaction may be strong enough to force offenders to limit drastically or cease operations)	21

4.4. The Usefulness (or lack thereof) of Sound Measurement

The discussion in this section has treated sounds as if they were all alike differing only in their intensity (loudness). Common experience, however, shows that all sounds are not alike, despite the difficulty in capturing those differences in measurements. Three examples may illustrate the differences.

Most people have had the experience of sitting on an airplane near a family with a baby. When that baby is laughing, few people find it disturbing. But when the baby is crying, even if the decibel level is similar, many people find it disturbing, some very disturbing.

Other people may be able to sleep through a spouse's snoring, or the furnace cranking on and off, but are driven to anger by their neighbor's dog barking (especially if they don't particularly like the neighbor). This occurs even when the dog barking is not noticeably louder than the snoring or the furnace.

A resource issue near Fairbanks illustrates the point as well. DNR limited the sound level of True North Gold Mine haul trucks to nighttime average (median) level of 45 dBA. For up to 36 seconds an hour the sound level could extend up to 55 dBA. This is not particularly loud. 45 dBA is between "bedroom or quiet living room; bird calls" and "light auto traffic at 100 feet." 55 dBA is between that level and "large store air conditioning unit (20 feet)." Note that these sound levels are at the property boundary. Sound levels inside the house in the winter when windows are closed (when the noise was most disputed by residents) are much lower.

Despite the restrictive sound levels, DNR received complaints from nearby residents. A few individuals in particular were very persistent. DNR received a number of complaints from the owner and guests of a bed and breakfast that indicated that these low level sounds disrupted their sleep.

When DNR had a consulting firm monitor the background noise levels at night in the subdivision, it found that the loudest sound was a water truck delivering water in the middle of the night. The water truck was louder than the mine's haul trucks, yet no one complained. When a meeting was held at one of the facilities to discuss the sound levels, staff noticed that the sound of the furnace going on and off was louder than the sound of the trucks. Further, the individual who complained most frequently about the trucks was situated adjacent to a dog lot.

No one complained about the water truck, which had been delivering water at night (apparently loudly), for years. The residents did not even notice the furnace. No one complained about the dog lot, which had been there for years. Yet the trucks, which third-party monitoring showed to have a median sound level close to the sound level of bird calls, prompted many complaints.

The point of this illustration is not that the residents were unreasonable, or that trucks should be banned at night. (The area, after all, had an industrial zoning). Rather, it illustrates the limitations of thinking about sound only in decibels. If people can identify an unwanted sound, they may consider it a bothersome noise despite other, louder sounds that do not have the stigma.

This discrimination between similar-intensity sounds is a real phenomena, but one with which government has a difficult time dealing. It is very difficult for government to

determine that one activity is allowed, but a different activity with the same or even lower sound level is not. While there may be some areas, such as parks that are managed particularly to allow people to enjoy a natural setting (including natural sounds), it is unusual in most situations for government to base regulation on some people's perception that an activity is unwanted, even if the physical impacts are low.

4.5. Impacts

Conducting helicopter operations is not without impact to wildlife, residents, or other users in the area. Most government land management agencies must, by law, consider those impacts when making land management decisions. They typically do so through Environmental Assessments, Environmental Impact Statements, or other decisional documents produced for specific actions and have detailed information about impacts to wildlife, recreationists, and the soundscape. Generally, authorizations require the avoidance of observed wildlife and horizontal or vertical separation from known breeding areas. See specific areas for wildlife mitigation measures in Area-Specific Helicopter-Supported Recreational Activities in Section 6. The following is a synopsis of those materials.

4.5.1. Impacts on Wildlife

Human-generated sound is known to affect animals in a variety of ways including annoyance, chronic stress, and hearing loss. Sound may directly affect reproductive physiology or energy consumption as individual animals spend energy, or lose mating or foraging opportunities by repeatedly reacting to or avoiding loud sound. Animals may be forced to retreat from favorable habitat to avoid human-generated sounds. Though direct effects of sound on wildlife may be the most obvious, it may also have indirect effects on populations as well through these mechanisms.

Wildlife biologists report that from extensive studies on wildlife reaction to helicopter sounds, that reaction to sound is species-specific and cannot be generalized (See Appendix J)

Regardless of whether a permit is issued, the threshold for wildlife management is federal and state laws that do not allow the harassment or disturbance of wildlife:

AS. 16.05.940(34) "take" means taking, pursuing, hunting, fishing, trapping, or in any manner disturbing, capturing, or killing or attempting to take, pursue, hunt, fish, trap, or in any manner capture or kill fish or game.

Further, actions are also subject to the Endangered Species Act of 1973 (as reauthorized in 1988), the Marine Mammal Protection Act of 1972, and the Bald and Golden Eagle Protection Act of 1940 (as amended).

Under the Bald and Golden Eagle Protection Act, as amended, it is unlawful to import, export, *take*, sell, purchase, or barter any bald eagle or golden eagle, their parts, products, nests, or eggs. "Take" includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing the eagles. (See 16 U.S.C. §§ 1531 – 1544.)

The Marine Mammal Protection Act, prohibits the *take* of all marine mammal species in U.S. waters. “Take” is defined as: “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.” Harassment is defined as “any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild; or has the potential to disturb a marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.” (See 16 U.S.C. § 1362.)

4.5.1.1. Mountain Goats

For alpine skiing and helicopter tours of backcountry and glaciated areas, the species most likely to be affected are mountain goats. This is primarily due to the proximity of their habitat to flight routes and tour landing sites. Preferred winter habitat of mountain goats is often steep and rocky, south-facing slopes, that are exposed to sun and wind and are confining in terms of forage and movement. (Greater Yellowstone, 1999)

Mountain goats breed during the months of November and December, and billies may wander considerable distances in search of nannies. The nannies drop their kids during the months of early May through early June. During these vital life stages, mountain goats are particularly sensitive to disturbances. (McCracken, 2002)

Because mountain goats are sensitive to loud noises (such as what a helicopter produces), their behavior may be affected based on duration and proximity. (Greater Yellowstone, 1999)

Members of the Northern Wild Sheep and Goat Council recommend a 1.5 km (roughly one mile) distance for known nursery or critical winter range habitat. In their 2004 position paper, the group stated that “mountain goat winter and kidding distribution and habitat selection should be known and mapped prior to issuance of annual or multi-year helicopter-recreation special use permits.” The paper emphasizes that physiological responses can occur even in the absence of behavior responses and that assumptions of habituation can not be made. (NWSGC, 2004) Federal and state agencies in Alaska have not relied on this position paper as a basis for their authorizations, but have conducted their own research, relied on published research, or the recommendations of biologists on staff. Two of the published documents that the agencies appear to rely upon the most are summarized below.

Chapter 4 of the Juneau Icefield EIS includes some of the issues associated with helicopter disturbance as:

- Physiological responses, such as increased heart rate or stress hormone levels, but whether such responses lead to long-term harm is equivocal.
- If other events such as nursing young or harsh winters are combined, the impacts of physiological stress can be more severe.
- Breeding success, feeding and habitat use may be affected.

- Accidental injury can result from trampling, falling, and running into objects or off cliffs.
- Reproductive losses can occur when young are left unattended or abandoned.
- Panicked running results in increased energy use.
- Reduced food intake if the animal happened to be feeding.
- Habitat avoidance or abandonment.

Steeve Côté conducted a study in Alberta from June to August 1995 to determine the effects of helicopter use in geophysical exploration for oil and gas. Côté found that the distance between the helicopter and the goats was the most important factor affecting behavior. When the helicopter was less than 500 meters away, 85% of the mountain goats observed were greatly disturbed (fleeing and hiding reactions). When the distance was increased to greater than 1500 meters, only 9% were. Similar to other studies, Côté also found that whether there were one or more overflights, the goats behaved similarly – as if each flight was a new event. Thirty-two percent of the goats were greatly disturbed by the overflight, 26% were moderately disturbed, and 42% were lightly disturbed. Note that one marked difference between helicopter use for geophysical surveys and helicopter tours is the requirement for flying a straight course in the collection of data. Helicopter tour pilots should be able to easily avoid winter habitat and critical areas through avoidance of known habitats or vertical/horizontal buffers from observed animals.

In 2001 and 2002, Goldstein, et al, recorded behavioral responses of 122 groups of mountain goats from 347 helicopter overflights. These observances occurred in four geographic areas in southeastern and southcentral Alaska. Like Côté, Goldstein's group found that mountain goats fled and hid from helicopter overflights. However, they found that the response was "muted in comparison."

Topography may provide some explanation for the different magnitudes of response, due to terrain, noise levels, and proximity to escape cover. Mountain goats in open, undulating terrain in Alberta responded by running for long distances (>100 m) or remaining alert for extended periods of time (>10 min) (Côté 1996). On our study sites, steep terrain may have limited the ability of mountain goats to run long distances. Proximity to escape cover may have reduced the magnitude of the responses we detected...In our study areas, goats with greater prior exposure to helicopters seemed to have the most tolerance for helicopter overflights. The length of time that a goat remained in a disturbed state following an overflight, however, was not different between areas. (Goldstein, 2005)

The Goldstein report recommended no-fly zones for known mountain goat locations. Further, they listed specific approach distances for the four geographic areas, based on a measure of risk disturbance of less than 25%:

Kenai Peninsula-Turnagain Arm:	1,000 m.
Eastern Prince William Sound:	1,234 m.
Chilkat Mountain Range	771 m.

Juneau Icefield: 500 m.

4.5.1.2. Other wildlife

Impacts could occur to black bear, brown bear, wolverines, mountain goat, gray wolf, bald eagle, Steller sea lion, trumpeter swan, moose, or harbor seal.

Ronald Larkin, in a 1996 literature review of the effects of military noise (such as helicopters) on wildlife, showed that different species have widely different responses to helicopter presence and noise. Negative responses can include birds abandoning nests, decreased chick survival, decreased reproduction, interruptions in feeding, and metabolic stress responses.

Brown/grizzlies bears react moderately or strongly to helicopters than fixed-wing aircraft. Bears fled to cover 61 percent of the time in response to fixed-wing overflights, and 88 percent of the time in response to helicopters, during petroleum exploration activities in Northwest Territories (Harding and Nagy, 1976 as cited in Juneau Icefield EIS, Forest Service, 2002a). Mitigation strategies include minimizing traffic during the denning period (October to early May), scheduling flights between 1 hour after sunrise to 1 hour before sunset (April through October), and maintaining a minimum altitude of 300 meters (984 feet) (IGBC, 1987; Claar et al. 1999; MELP, 2001 as cited in Juneau Icefield EIS, Forest Service, 2002a).

Habituation varies among individual eagles, and generally was greatest at nest sites with the most frequent overflights. Grubb and Bowman (as cited in Juneau Icefield EIS, Forest Service, 2002a) recommended a 600-meter (1,969-foot) aircraft exclusion zone around nests.

4.5.1.3. Summary of Mitigation Measures

Table 0-4 in the Executive Summary summarizes mitigation measures most frequently used by regulators in managing the impacts of helicopter-supported recreation activities on wildlife.

4.5.2. Impacts on People

4.5.2.1. Impacts on Urban Communities

At some level of sound intensity and duration, people experience physiological and psychological effects. According to the 2002 USFS Juneau Icefield Final EIS (p 4-22), the “US Environmental Protection Agency has established 70 dB to be the *maximum safe average* amount of sound... (sleep loss and other adverse physiological and psychological response may occur at lower levels), and continuous exposures to sound levels of 85 dB and above may be physically hazardous to hearing.” While sound levels from government-authorized helicopter-recreation should not occur at a level to cause a physiological impact, they may still cause significant community displeasure.

Individuals in Juneau or other urban communities are subject to a cacophony of sound. To the extent that helicopter-recreation causes a sudden increase in sound levels, or even a gradual long-term increase, there will be a significant impact on community residents. To the extent that the sound levels are within background sound levels within these communities, the impacts will be limited or may be non-existent.

4.5.2.2. Impacts on Recreational Cabins and Rural Areas.

A concentrated increase in helicopter sounds has the potential to change people's enjoyment of their recreational cabin or other rural areas. These areas usually lack the level of human-caused background sounds audible within a city. In fact, the relative quiet may be one of the characteristics that attract people to the area in the first place. If that quiet is affected or shattered frequently, it is likely to matter very much to those who live there.

From the 2002 USFS Juneau Icefield Final EIS (p 4-23),

How people perceive the loudness of any given sound depends on several measurable physical characteristics of the sound. These characteristics include: (1) intensity, (2) frequency of contact, (3) change in sound pressure, and (4) rate of increase of sound pressure levels. However, the loudness of the sound is not the (only) issue. It is the noise of the helicopter. Noise is usually regarded as unwanted sound — sound that disturbs routine activities and quiet, and perhaps causes a feeling of annoyance. Which sounds are noise is obvious to each listener and he or she has no need to measure it. It is there and it is bothersome. Annoyance response is remarkably complex, and considered on an individual basis, displays a wide variability for any given noise. These variables include (1) emotional variables such as feelings about the necessity or preventability of the noise, judgment of the importance value⁷ which is produced by the noise, and activity at the time an individual hears a noise, and (2) physical variables such as the setting, time of day, season, predictability of noise, control over noise, and length of time an individual lie exposed to the noise.

Like the examples explained in Section 4.4, helicopter noise that is obvious to individuals who value the relative quiet of an area will be disliked. Sometimes it will be intensely disliked and can affect the individual's enjoyment of a cabin or community. The extent of the impact will typically depend on the extent to which the helicopter noise is disruptive: how often it occurs and how clearly it can be heard above natural noises in the area.

Any more precise impact on the lifestyles of individuals in recreational cabins and rural areas would depend on the specifics of the situation.

⁷ Importance value. In other words, if someone believes that the use is important, they are likely to be more tolerant of the sound it produces.

4.5.2.3. Impacts on Recreationists and Recreation Areas

The conflicts between helicopter-supported recreation and other primarily non-motorized uses in the area are well known. People who recreate in the backcountry say that the presence of a helicopter, primarily as a source of noise in an otherwise pristine or quiet area detracts from their experience. Some feel that the sudden presence of heli-skiers or tourists in areas that they have expended considerable effort to reach is unfair, especially when it involves terrain accessible for day tours. (Forest Service, 2004a)

Essentially, the impacts are two-fold. Those who use the backcountry may be displaced by the helicopter tours — either because those brought in by helicopter use the resources, or because the noise drives them away. Even if they are not displaced, their enjoyment and perception of an area may be significantly affected.

These issues received national attention at the Grand Canyon where the conflict between sounds caused by flightseeing aircraft and those enjoying the natural environment were the subject of legislation by Congress.

The National Parks Air Tour Management Act of 2000 requires FAA and NPS to jointly establish air tour management plans to “mitigate or prevent the significant adverse impacts, if any, of commercial air tour operations upon the natural and cultural resources, [and] visitor experiences.” Alaska’s national parks as well as the Grand Canyon, were exempted from this Act.

The issues are similar, though perhaps less intense, elsewhere. Nevertheless, helicopter-supported recreation has the potential to displace backcountry recreationists and to decrease the enjoyment of those who remain.

5. Economic Benefits of Activities

5.1. Summer Heli-Tours

The cruise industry is the largest contributor in terms of clients for helicopter-supported recreation. The McDowell Group prepared an assessment of the cruise industry on local government revenues and expenditures in Southeast (1998). In that report, information about the cruise industry and its effects on the local economies of Southeast were discussed. Cruise ship passengers spent approximately \$160 million during the 1997 season, including approximately \$120 million in taxable spending. Shore excursions, such as helicopter tours, are a significant part of that revenue. Table 5-1 shows total revenue received by area:

Table 5-1. Cruise-Related Revenues and Costs by Local Government, 1997

	Total Revenues	Total Costs	Net Gain (Loss)
City of Ketchikan	\$2,891,300	\$1,219,995	\$1,671,305
Ketchikan Gateway Borough	809,000	13,800	795,200
Wrangell	40,400	41,950	(1,550)
Petersburg	27,500	4,700	22,800
Sitka	685,000	290,230	394,770
Juneau	4,254,000	1,296,850	2,957,150
City of Haines	329,000	247,691	81,309
Haines Borough	65,000	3,660	61,340
Skagway*	1,049,000	187,122	861,878
Totals	\$10,150,200	\$3,305,998	\$6,844,202

Source: McDowell Group. 1998.

Using the 1997 reported actual service days (75,491) permitted at the Juneau Icefield and the lowest-cost helicopter tour for the area of \$295 (2006 published price for a dog-sled tour by NorthStar Trekking), leads to a conclusion that about 5-10% of the Juneau cruise receipts goes to helicopter tour companies and that it has a positive economic effect on the Juneau community. Table 5-2 is based on a web-search and provides a list of known operators, the packages that they offer, and their published rates. Note that the list is *only the daily rate* as advertised; it does NOT include week-long packages, rates for groups, or similarly priced products that the individual operators may offer. Thus, the daily rate may not always be the most cost-effective, but is used for comparison purposes only. Web links have been included for the reader to access further information.

Very little data was made available to us in terms of revenue received by the various governmental agencies. (The information that is available is included in Section 6 Area-Specific Helicopter-Supported Recreational Activities.) However, using the 2001 fee schedule (see Appendix F):

the number of visitors at the Juneau Icefield in 2001:	89,961
times the Heli-Tour Fee per NFS Client Day:	<u> x </u> \$2.61
equals the base rate that the Forest Service received:	\$234,798.20

Note that this does not include any additional fees that may be “offered” as part of the bid prospectus.

5.2. Winter Heli-Skiing

In a response to a comment received regarding the profitability of heli-skiing, the Chugach Forest Service in its 2004 FEIS (p.5-13) stated that,

We know of no industry study to determine the profitability of heli-skiing. Each operation is unique. The Forest Service has collaborated with [Chugach Powder Guides] to determine the number of client days and units necessary to ensure economic feasibility and sustainability and to achieve forest-wide and region-wide desired conditions and goals. The number of client days for the break even point in this study is 1,200 client days and ensures that the Forest Service is permitting CPG with adequate client days to allow for:

- *A high quality recreational experience to be provided on National Forest lands.*
- *Economic benefits to forest dependent communities associated with helicopter-skiing operations.*
- *The greatest opportunity for hiring operationally experienced guides, keeping helicopter equipment well maintained, and an overall safety.*

Further, in its discussion on the economics of the activity, the 2004 FEIS (p. 4-36) mentioned other factors that contribute to economic benefits of heli-skiing:

Other sources of income to [local communities] include: temporary housing for guides, hotel and restaurant use by clients, and other purchases from both guides and clients. In 2003 nine CPG’s heli-ski guides resided locally and two came from out-of-state. During the same year 33 percent of CPG’s clients were local residents and 67percent came from out of state.

Again, very little data was made available to us in terms of revenue received by the various governmental agencies. (The information that is available is included in Section 6 Area-Specific Helicopter-Supported Recreational Activities.) However, using the 2001 fee schedule (see Appendix F) for heli-skiing:

the number of client days report in 2001 by Chugach Powder Guides:	886
times the Heli-Tour Fee per NFS Client Day:	<u> x \$8.10</u>
equals the base rate that the Forest Service received:	\$7,176.60

Note that this does not include any additional fees that may be “offered” as part of a bid prospectus.

Table 5-2 List of Helicopter-Supported Recreation Providers

<u>Area</u>	<u>Operator</u>	<u>Tour</u>	<u>Cost</u>	<u>Website</u>
Bristol Bay	Egli Air Haul	Katmai Round Robin Tour	Not Listed	http://www.egliair.com/DEAH%20Fltsee%20&%20Adven.html
Bristol Bay	Egli Air Haul	10,000 Smokes Tour	Not Listed	http://www.egliair.com/DEAH%20Fltsee%20&%20Adven.html
Bristol Bay	Egli Air Haul	Battle Lake Tour	Not Listed	http://www.egliair.com/DEAH%20Fltsee%20&%20Adven.html
Bristol Bay	Egli Air Haul	Bristol Bay Fishery Tour	Not Listed	http://www.egliair.com/DEAH%20Fltsee%20&%20Adven.html
Cordova	Points North Heli Adventures	Heli-ski one day (ave)	\$ 850	http://www.alaskaheliski.com/
Denali	Era Helicopters	Heli-hiking	\$ 374	http://www.flightseeingtours.com/
Girdwood	AK Mtn and Glacier Guides	Ridgeline hike	\$ 399	http://www.alaskavisitorscenter.com/images/akmountainguides.html
Girdwood	AK Mtn and Glacier Guides	Glacier Tour	\$ 599	http://www.alaskavisitorscenter.com/images/akmountainguides.html
Girdwood	Alpine Air Alaska	Glacier Tour	\$ 189	http://www.alaska.net/~alpineair/
Girdwood	Alpine Air Alaska	Glacier Landing Tour	\$ 279	http://www.alaska.net/~alpineair/
Girdwood	Alpine Air Alaska	Glacier Landing/PWS Tour	\$ 389	http://www.alaska.net/~alpineair/
Girdwood	Alpine Air Alaska	Glacier Dog Mushing	Not Listed	http://www.alaska.net/~alpineair/
Girdwood	Alpine Air Alaska	Columbia Glacier Landing	\$ 599	http://www.alaska.net/~alpineair/
Girdwood	Chugach Powder Guides (Chugach Adventure Guides)	6-7 Heli-ski Runs	\$ 850	http://www.chugachpowderguides.com
Girdwood	Class V Whitewater (Chugach Adventure Guides)	Flightsee and Raft Trip	\$ 375	http://www.alaskanrafting.com/twenty mile.html
Haines	Glacier Valley Tours	Glacier Camp Cabins	Not Listed	http://www.haines.ak.us/hainesweb/tours/index.html
Haines	Out of Bounds Adventures	6 Heli-ski Runs	\$ 540	http://www.alaskaheliskiing.com/
Haines	Southeast Backcountry Adventures	Heli-ski (\$500/hr)	Daily rate not listed	http://www.skiseaba.com/
Haines	Teton Gravity Research	Heli-ski filming only		http://www.tetongravity.com/
Homer	Maritime Helicopters	Glacier Tours	Not Listed	http://www.maritimehelicopters.com/tours.htm
Homer	Maritime Helicopters	Custom Tour: Augustine Island	Not Listed	http://www.maritimehelicopters.com/tours.htm
Homer	Maritime Helicopters	Heli-Fishing	Not Listed	http://www.maritimehelicopters.com/tours.htm
Homer	Maritime Helicopters	Custom Tour: Barren Islands	Not Listed	http://www.maritimehelicopters.com/tours.htm
Homer	Maritime Helicopters	Custom Tour: Fossil Point	Not Listed	http://www.maritimehelicopters.com/tours.htm
Juneau	Coastal Helicopters	Adventure Tour	\$ 315	http://www.coastalhelicopters.com/
Juneau	Coastal Helicopters	Icefield Excursion	\$ 192	http://www.coastalhelicopters.com/
Juneau	Coastal Helicopters	Dog Sled Tour	\$ 395	http://www.coastalhelicopters.com/

<u>Area</u>	<u>Operator</u>	<u>Tour</u>	<u>Cost</u>	<u>Website</u>
Juneau	Era Helicopters	Dog Sled Tour	Not Listed	http://www.flightseeingtours.com/
Juneau	NorthStar Trekking	Level 1: Helicopter Glacier Walkabout	\$ 295	http://www.northstartrekking.com/
Juneau	NorthStar Trekking	Level 2: Helicopter Glacier Trek	\$ 359	http://www.northstartrekking.com/
Juneau	NorthStar Trekking	Level 3: The "X-Trek"	\$ 459	http://www.northstartrekking.com/
Juneau	Temsco Helicopters Inc.	Mendenhall Glacier & Guided Walk	Not Listed	http://www.temscoair.com/
Juneau	Temsco Helicopters Inc.	Pilot's Choice Tour	Not Listed	http://www.temscoair.com
Juneau	Temsco Helicopters Inc.	Dog Sled Tour	Not Listed	http://www.temscoair.com
Kodiak	Maritime Helicopters	Hunting	Not Listed	http://www.maritimehelicopters.com/tours.htm
Petersburg	Temsco Helicopters Inc.	Glacier Helicopter Tour	Not Listed	http://www.temscoair.com
Seward	Godwin Glacier Dog Sled Tours	Flightsee & Glacier Landing	\$ 270	http://www.alaskadogsled.com
Seward	Godwin Glacier Dog Sled Tours	Glacier Walk	\$ 323	http://www.alaskadogsled.com/
Seward	Godwin Glacier Dog Sled Tours	Dog Sled Tour	\$ 413	http://www.alaskadogsled.com
Seward	Godwin Glacier Dog Sled Tours	Overnight Stay Tour	\$ 498	http://www.alaskadogsled.com/
Skagway	Temsco Helicopters Inc.	Valley of the Glaciers tour	Not Listed	http://www.temscoair.com/
Talkeetna	Nova River Runners	River rafting Trip/Heli-Tour	\$ 750	http://www.novalaska.com/chick.htm
Valdez	AK Backcountry Adventures	6 Heli-ski runs	\$ 675	http://www.alaskabackcountry.com/skiing.html
Valdez	Alaska Rendezvous Guides	Heli-ski -- Alaska Local	\$ 250	http://www.arline.com/
Valdez	Alaska Rendezvous Guides	Heli-ski -- Full Package	\$ 780	http://www.arline.com/
Valdez	Valdez H2O Heli Adventures	Heli Ski, single day	\$ 940	http://heli-skiing.gordonsguide.com/deancummings/index.cfm
Valdez	Valdez Heli-Camps	Alaskan Copper 'punch card'	\$ 979	http://www.valdezhelicamps.com/
Valdez	Valdez Heli-Ski Guides	7-Day heli-ski packages	No Day Rate	http://www.valdezheliskiguides.com/

6. Area-Specific Helicopter-Supported Recreational Activities

The following is a description of the authorized helicopter-supported recreational activities divided into geographic/use areas – Denali-Talkeetna, Girdwood, Haines, Homer, Juneau, Petersburg, Seward, Skagway, and Valdez-Thompson Pass. Within each area is a discussion of the type of use (winter vs. summer), the particular area and what makes it unique, the regulatory framework surrounding the authorized uses, and a description of the authorizations and their respective requirements and statistics. Any gaps in information, whether it is not available without a FOIA request to a particular agency or we were unable to capture the information, are noted.

There are some operators who describe in DNR’s commercial tourism registration system that they may use helicopters to transport clients. These are generally small-volume operations (at least for helicopters). Registering with DNR for helicopter use gives an operator the legal option of using helicopters for transport on general state land, but it does not mean that they actually do so. In general, many of these operations do not use helicopters, use them occasionally, or effectively act as booking agents for the larger tours.

6.1. Denali-Talkeetna Area – Summer

Era Aviation operates a summer heli-tour operation in the Denali National Park Area. The company takes its clients from the many tourists who visit the Park. The Matanuska-Susitna Borough issued a conditional use permit for Era's heliport site at the Chulitna River. The Borough permit limits operations to no more than two helicopters at any one time and requires operations to occur only between 8 AM and 8 PM, May 1st through September 30th. No landings are allowed in Denali National Park, and the company lands its clients in the adjacent Denali State Park (with a view of Denali). The Alaska Division of Parks and Outdoor Recreation authorizes up to 20 landings per day at three sites in the state Park. While this volume could theoretically total 3,000 trips annually and up to 18,000 clients per year, actual usage is far less than that. In 2005, the company reported 231 landings and 1,564 client days. The state Park permit restricts landing to specific areas and requires the company to avoid certain popular hiking and camping areas near Long Point. It includes restrictions to protect wildlife, primarily focused on waterfowl and raptor nesting.

6.1.1. Denali as a Destination

Established initially as a wildlife refuge in 1971, Mt. McKinley National Park was expanded in 1980 and designated as Denali National Park and Preserve. The mountain attracts more than 400,000 visitors to the park each year. The National Park Service's website describes it as "more than a mountain:"

Denali's dynamic glaciated landscape supports a diversity of wildlife with grizzly bears, caribou, wolves, Dall sheep and moose. Summer slopes are graced with birds and wildflowers. Visitors enjoy flightseeing, backpacking, mountaineering, and research opportunities. Whether climbing or admiring, the crowning jewel of North America's highest peak is the awe inspiring 20,320 foot Mount McKinley.

Visitors can experience the 6 million acre wilderness environment on foot, in a vehicle, or in an aircraft any season of the year.

Denali State Park is adjacent to Denali National Park and provides vantage points of the National Park and Mt. McKinley from the south. It also provides many recreational opportunities. The 325,240 acres park is about 100 air miles north of Anchorage and is accessed by the George Parks Highway. It is nestled between the Talkeetna Mountains and the Alaska Range. Curry and Kesugi Ridges, a 35 mile-long north/south alpine ridge, is the "backbone of the eastern half of the park." (DPOR, 2006a)

6.1.2. Regulatory and Decision-Making Framework

Outside of the roaded areas, aircraft provide the principal means of access to and viewing of most of the Denali National Park and Preserve and Denali State Park. With respect to the National Park, the National Park Service does not control helicopter flights in the airspace above the park, but does regulate landings within its management boundary. Helicopter landings are not allowed anywhere in the park, except for administrative purposes and emergencies. (NPS, 2003) Thus, any helicopter tours must use landing sites outside of the Denali National Park and Preserve to be able to tour Denali – the state Park provides that opportunity.

The Department of Natural Resources, Division of Parks and Outdoor Recreation (DPOR) authorizes helicopter landings within the Denali State Park and regulates airspace through its authorizations.

Management guidelines as well as the decision to authorize activities within the Denali State Park is based on the Denali State Park Master Plan, adopted in 1989 and amended in 2006. Helicopter operations are not allowed in the areas designated Wilderness or Cultural, but are conditionally compatible in the Natural and Recreation Development designated areas. The 2006 Revised Denali State Park Master Plan states that,

Natural Areas are established to provide for moderate-to-low impact and dispersed forms of recreation and to act as buffers between areas designated Recreation Development and Wilderness.

These areas are relatively undeveloped and undisturbed, and are managed to maintain high scenic qualities and to provide visitors with opportunities for significant, natural outdoor experiences. An area's natural landscape character is the dominant feature within these areas.

The management guidelines allow landings in the Natural and Resource Development designated areas, but landings are limited to gravel bars or beaches on the Tokositna, Chulitna, and Susitna rivers, as may be authorized by the Director. Also, one helicopter landing zone may be designated in conjunction with the Tokositna backcountry lodge.

6.1.3. Permitted Activities⁸

DPOR authorizes Era Aviation Inc. (Era) to land its heli-tours on three areas within the Denali State Park, allowing its clients tour opportunities on the southern flank of the Alaska Range and Mt. McKinley. Era has received annual permits from DPOR since 1999. (DPOR is limited to one-year permit terms by regulation. See 11 AAC 18.030.)

The Matanuska Susitna Borough (MSB) issued a conditional use permit for Era's heliport site at Chulitna. The permit, which expires April 2009, requires that

- no more than two helicopters may provide flight services at any given time,
- operations must be between 8:00 a.m. and 8:00 p.m.,
- operations are limited to May 1 to September 30, and

⁸ The Alaska Department of Natural Resources does not require a permit for commercial recreation day use of state land, but does require commercial recreation operators to register. In their registration, the following operators indicated that they may use helicopters: Alaska Backcountry Access (2006), Alaska Bush Sports (2004), Alaska Legacy Fish Camp (2004), Alaska Mountain and Glacier Guides (2004), Alaska Wilderness Journeys (2004), Alpine Air (2004), American Mountain Guide Association (2004), Backcountry Safaris (2004), Bear Lake Lodge (2005), Brent Rinkers Alaskan Fishing (2004, 2005), Denali Anglers (2006), Leonard's Last Frontier Fishing Adventures (2004), Nova River Runners (2004, 2005), Midnight Sun Locations (2006), Shulin Lake Lodge (2005, 2006), Talaview Resorts (2005), and Within the Wild Adventure Company (2005), registered in Game Management Units 13E, 14, and 16. See Appendix C for activities, projected use, and other means of access used. It is unknown whether these operators do use helicopters in this area or not; however, they are not expected to be large-volume heli-supported recreation operators.

- maintain a one-half mile vertical and horizontal separation from park developed facilities, except for take offs and landings.

6.1.3.1. Authorized Aircraft

Within the Denali State Park, Era is authorized to use Bell 407, Bell 206I, and AS350 A-Star helicopters. No more than two helicopters are authorized to operate at one time. The permit requires that overflights of Curry and Kesugi Ridges and the Long Point area be avoided and that overflights of Hidden River Valley follow a perpendicular route when transitioning the valley.

6.1.3.2. Permit Period

The permit period is from May 1 through September 30, operating daily from 8:00 a.m. to 9:00 p.m. Operations are allowed outside of this permit period with prior authorization from the park superintendent. According to the DNR records, MSB’s conditional use permit restricts operations to the period from May 1 through September 30.

6.1.3.3. Use Days and Landings.

Era is authorized to land up to 20 landings per day at three sites: Eldridge Glacier Knob/Overlook, a gravel bar at the base of Eldridge Glacier, and a gravel bar at the confluence of the Fountain and Chulitna Rivers. Era projects 20 daily trips into the park for a total of 3,000 trips annually. Based on a maximum of six passengers per trip, this would equal to 18,000 clients per year. (DNR, 1997) Actual usage is reported at the end of each season; information contained in the department’s official permit files is shown on the chart and table below.

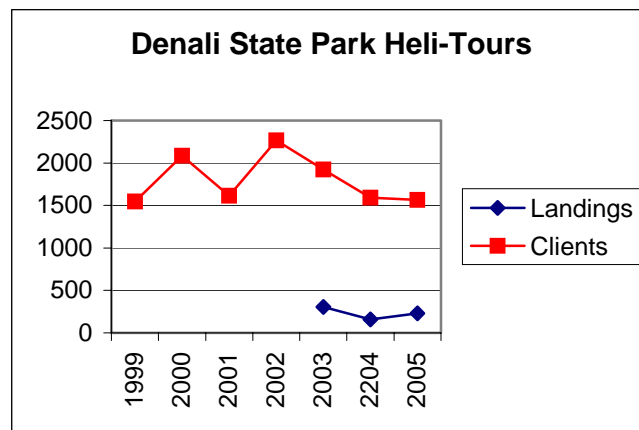


Table 6-1. Denali State Park Heli-Tour Use Reports

ERA Aviation Permits C99-007 thru C05-007	1999	2000	2001	2002	2003	2204	2005
No. of Landings					307	159	231
No. of Clients/Use Days	1,546	2,086	1,615	2,268	1,924	1,593	1,564

6.1.3.4. Acreage

Era is authorized three landing sites. See map in Appendix A for exclusion areas.

6.1.3.5. Fees

In addition to the \$250 permit fee, Era pays a per-client use fee of:

- \$5 per person per day for those landing at Era’s designated landing sites (from revenue generating passengers)
- \$2 per client per day for rafting accessed by helicopter [decreased from \$3 in 2002]
- \$1 per client per day for hiking accessed by helicopter

6.1.3.6. Wildlife Impact Mitigation.

Pilots must maintain a 1,500-foot vertical and horizontal separation between the helicopter and known waterfowl and raptors nesting sites and active bear and wolf denning sites. There is also a 1,500-foot altitude restriction above the Tokositna River valley because it is a traditional waterfowl nesting area. Outside of these traditional and known sites, the minimum altitude is 500 feet, except where necessary to protect the safety of life, property and park resources. Any deviations must be reported to DPOR. [Note: Tokositna River valley restrictions are mapped and made a part of the annual permit.]

Era is required to assist with Resource Projects (trail building, bear observations, swan or other wildlife studies), on a case-by-case basis, not to exceed 4 flight hours per calendar year.

6.1.3.7. Human Conflict Mitigation.

ERA has two areas of avoidance, both associated with popular hiker and camper areas in the Long Point area. The avoidance areas are mapped and made a part of the annual permit. (See map in Appendix A)

6.1.3.8. Monitoring Requirements and Results

Era is required to provide one positive space seat per month in the operating season. It is also required to provide “space available” seats, as needed, for the park rangers. If DNR receives a complaint about the operation or any allegation of permit violations, park personnel will conduct an investigation and follow-up with default notice requirements, as needed.

6.1.4. Trends

The use numbers are relatively flat, likely because the visitors do not get a close enough view of Denali. If another landing site is authorized closer to the national park boundary (but within the Wilderness area of the state park), it is possible that the number of use days may increase. Also, unless the National Park Service changes its policy of “no helicopter landings within the park boundaries,” the State Park continues to be the only option for landings close to the park on the south side, except for private inholdings.

Further, fixed wing aircraft have a competitive advantage since they have been “grandfathered” as a traditional use in the national park for glacier landings.

6.2. Girdwood – Summer and Winter

Chugach Powder Guides operates out of Girdwood to offer winter heli-skiing on state land primarily in the Winner Creek area and on federal land both near Girdwood and elsewhere on the Kenai Peninsula. Clients are reportedly from both the local market, Anchorage, and from those who come to Girdwood from around the world to ski. The state's management plan for Winner Creek area restricts operation to a single company. The 2004 federal decision document does not restrict the number of operators, but limits heli-skiing to between 8:30 AM and 7:00 PM, and limits operations to 1,200 client days (on federal land). The federal permit includes stipulations to protect wildlife and requires certain flight paths to protect residences in Girdwood, and some recreational use areas. In 2004, Chugach Powder Guides reported 404 client days on Forest Service land and 515 client days on state land within Winner Creek area. There may be significant overlap between these client days; a client who skis on both federal and state land during a single day will be reported in both totals.

Alpine Air operates in the summer and winter on Chugach National Forest land to provide flightseeing with landing tours of Spencer, Lake George, Punchbowl and Eagle Glaciers. . Alpine Air is authorized 20 clients at Spencer Glacier, 104 at Lake George Glacier, 105 at Eagle Glacier, and 20 at Punch Bowl. Alpine's use is primarily Spencer (20 in 2005; 19 in 2004; 3 in 2003) and Lake George (21 in 2005; 12 in 2004; 3 in 2003); use of Eagle Glacier was only reported in 2003 (26 clients).

Glacier City Snowmobile Tours provide heli-accessed snowmachine trips at Eagle Glacier, Chugach National Forest, during the summer. Glacier City is authorized 450 client days and reported 12 in 2003 and 136 in 2005.

Alyeska Dogteam Adventures provides a guided dog sled tour and hiking tours operating out of Punch Bowl Glacier on Chugach National Forest land during the summer. ADA is authorized 810 clients and reported 481 in 2002; 504 in 2003; 620 in 2004; and 763 in 2005.

Class V Whitewater provides a heli-supported (and sometimes fixed wing) rafting trip of Twentymile River. Accessed from Carmel Lake on Chugach National Forest land, CVW rafts its clients from Carmen Lake to Twentymile boat launch. At the boat launch, CVW is allocated a total number of launches per season and one or two launches per day depending on season and weekend or weekday. Total use report was 5 in 2004 and 11 in 2005.

6.2.1. Girdwood as a Destination

About 40 miles south of Anchorage, Girdwood began as a small mining community at the turn of the century and saw slow expansion as the railroad construction began in 1915 and the Seward Highway construction began in 1949. Then, in 1954, locals formed the Alyeska Ski Corporation with the dream of a first-class ski resort. In 1960, the first chair lift and a day lodge was built. In 1980, Seibu Corporation purchased Alyeska Resort and built a new high-speed quad chair, a fixed quad and a 60 passenger aerial tramway. The 307-room Westin Alyeska Prince Hotel opened in

1994, including a fine-dining restaurant and skier's cafeteria. Girdwood offers a variety of year-round Bed and Breakfasts, restaurants, shops and mercantile. (Girdwood, 2006) The surrounding Chugach Mountains and Mt. Alyeska provide skiing from November through May.

The many rivers, mountains, and trails in the Girdwood-Kenai Peninsula area as well as its proximity to Anchorage make it an attractive recreational area for residents and visitors alike. One operator's authorized summer use of the Chugach National Forest starts in Girdwood with a short helicopter flight through the Chugach Mountains and lands on Carmen Lake, the headwaters for the Twentymile River. The twenty-mile river rafting trip ends at the New Seward Highway on the Turnagain Arm at the mouth of the river. (CAG, 2006)

Another authorized use has a half hour flight to Eagle Glacier, where the clients are able to ride around on snowmobiles year-round.

6.2.2. Regulatory and Decision-Making Framework

An environmental assessment of Chugach Powder Guides' (CPG) by the US Forest Service proposed action and alternatives was released September 1999. It disclosed the environmental effects of CPG being issued a one-year or a five-year special use permit for guiding helicopter skiing on National Forest lands near Girdwood and on the Kenai Peninsula. A Decision Notice and Finding of No Significant Impact was issued in November 1999 granting a one-year authorization to CPG. In September 2004, the Final EIS was completed and a Record of Decision issued for the same area resulting in an increase in acreage and number of clients from 1,200 to 1,800 – although CPG requested 2,400.

The State's Turnagain Arm Management Plan, adopted 1994, prescribes guidelines for the management of land in the Turnagain Arm area, including uplands near Girdwood and Crow Pass, small parcels near the Seward Highway, and tidelands in the arm itself. In that plan, the DNR establishes management guidelines for commercial recreation on state land, including helicopter skiing and aircraft operations and safety plans. Only one operator will be permitted to use a delineated permit area. The permitted area must remain open to the public, except for closures for specific safety reasons. Further, the Glacier/Winner Creek Special Land Use Designation allows only one mechanized guided skiing operator.

For the balance of activities authorized – summer and winter heli-supported rafting and snowmachine tours – a Decision Memo is issued based on categorical exclusions. No EA or EIS documents are issued.

6.2.3. Permitted Activities⁹ – Summer

There are four operators that have authorizations from the Forest Service to conduct heli-supported tours on Chugach National Forest:

- a) Alyeska Dogteam Adventures – provides guided dog sled tours and hiking tours at Punch Bowl Glacier.
- b) Alpine Air – provides flightseeing and landing tours of Spencer, Lake George, Punchbowl, and Eagle Glaciers summer and winter.
- c) Class V Whitewater (Chugach Adventure Guides) – provides a helicopter-supported (and sometimes fixed wing) rafting trip of Twentymile River. Accessed from Carmel Lake on Chugach National Forest land, CVW rafts its clients from Carmen Lake to Twentymile boat launch.
- d) Glacier City Snowmobile Tours – provides helicopter-accessed snowmachine trips at Eagle Glacier.

6.2.3.1. Authorized Aircraft

Not listed.

6.2.3.2. Permit Period

Alyeska Dogteam Adventures was issued one year permits in 2002 and 2003 and a five year permit in 2004 (to expire end of year 2008). The operating season is from mid-May through August at Punchbowl Glacier.

Alpine Air was issued a five-year permit in 2002 (to expire end of year 2006) for flightseeing and landings at the following areas:

- Spencer Glacier (at the 2,000 to 3,100 ft level) approximately 1 mile south of Carpathian Peak.
- Saddle between Lake George Glacier and Twentymile Glacier (reported at Lake George Glacier)
- Eagle Glacier, east of Goat Mountain
- Punch Bowl, at the 3,000 foot level, located four miles east of Girdwood

Class V Whitewater was issued a ten-year permit in 2006 (to expire end of year 2015) for launches at the Twentymile boat launch. Permits prior to 2006 were unavailable; however, CVW reported use at the launch in 2004 and 2005.

⁹ The Alaska Department of Natural Resources does not require a permit for commercial recreation day use of state land, but does require commercial recreation operators to register. In their registration, the following operators indicated that they may use helicopters: Alaska Backcountry Access (2006), Alpine Air (2004), American Mountain Guide Association (2004), and Backcountry Safaris (2004), registered in Game Management Unit 14C. See Appendix C for activities, projected use, and other means of access used. It is unknown whether these operators do use helicopters in this area or not; however, they are not expected to be large-volume heli-supported recreation operators.

Glacier City Snowmobile Tours was issued a five-year permit in 2004 (to expire end of year 2008) for helicopter-supported tours at Eagle Glacier; the permit also includes operations that are not helicopter supported and not a part of this report.

6.2.3.3. Use Days and Landings.

Alpine Air is authorized, summer and winter combined, a total of 249 client days at four locations:

- Spencer Glacier – 20 client days
- Lake George Glacier (saddle) – 104 client days
- Eagle Glacier – 105 client days
- Punch Bowl Glacier – 20 client days

Alyeska Dogteam Adventures is authorized 810 client days at Punch Bowl Glacier.

Class V Whitewater is authorized a total of 35 launches for the permit year at Twentymile boat launch, as allocated:

Allocated Launches	Season Dates	Time Period
10 launches total no more than 1 launch per day	Peak Weekend days (July 11-Augst 31)	N/A
5 launches total no more than 2 launches per day	Peak Weekdays (July 11-August 31)	7:00 a.m. - 1:00 pm 1:00 p.m. - 7:00 p.m.
15 launches total no more than 1 launch per day	Non-Peak Weekend days (up to July 11, after August 31)	N/A
5 launches total no more than 1 launch per day	Non-Peak Weekdays (up to July 11, after August 31)	N/A

Glacier City Snowmobile Tours is authorized 45 client days at Twentymile River; other use allocations are not helicopter-supported and not a part of this report.

Table 6-2. Chugach National Forest at Girdwood-Turnagain Pass Reported Use for Summer Activities

	2002	2003	2004	2005
Alpine Air – Eagle Glacier		26		
Alpine Air -- Lake George		3	12	21
Alpine Air -- Spencer Glacier		3	19	20
Alyeska Dogteam Adventures	481	504	620	763
Class V Whitewater			5	11
Glacier City Snowmobile Tours		112		136
TOTALS	481	648	656	951

6.2.3.4. Acreage

Acreage is either listed as 1 acre or none.

6.2.3.5. Fees

Except for Alpine Air, the permits include a use fee that is the greater of \$100 base rate, or a flat fee based on the Alaska Region flat fee schedule. The 2001 rate was listed as \$2.61 (See schedule in Appendix F). Based on that rate, the Chugach Forest received \$100 from Alpine Air, \$1,618.21 from Alyeska Dogteam Adventures, \$100 from Class V Whitewater, and nothing from Glacier City Snowmobile Tours in 2004.

6.2.3.6. Wildlife Impact Mitigation.

Alpine Air is required to maintain a 1,500 foot minimum vertical distance from observed goats and refrain from landing within one-half mile of goats. It has winter “no-fly zones” from November 1 through May 31 and May 15 to June 15. (See map in Appendix A)

Alyeska Dogteam Adventures is required to:

- a) Fly at an elevation at or above 1,500 feet in “no flights” zones and adhere to “no prolonged activity” and “no landing” zones identified on a location map. (See map in appendix A)
- b) Ensure that participants do not approach, chase, or otherwise harass wildlife species encountered.
- c) Maintain camp and sled routes in same location and establish camps and sled routes at the widest part of the glacier – far from terrestrial habitat as possible.
- d) Ensure that dogs are restrained.

In Glacier City’s permit, only two mitigation measures were included for wildlife:

- a) The holder shall maintain the base camp location and snowmobile routes in the same location all summer long, unless directed to move by the permit administrator. This allows wildlife to evaluate the potential disturbance stimulus as a predictable constant within their environment.
- b) The holder shall fly at an elevation equal to or greater than 1,500 feet above ground level and land one half mile outside of the mapped no-fly zones as defined by a solid blue line on the location map. (See map in Appendix A)

No special stipulations regarding wildlife were included in the authorization to Chugach Adventure Guides.

6.2.3.7. Human Conflict Mitigation.

In Glacier City's permit, only one mitigation measure was included for noise mitigation:

The holder shall be required to establish a "Hot Line" which will allow those using the south end of the Eklutna Traverse and Rosie's Roost hut to leave a message with the when and where information. When GCST is notified of the use, GCST will be required to avoid use within the view shed as shown on the location map. (See map in Appendix A)

6.2.3.8. Monitoring Requirements and Results

No information available.

6.2.4. Permitted Activities¹⁰ -- Winter

The Forest Service issued one-year permits to Chugach Powder Guides beginning in 1997. A five year permit was issued in 2005 (to expire April 2009). The 2004 FEIS (p.3-2) provides a brief summary of past authorizations and use:

Guided helicopter skiing on the Kenai Peninsula geographic area was first approved in 1974. Another operator, Far North Ski Guides, had a permit in 1977. There is no record of the level of use. In 1997 CPG was granted a permit. A similar permit was issued in 1998. In 1999, the permit area was reduced. For the 2000 season, a one-year permit was issued for five units totaling 111,200 acres with a maximum of 800 client days of skiing. Similar permits were issued for the 2001 and 2002 seasons. In 2003, the use area was expanded to seven units totaling 159,000 acres with a maximum use of 1,200 client days. In 2004 permit was reissued for the same areas and client days of use.

Since 1997, DNR, Division of Mining, Land and Water (DMLW) has authorized Chugach Powder Guides to conduct snow-cat skiing and helicopter skiing activities in the Winner Creek area. The authorizations allow the use of explosives for avalanche control. Through 1998, the authorizations were one year in length. In 1998, the DMLW issued a five-year permit, and with one-year extension. The most recent extension expired in May 2006.

¹⁰ The Alaska Department of Natural Resources does not require a permit for commercial recreation day use of state land, but does require commercial recreation operators to register. In their registration, the following operators indicated that they may use helicopters: Alaska Backcountry Access (2006), Alpine Air (2004), American Mountain Guide Association (2004), and Backcountry Safaris (2004), registered in Game Management Unit 14C. See Appendix C for activities, projected use, and other means of access used. It is unknown whether these operators do use helicopters in this area or not; however, they are not expected to be large-volume heli-supported recreation operators.

6.2.4.1. Authorized Aircraft

The 2004 FEIS indicates that CPG uses an A-Star 350.

6.2.4.2. Permit Period

The Forest service permit, issued February 3, 2005, authorizes use in the following areas until April 20 of each year (through 2009):

- a) Core Areas:
 - 1) Glacier/Winner Creek
 - 2) West Twentymile
 - 3) North Twentymile
 - 4) East Twentymile
 - 5) Placer/Skookum Valleys
 - 6) North Bench Peak
 - 7) East Bench Peak
 - 8) West Bench Peak
 - 9) Grandview
- b) Exploratory Areas:
 - 1) Mid Seattle Creek*
 - 2) East Seattle Creek*
 - 3) East Moose Creek
 - 4) Mount Ascention

* a timing restriction is in place on the Mid and East Seattle Creeks to allow helicopter skiing only on Friday, Saturday, and Sunday.

DMLW permits originally were for the period of February through May. The 1998 and subsequent permits have authorized an operating period from November 15 through May 15.

6.2.4.3. Use Days and Landings.

From 1997 through 2003, the Forest Service annual permits allowed from 800 to 1,200 client days. Maximum client days allowed under the 2004 FEIS was 1,200. The 2005 permit to CPG allowed 1,800 client days in the Core areas and 400 client days in the Exploratory areas, for a total of 2,200.

From DMLW permit files, CPG's skier-days use reports to DNR for the period 2000 through 2004 are shown in Table 6-4. Note that the number of skiers reported in the two ownership areas may overlap – meaning that one skier might use both areas and be reported once to the federal agency (national forest) as well as to the state

Table 6-3. Chugach National Forest at Girdwood Reported Use by Chugach Powder Guides

Year	Number of Client Days Authorized	Number of Client Days Used	Areas Approved for Heli-Skiing							
			Glacier/Winner Creek	West Twenty Mile	North Twenty Mile	East Twenty Mile**	Placer/Skookum	Bench Peak	Grandview	Moose Creek
1997	Not specified	231	X	X	X	X	X	X	X	X
1998	Not specified	285	X	X	X	X	X	X	X	X
1999	1,200	542	X			X	X	X	X	
2000	800	641	X			X	X	X	X	
2001	800	886	X			X	X	X	X	
2002*	800	1,029	X			X	X	X	X	
2003	1,200	531	X	X	X	X	X	X	X	
2004	1,200	404	X	X	X	X	X	X	X	
2005	1,200	667	X	X	X	X	X	X	X	
2006***	1,800		X	X	X	X	X	X	X	
TOTALS	9,000	5,216								

Notes:

* CPG was issued a letter of non-compliance for exceeding client days used.

** After 1999, only Bear Valley East was authorized in the East Twenty Mile area..

*** In 2006, CPG was allowed four exploratory areas for an additional 400 client days, for a total of 2,200.

Source: Forest Service. 2004b. at 3:23 and Forest Service files.

Table 6-4. State Land (DMLW) at Girdwood Reported Use by Chugach Powder Guides

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005
Skier Use Days	80	77	No info	653	458	605	207	515	110

6.2.4.4. Acreage

The 2005 Forest Service permit did not list an acreage value. From 1997 through 2003, the Forest Service annual permits varied from 111,200 to 159,000 acres.

Permitted acreage for 2004 was 159,000 acres (131,247 acres net acres based on restricted areas for wildlife mitigation). (Forest Service, 2004a)

The DMLW current permit does not list an acreage value, but does list 21 sections in four townships. At 640 acres per section, the operational area is a maximum of 13,400 acres.

6.2.4.5. Fees

The Forest Service charges the greater of a \$100 base fee or a per client fee based on the Alaska Region flat fee schedule. (See Appendix F for an example). The fee rate under the 2001 schedule is \$8.10/client day. Based on 2001 use reports, CPG paid \$7,176.60.

In 1997 and 1998, DMLW charged \$5 per client day. Beginning in the fall of 1998, DMLW included a base fee of \$100 plus \$5 per client. DMLW also charged \$100 to allow “off-season” caching. In 2003, the base rate changed to \$250. Thus, for 2005, CPG paid \$760.

6.2.4.6. Wildlife Impact Mitigation.

The 2005 Forest Service permit provides for the following mitigation measures:

- a) Helicopters will maintain a 1/2-mile horizontal (ground level) or 1,500 feet above ground level (AGL) from all observed wildlife.
- b) Helicopters will not hover, circle, or harass any species of wildlife in any way.
- c) CPG will adhere to the No-Fly Zones, which identify mountain goat and Dall’s sheep concentration areas (See No-Fly Zone Maps, Appendix B). No-Fly Zones are based on a separation distance of 1,500 feet from important habitat. The ADFG will be consulted by the Forest Service before any alteration of zone boundaries to less than 1,500 feet.
- d) CPG will provide mountain goat, Dall’s sheep, and other wildlife sightings to the Glacier Ranger District. The District will provide CPG with incidental wildlife observation forms to be filled out daily. These forms are to be submitted annually upon completion of the permit season. Unique wildlife sightings, such as wolves, wolverines, or brown bears, will be reported during the next business day.
- e) If a brown bear or wolverine den is located (either by CPG or during wildlife observation flights), CPG will maintain a 1/2 mile horizontal (ground level) or 1,500 AGL separation during their operations.
- f) No skiing or any human activity within 330 feet of known bald eagle nests.
- g) Helicopter flights will not fly within 1/4-mile horizontal distance or 1,500 AGL of any active bald eagle or goshawk nest. When it is not known whether the nest is active, helicopter flights will avoid the nest. The Glacier Ranger District will provide CPG an updated bald eagle and goshawk nest map prior to each season.

The DMLW permit requires the following mitigation measures to minimize impacts to wildlife:

- a) Route aircraft and operations to minimize or avoid impacts to wildlife.
- b) Flight paths to and from heli-skiing area will be consolidated and standardized.
- c) Maintain 1500 vertical and horizontal separation from all observed wildlife, with the exception of mountain goats.
- d) Maintain one-half mile vertical and horizontal separation from observed mountain goats.
- e) Under no circumstances will helicopters hover over, circle or harass wildlife.

6.2.4.7. Human Conflict Mitigation.

The 2005 Forest Service permit provides for the following mitigation measures:

- a) CPG will provide a public “heli-skiing hot line” stating their planned runs for the day.
- b) CPG will not fly over the east side of Turnagain Pass (non-motorized recreation area).
- c) All heli-skiing will take place between 8:30 a.m. and 7:00 p.m.
- d) All helicopters will maintain a distance of 1/2 mile above the valley floors. Helicopters may fly less than the minimum required distance when (1) shuttling passengers from the bottom to the top of a run, (2) during landing and takeoffs, (3) flying over major highway corridors, and (4) when safety may be compromised.
- e) All helicopters will maintain a distance of 1/2-mile horizontal (ground level) distance or 1,500 feet AGL above observed users.
- f) Helicopters exiting from the Girdwood Airstrip will stay at very low levels either in Glacier Creek Gorge or just west of the creek until near the Four Corners area. Flights toward Turnagain Arm and the southern units will follow the western fringe of the Girdwood Valley until over the Seward Highway, then will follow the highway or cross Turnagain Arm. Flight departures from the Girdwood Airstrip to the south over residential areas will only be used as absolutely needed due to wind direction or other safety factors. When flying south, CPG will also test and evaluate a flight path over the western fringe of Girdwood by flying low over Glacier Creek and then veering east halfway out the valley where there are no residential areas. Based on public’s comments or complaints, if any, this route could be used exclusively.
- g) CPG will not fly along the South Fork of Snow River drainage to reduce potential conflicts with non-motorized users. CPG will minimize the number of crossings of the drainage to access Mile 12.4 staging area and these crossings will occur as close to the South Fork and North Fork of Snow River confluence as possible.
- h) Helicopters exiting/entering from the Seward Airport or Mile 12.4 staging area will not fly in the Resurrection River Valley corridor. There will be no flightseeing over Exit Glacier or Harding Ice Fields to preserve the natural quiet of the Exit Glacier area.
- i) Helicopter skiing will not be permitted after March 31 in the Placer-Skookum unit in the area that is closed to all motorized use by the Revised Forest Plan.

Except for Avalanche Hazard operations, the DMLW permit does not provide any specific recreationist and community mitigation measures.

6.2.4.8. Monitoring Requirements and Results

With the addition of the exploratory areas in the 2005 Forest Service permit, CPG is required to give the Forest Service advance notice of operations in the Mount Ascension and East Moose Creek units to facilitate monitoring of noise and visual impacts within the Moose Pass Community. Monitoring teams made up of Forest Service employees and community members will record noise and visual observations from several different locations within the community.

As required by the permit, CPG provides a copy of their run log to help monitor their activities. The submissions will be used by the Forest Service for a dataset to study the effects related to other recreation activities and wildlife.

6.2.5. Trends

CPG has increased in client use days and use period since it began operations in 1997. Information obtained for this report indicates that clients are predominantly Alaska residents. Because of its proximity to Anchorage, it is expected that the client base will remain stable. Expansion into a national or more international market will obviously increase the number of clients. The only limiting factors for continued use at this or at an increasing level will be depth of snow and visibility for safe helicopter operations.

Summer tourism is a function of visitors to the Anchorage area – either through the casual visitor or “packaged” tours. Expansion is limited more by the number of client use days. From the information in Table 6-2, the number of clients has almost doubled in four years, but still has not maximized the total authorized number.

6.3. Haines – Summer and Winter

Helicopter-recreation operators in the Haines area need authorizations from three separate agencies. A conditional use permit from the Haines Borough is needed for helicopter-recreation operation in the Borough. A permit from BLM is required to operate on federal land in the borough. Finally, before operating on state land, an operator must register with the state DNR, though an actual permit is not required.

Two companies offer heli-skiing within the Borough: Out of bounds Adventures (Alaska heli-skiing) and Southeast Backcountry Adventures. Both use federal (BLM) and state land. Also, a third company, Teton Gravity Research, films heli-skiing movies in the area. These companies market their operations nationally and, in some cases, internationally.

The Haines Borough ordinance provides that the Borough will allow no more than 1,000 skier days, plus the a single ski competition event, and an additional 140 photographer days. However, in 2005 BLM EA, the two heli-skiing companies projected a total of 540 user days. The Haines Borough also provides that winter operations must occur between 8 AM and 6 PM, except certain filming outside that time. Operations must occur between February 1st and May 3rd, unless otherwise authorized. The Haines Borough permits have some altitude and flight-path stipulations to protect local residences, and some stipulations to protect wildlife, primarily mountain goats. The BLM permit stipulations are primarily for a variety of wildlife with specific emphasis on mountain goats.

There is also one company that operates heli-tours in the summer. The operator bases the tours from private land outside the developed area of the Borough and likely lands clients on nearby state land.

6.3.1. Haines as a Destination

On the Chilkat Peninsula is the City of Haines. Between the Chilkoot and Chilkat Rivers, it is bordered by the Chilkat Mountain Range on the west and the Coast Range on the east. Haines is rich in Alaska gold rush history – the historic Chilkat, Chilkoot and White Pass routes to the Klondike gold fields are to the north of the community. Haines is 85 air miles northwest of the Juneau and is connected by road to the interior of Alaska and the continental United States by the Alaska Canada Highway. The Tlingit Indians were the original inhabitants of the Chilkat Valley. The village of Klukwan, 22 miles from Haines, is still the mother village for the Tlingit nation. (Haines, 2006.) All this coupled with the snowy Chilkat valley brings skiers and tourists to the area.

6.3.2. Regulatory and Decision-Making Framework

In April 2002, the Bureau of Land Management issued an environmental assessment for the winter operations of three commercial helicopter operators: Out of Bounds Adventures (Alaska Heli-skiing), Southeast Backcountry Adventures and Teton Gravity Research. It was followed by a Decision Record and Finding of No Significant Impact (FONSI) in May 2002. In May 2005, BLM issued an Environmental Assessment (EA) and in September 2005, BLM issued a FONSI for Alaska Cross Country Guiding

(ACCG) and Glacier Valley Tours [same operator] to conduct summer commercial helicopter supported glacier hikes/walks, alpine hikes/walks, and river rafting.

The Haines Borough adopted an ordinance, HBC 5.18.080, which was originally proposed by the DNR after being worked out through a local residents' committee, and after the then-existing City of Haines, and the surrounding Borough of Haines asked DNR to enact the committee-endorsed ordinance. Using the Borough's recommendation, DNR designated a special use area for specific areas and dates for heli-skiing operations and set standards for those operations. Further, the special use area prohibited helicopter landings on state lands for the purpose of commercial recreational tours (such as glacier landing tours). (See Appendix D) DNR published draft regulations to implement the special use designation, but it withdrew those regulations in May 2004. The special use area remains on the books, but because the regulations were never finalized, the permitting requirements are not enforceable.

During fall 2002, voters consolidated the first-class City of Haines and the surrounding third-class Haines Borough. This change had the effect of extending planning and zoning power to the entire Borough, beyond what had been the core City of Haines, and giving the new Borough legal authority to regulate areas used for heli-skiing. The new Borough of Haines revised DNR's draft regulations and adopted them as a Borough ordinance.

6.3.3. Permitted Activities – Summer Heli-Tours and Heli-Hiking

Regardless of who owns the land (federal, state, or private), the Haines Borough requires a permit for commercial helicopter tours. Haines Borough issues a permit to ACCG for summer operations.

The same operator also receives a permit from BLM. BLM has authorized ACCG a five-year permit beginning in 2005. While the operator has held permits from BLM for other tours, those particular tours were not dependent on helicopters.

The Department of Natural Resources does not require a permit for commercial recreation day use of state land, but does require commercial recreation operators to register. Glacier Valley Tours (2006) and Glacier Valley Tours/AK Cross Country Guiding (2004) registered in Game Management Unit 1D. See Appendix C for activities, projected use, and other means of access used.

The information in BLM's decision documents, summarized below, are expected to be consistent with the Haines Borough's permit to the operator.

6.3.3.1. Authorized Aircraft

The website summary of the BLM FONSI states that *the commercial helicopter operation for ACCG and Glacier Valley Tours is solely concentrated in the Tsirku River Valley based out of Gilliam's private property on Nugget Creek. Helicopter travel to/from Haines is restricted to ACCG staff and supplies only. Revenue generating clientele associated with Al Gilliam's commercial helicopter operation will be transported into the Nugget Creek base*

camp site via fixed-wing aircraft or by airboat up the Tsirku River. All aircraft will follow the designated flight corridor established by the State of Alaska and adopted by the Haines Borough Planning and Zoning Commission. The flight corridor from Haines to Gilliam’s Nugget Creek camp follows the Takhin River valley. The restriction is enforced in coordination with the Haines Borough zoning authority. (BLM, 2006)

6.3.3.2. Permit Period

The 2005 Decision Record and FONSI states that the operating period is from February 1 through October 31, with the following exceptions:

- LeBlondeau and Takhin Glaciers: A seasonal “non-helicopter use” is in effect from May 1 through June 30 at.
- Ptarmigan Ridge and Ice Fall Ridge: landings only July 1 through September 30.
- Upper Takhin Glacier and LeBlondeau Glacier: landings only July 1 through September 30.

6.3.3.3. Use Days and Landings.

Information regarding actual use is available by FOIA request to BLM. The maximum number of landings, as shown in the Decision Record and FONSI, by area, are:

- LeBlondeau Glacier Camp: maximum of 10 landings per day.
- Ptarmigan Ridge and Ice Fall Ridge: maximum of 5 landings per site per day.
- Upper Takhin Glacier and LeBlondeau Glacier: operator selects one site to receive one landing per day.

6.3.3.4. Acreage

No acreage given in the FONSI or EA; however, the EA lists 44 sections – roughly 28,160 acres.

6.3.3.5. Fees

BLM has a base fee plus a per client fee based on the number of landings on BLM land. The actual amount may be available through a FOIA request.

6.3.3.6. Wildlife Impact Mitigation.

In the FONSI, the restrictions to landings at LeBlondeau Glacier Camp, Ptarmigan and Ice Fall ridges, and Upper Takhin Glacier and LeBlondeau Glacier will “mitigate potential impacts to wildlife and use patterns for goats dispersing to and occupying kidding and high quality forage sites . . . [and] the benefit to natal dens and neonatal habitat selection and use by bears and wolverines.” The 2005 Section 810 ANILCA Compliance/Clearance also states that flight routes are designed to avoid known goat late wintering habitat to the greatest extent possible. The EA states that a 1,500 foot minimum elevation about river bottoms for bald eagle courtship and nesting territory as well as a one mile minimum distance where terrain allows for flight corridors that pass over mountain goat habitats and observed goats on rock islands. In addition to

the above, the 2005 letter to Gilliam confirming authorization also lists the following special stipulations:

- Maintaining a 1,500 feet above ground and 1,500 feet horizontal distance of key mountain goat areas, mountain goats, sensitive bird nesting sites, brown and black bears, wolves, moose, sea lions, and other marine mammals.
- One mile distance from observed mountain goat activity on rock islands and avoid flying over rock islands with observed activity.
- Avoid any eagle nest by at least one-quarter mile and avoid circling any eagle nest.
- No circling or harassing wildlife in any way.

The BLM wildlife stipulations are more detailed and comprehensive than those of the Borough ordinance.

6.3.3.7. Human Conflict Mitigation.

The BLM EA states that “flight routes have been specifically designed to avoid those areas identified by the public as locations where noise from helicopters would negatively affect recreationists . . . ACCG and Glacier Valley Tours will operate their base of operation from private land next to Nugget Creek in the Tsirku River Valley to reduce most of the noise and visual impacts identified by Haines residents and visitors.” The 2005 Section 810 ANILCA Compliance/Clearance also states that helicopters will operate at a minimum distance of 12 miles from residential and business structures near and around Haines. No particular stipulations regarding conflicts with other users are listed in the FONSI.

6.3.3.8. Monitoring Requirements and Results

The BLM FONSI states that pre- and post-season field exams and documentation of base camps from site to site will be done annually. Adjustments in flight corridors, landing sites, and areas of operations may be made as a result of the monitoring. Further, the EA indicates “in the event that over two consecutive years local kid to adult ratios are lower than ten or that adults experience a two consecutive year drop of 20 percent or more, initiation of adaptive management actions may be enacted.”

6.3.4. Permitted Activities – Winter Heli-Skiing¹¹

Regardless of who owns the land (federal, state, or private), the Haines Borough requires a permit for heli-ski operations. The same three operators who receive Borough permits to guide heli-skiing also receive permits from BLM.

¹¹ The Alaska Department of Natural Resources does not require a permit for commercial recreation day use of state land, but does require commercial recreation operators to register. In their registration, the following operators indicated that they may use helicopters: Alaska Mountain Guides & Climbing School (2004) and Glacier Valley Tours/AK Cross Country Guiding (2004) registered in Game Management Unit 1D. See Appendix C for activities, projected use, and other means of access used. It is unknown whether these operators do use helicopters in this area or not; however, they are not expected to be large-volume heli-supported recreation operators.

The Bureau of Land Management's 2002 environmental assessment covers the winter operations of three commercial helicopter operators: Out of Bounds Adventures¹² (Alaska Heli-skiing), Southeast Backcountry Adventures and Teton Gravity Research. In common are the requirements for helicopter operations through stipulations and terms of the special recreation permits. The permit to Teton Gravity Research is for commercial filming and is not a part of this report. The following items are salient points from the EA document.

Alaska Mountain Guides & Climbing School (2004) and Glacier Valley Tours/AK Cross Country Guiding (2004) registered in Game Management Unit 1D. See Appendix C for activities, projected use, and other means of access used.

6.3.4.1. Authorized Aircraft

Out of Bounds Adventures operates two American Eurocopters, A-Star 350B-2. Flights originate from either the Haines airport or a private staging area located at mile 33 of the Haines Highway.

Southeast Alaska Back Country Adventures also operates two American Eurocopters, A-Star 350B-2. Flights originate from either the Haines airport or a private staging area located at mile 33 of the Haines Highway.

6.3.4.2. Permit Period

The BLM permit term is five years. Out of Bounds Adventures operates from March 1 through April 30. Southeast Alaska Backcountry Adventures operates from February 15 to April 30. Both are authorized the hours of operation between 8:00 a.m. and 6:00 p.m. each day.

6.3.4.3. Use Days and Landings.

Out of Bounds Adventures projects a maximum of 400 user days, operating two helicopters per day, with two groups of five skiers, plus their guides (at a 5 skiers to 1 guide ratio) per day per helicopter. (The 2002 EA noted that a third helicopter may be used, but only on state managed lands.) Also, early March operations may only have one helicopter operational.

Southeast Alaska Backcountry Adventures projects 140 user days, operating two helicopters per day, with two groups of five skiers, plus their guides (at a 5 skiers to 1 guide ratio) per day per helicopter. (The 2002 EA noted that a third helicopter may be used, but only on state managed lands.) BLM projected 40 to 48 landings per day for all four groups.

The Haines Ordinance provides a skier limit of 1,000 skier days for the industry operating within the Borough. If operators cumulatively apply to take more clients

¹² Out-of-Bonds adventures also has a permit from Tongass National Forest for the use of land northeast of Juneau and across Lynn Canal northwest of Juneau. It is expected that these trips are based out of Haines and are a small volume of their overall Haines clientele.

than that, the Borough ordinance allocates 1,000 skiers among the operators. The information shows that the two operators have projected 540 skier days, and so the allocation process is not yet necessary. In addition, to the 1,000-skier limit, the Borough may also authorize an additional ski competition and an additional 140 photographer days.

6.3.4.4. Acreage

Total area affected is 238 sections within 12 townships, approximately 150,000 acres.

6.3.4.5. Fees

BLM has a base fee of \$80 plus a per client fee based on the number of landings on BLM land. The actual amount may be available through a FOIA request. The Haines Borough requires an application fee for its permit.

6.3.4.6. Wildlife Impact Mitigation.

Based on a series of stipulations contained in the 2002 environmental assessment (AK-040-02-EA-011), the following is a summary of BLM requirements as it relates to wildlife:

- a) Pilots must operate within designated flight corridors and within elevation restrictions.
- b) Pilots must maintain a 1,500-foot clearance of key mountain goat areas, sensitive bird nesting sites, and the presence of any mountain goats, brown and black bears, wolves, moose, sea lions, and other marine mammals. Pilots must attempt to maximize the distance between ground and habitats or animals, where possible. Pilots are also required to maintain a 1,500-foot horizontal distance. Deviations are allowed for safety when weather conditions do not allow 1,500 feet. A 5,000-foot minimum is required for flight corridors to drop off sites that pass over mountain goat habitats. Heli-ski runs that cross or originate on BLM administered lands and then terminate on state administered lands within important mountain goat winter range or sensitive wildlife habitat areas are not authorized.
- c) Maintain a minimum of one mile distance from observed mountain goat activity on rock islands.
- d) Above the river bottoms, a 1,500-foot minimum elevation is required for bald eagle courtship and nesting territory.
- e) Avoid any eagle nest by at least one-quarter mile and avoid hovering near and circling any eagle nest.
- f) Do not hover, circle or harass wildlife in any way.

These stipulations are expected to be consistent with but more detailed than the stipulations in the Haines Borough permit.

6.3.4.7. Human Conflict Mitigation.

No specific recreation or resident mitigation measures were included in the EA or the FONSI. However, the Haines Borough designates specific flight corridors, and requires that operators fly 1,500 feet above the ground surface, and attain that altitude as rapidly as practical after take-off. Finally, the Haines ordinance requires that

operations be conducted between 8:00 AM and 6:00 PM, from February 1st through May 3rd (although the borough may authorize operation outside that time for filming, including an additional 30 days.)

6.3.4.8. Monitoring Requirements and Results

Monitoring will be conducted as part of the ongoing monitoring for the Temsco permit (EA-AK-040-95-015). If professional biologists determine a greater buffer is warranted or if a significant decline in mountain goat populations occur, then BLM may make changes to flight corridors, landing sites, and areas of operations.

6.4. Homer-Kachemak Bay – Summer and Winter

Maritime Helicopters offers a variety of winter skiing and summer activities out of Homer. They are authorized to land in Kachemak Bay State Park at a number of locations. They have registered to use other state land in the area, though a permit is not required. In 2005, the company reported taking only 77 clients into Kachemak Bay State Park and an unknown amount elsewhere on state land.

6.4.1. Kachemak Bay State Park and Kachemak Bay State Wilderness Park as a Destination

Kachemak Bay was Alaska's first state park and it is the only state park with a wilderness designation. The Division describes the 400,000-acre park as "mountains, glaciers, forests and ocean. The bay's twisted rock formations are evidence of the movement of the earth's crust. Highlighted by constantly changing weather patterns, the park's outstanding scenery is a backdrop for high quality recreation." (DPOR, 2006b)

6.4.2. Regulatory and Decision-Making Framework

The Department of Natural Resources, Division of Parks and Outdoor Recreation (DPOR) authorizes helicopter landings within the state park boundaries and regulates airspace through its authorizations. Management guidelines as well as the decision to authorize activities within the Kachemak Bay State Park and Kachemak Bay State Wilderness Park are based on the Kachemak Bay State Park Master Plan, adopted in 1995. Helicopter operations are an allowed use in the park, although decision makers understand the need to reduce conflicts with other users:

Flightseeing and air taxi services offer an important recreation service. Conflicts can arise, though, between those seeking a "backcountry" experience and those reaching the park by air. Aircraft can easily get to many remote areas in the park, where backcountry users have made considerable effort to get away from this kind of activity. Management strategies should be developed to reduce both potential and existing conflicts.

Current regulations allow aircraft landing within Kachemak Bay State Park and on saltwater or saltwater beaches within Kachemak Bay State Wilderness Park. These regulations do not differentiate between wheeled fixed-wing, float equipped aircraft, or helicopters. (DNR, 1995)

6.4.3. Permitted Activities¹³

DPOR has issued annual permits for landings since 1990 to Maritime for the following landing sites:

- a) Summer tours and drop off sites:
 - Sadie Knob
 - (Lower) Grewingk Glacier
- b) Commercial Fishing tours only:
 - Head End Creek
 - Island Creek,
- c) Winter Heli-Ski tours only:
 - Icefield Gap (plus a pick up zone for skiers within a three mile radius)
 - Alpine Ridge at Halibut Cove, plus a pick-up zone for skiers within a two-mile radius [authorized only after Labor Day through the day before Memorial Day]
 - Upper Hazelle Lake – knob at elevation 2355
 - Doroshin Glacier – knob at elevation 2257, plus the lower middle to the top of Doroshin Glacier.
 - Upper Sadie Ridge, plus a 3-mile radius pickup zone for skiers

Table 6-5. Kachemak State Park Reported Use

6.4.3.1. Authorized Aircraft

Not specified in the permit.

6.4.3.2. Permit Period

The permits are issued each year with stipulations as to what areas may be used at differing times.

6.4.3.3. Use Days and Landings

For each year, the number of clients that “landed” in Kachemak Bay State Park are shown on Table 6-4, as reported to DNR.

6.4.3.4. Acreage

Not listed in the permit.

Year	Clients
1990	155
1991	387
1992	290
1993	542
1994	359
1995	316
1996	398
1997	139
1998	22
1999	No info
2000	110
2001	108
2002	88
2003	80
2004	78
2005	77

¹³ The Alaska Department of Natural Resources does not require a permit for commercial recreation day use of state land (outside the park), but does require commercial recreation operators to register. In their registration, the following operators indicated that they may use helicopters: Backcountry Safaris (2004), Bear Lake Lodge (2005) and Brent Rinkers Alaskan Fishing (2005) registered in Game Management Unit 15C. See Appendix C for activities, projected use, and other means of access used. It is unknown whether these operators do use helicopters in this area or not; however, they are not expected to be large-volume heli-supported recreation operators.

6.4.3.5.Fees

The permit fees is 200.00 dollars, plus a per client fee of \$8. Thus, for 2005, Maritime paid \$816 to DNR.

6.4.3.6.Wildlife Impact Mitigation.

The DPOR permit stipulates that landing at Head End Creek and Island Creek during commercial fishing periods shall be at least 100 yards above the saltwater terminus of the creeks and “high enough to avoid scaring fish out of the sanctuary markers.”

6.4.3.7. Human Conflict Mitigation.

The DPOR permit stipulates that Maritime must make every effort to avoid direct overflights of less than 500 feet over the Grewingk Glacier Lake and valley and avoid direct overflights of campers, hikers, and other user groups in the area. Except for landings and takeoffs, flights should be greater than 500 feet to minimize complaints.

The Alpine Ridge site may not be used from Memorial Day through Labor Day.

At Doroshin Glacier, Maritime will avoid direct overflights and landings when campers or other user groups are present.

6.4.3.8.Monitoring Requirements and Results

Maritime is required to provide transportation (2 seats) before and after the season to inspect summer tour sites to evaluate hazards and site characteristics plus document conditions at the site and any changes post-season.

6.5. Juneau – Summer

Four companies offer summer helicopter-tours from Juneau to National Forest land, primarily on the Juneau Icefield. In 2004, the Forest Service limited total landings from all four operators to 19,039 landings, though a 5% increase is allowed in 2005, 2006, and 2007 for a total of 22,040. In 2005, the companies reported using almost the entire landing limit. They used 18,355 landings and transported 93,902 clients. The USFS permit limits hours of operation between 8:30 AM and 8:00 PM, prohibits landings in some areas requested by operators, but used by recreationists, and contains wildlife stipulations to protect a variety of wildlife. The clients for the Juneau companies are almost exclusively from cruise ships.

6.5.1. Juneau and the Juneau Icefield as a Destination

Juneau is Alaska's capital and is the third largest city. The Juneau Convention and Visitors Bureau characterizes Juneau as a city “full of contrasts, a sophisticated cosmopolitan city in the heart of the Tongass National Forest. Nestled at the base of towering mountains overlooking the Gastineau Channel, the community's rich culture and history is displayed throughout the town and in several local museums.” (JCVB, 2006)

In the 2002 FEIS, the Forest Service states that the Juneau Icefield is “the fifth largest icefield in North America. The icefield blankets more than 1,500 square miles of land and stretches nearly 100 miles north to south and 45 miles east to west. Many small glaciers and at least 40 larger valley glaciers feed from this icefield. Snow and ice depths have been estimated to range from 800 to more than 4,500 feet.” (Forest Service, 2002a)

Visitors can experience Juneau through a variety of means: on foot at its many miles of trails, by bus, boats for marine wildlife tours, and helicopters and fixed-wing air craft at the Juneau Icefield.

6.5.2. Regulatory and Decision-Making Framework

Temsco Helicopters was the first operator to be issued a permit in 1984. In 1987, the Forest Service received four applications for new landing tours. An Environmental Assessment (EA) was written in March 1987. The 1987 EA divided the study area into 10 management zones, based on landforms and use patterns. As a result of the EA, a prospectus for bids was offered; Temsco and Era Helicopters were issued permits. (Forest Service, 1992) In July 1992, an EA was written to address applications received from Temsco, Era, and Coastal Helicopters. A bid prospectus was issued in 1993, resulting in permits to all three operators. An EIS was completed during 1994 using the same zones identified in the 1987 EA, but changed the unit of measure from number of service days to number of landings. The record of decision (ROD) received five appeals. Four of the appeals were denied; the fifth appeal, upheld the maximum number of landings, but the specific company assignments to those landings was reversed. Permits were issued to TEMSCO, Era, and Coastal. Gradual increases in the number of landings were allowed from 1995 through 1997, then the number was capped at 19,039 from 1997 through 1999. In May 2002, an EIS was written to address applications received from Temsco, Era, Coastal, and NorthStar Trekking. Following the FEIS and Record of Decision, permits

were issued to all four operators. Again, the number of landings were held to 19,039 in 2003 and 2004, then a 5% increase each year through 2007. (See also discussion in Section 6.5.3 below).

6.5.3. Permitted Activities¹⁴

In the 1987 EA, the Juneau Icefield was divided into zones of management. (See Appendix A) Temsco was the first operator to be issued a permit in 1984. A 1987 prospectus and bid process awarded Temsco use of zones 3, 7, and 8 and Era zones 5, 7 and 8. Temsco was also the only operator authorized to use zone 4. In 1993, another prospectus and bid process awarded Temsco use in zone 3. Coastal was authorized use of zone 1, but denied in zone 3. In 1995, the ROD was appealed resulting in Coastal gaining use of zone 3. In 1998, the operators held a meeting and negotiated landings: Temsco and Era were given landings in Zone 1; NorthStar applied for and was authorized to use zones 1, 4, 5, 7, and 8. (NorthStar also requested zone 2, but was denied); Coastal gained access to 5, 7 and 8. The 2003 permit added zone 6 for all four operators. The distribution of zones for the 2004 authorizations is shown in Table 6-6. (Driscoll, 2006)

Table 6-6. Juneau Icefield Zone Authorizations (2004)

Zone	Area 1: Gilkey	Area 3: Herbert	Area 4: Mendy	Area 5: Lemon	Area 6: Death Valley	Area 7: Norris	Area 8: Taku
Operator							
Coastal	X	X		X	X	X	X
Era	X				X	X	X
NorthStar	X		X	X	X	X	X
Temsco	X	X	X	X	X	X	X

Source: Driscoll, 2006

6.5.3.1. Authorized Aircraft

According to the FEIS for the Juneau Icefield, helicopter operators prefer the A-Star because of its carrying capacity (six passengers) and quiet technology. Further, helicopter tour companies can operate out of any of five existing heli-bases:

1. TEMSCO's helibase – northeast end of the Juneau Airport.
2. Coastal's helibase – midpoint of the Juneau Airport.
3. NorthStar's helibase – northwest end of the Juneau Airport.
4. Era's helibase – west side of Gastineau Channel, North Douglas Highway, Mile 4.
5. Era's 2nd helibase – northeast end of the Juneau Airport.

¹⁴ The Alaska Department of Natural Resources does not require a permit for commercial recreation day use of state land (outside the park), but does require commercial recreation operators to register. However, no operators registered in Game management unit 1C. See Appendix C for activities, projected use, and other means of access used.

6.5.3.2. *Permit Period*

Following a prospectus and bid award, five-year permits were issued in 2003 to expire 2007.

6.5.3.3. *Use Days and Landings.*

Actual usage is reported at the end of each season; information contained in the service’s Environmental Assessment Appendix A and from its official files is shown on the charts below. (Driscoll, 2006)

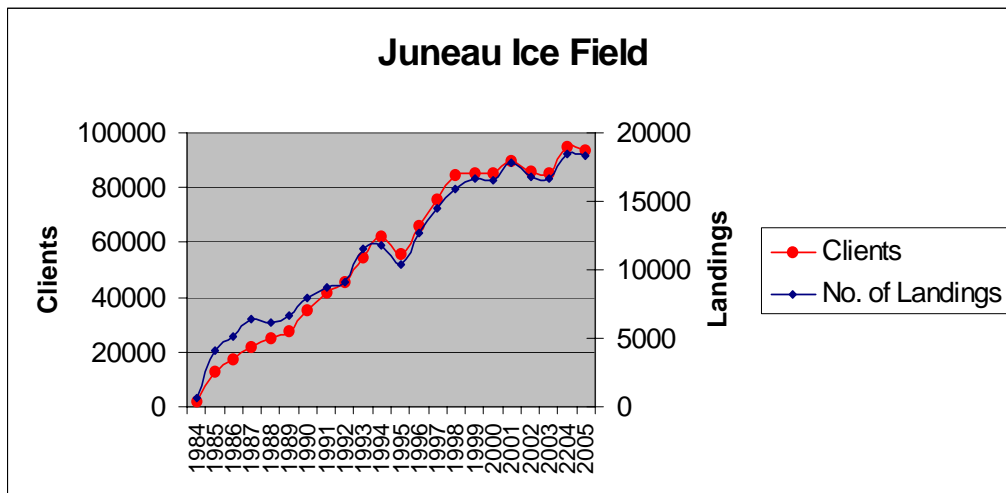


Table 6-7. Juneau Icefield Heli-Tours Reported Use

Year	No. of Landings Authorized	No. of Actual Landings	No. of Clients Authorized	No. of Actual Clients
1984		662		1,986
1985		4,076		12,637
1986		5,175		17,353
1987		6,410		22,023
1988		6,175		24,783
1989		6,648		27,326
1990		7,913		34,989
1991		8,674		41,887
1992		9,046		45,711
1993		11,559		54,589
1994		11,793		61,898
1995		10,421		55,815
1996		12,741		65,709
1997	19,039	16,243	114,234	69,542
1998	19,039	15,953	114,234	84,632
1999	19,039	16,709	114,234	85,852
2000	19,039	16,517	114,234	85,531
2001	19,039	17,784	114,234	89,961
2002	19,039	16,739	114,234	85,680
2003	19,039	16,645	114,234	85,407
2004	19,039	18,492	114,234	94,928
2005	19,991	18,355	119,946	93,902

Source: Driscoll, 2006 and Forest Service, 2002a.

6.5.3.4. Acreage

No acreage was included in the FEIS or ROD.

6.5.3.5. Fees

Fees may be available through a FOIA request. However, at a minimum, one can surmise the base rental amount on the Forest Service published Fee Schedules. In the Cordova District Forest Service 2001 bid prospectus, it included the current fee schedule (see Appendix F). It also stated that “prospectus applicants may offer larger fees . . . The Regional Forester will annually adjust the amounts within the Flat fee schedule using the Implicit Price Deflator-Gross National product index. The Regional Forester may also make periodic adjustments to fee schedules based on updated appraisals.” The fee rate under this schedule is \$2.61/client day for heli-tours.

6.5.3.6. Wildlife Impact Mitigation.

Where feasible, facilities, camps, and other developments should be located 1 mile or more from important wintering and kidding habitat. If the 1-mile or more distance cannot be achieved, possible adverse impacts are mitigated by seasonally restricting or regulating human use and employing other site-specific mitigation measures.

Aircraft flights (fixed-wing and helicopter) should maintain a 1,500-foot vertical or horizontal clearance from traditional summer and kidding habitat and animals whenever feasible. Where feasible flight paths should avoid known mountain goat kidding areas from May 15 through June 15. (Forest Services, 2002a)

Additionally, operators are required to

- a. maintain a 0.25-mile (1,320-foot) avoidance of eagle nests
- b. maintain a 3,000-foot horizontal and vertical clearance from the Steller sea lion haulout on Benjamin Island, and
- c. not hover, circle, harass, or pursue wildlife in any way

6.5.3.7. Human Conflict Mitigation.

The 2002 ROD discussed noise impacts to residents and recreationists (see 2002 ROD pp. 16 and 17 for more information). For residents, essentially the hours of operation were restricted to “awake” hours – 8:30 a.m. to 8:00 p.m.; incentive for more landings to those operators investing in new quieter technology and new heliport locations “that would substantially reduce noise impacts to residents;” kept the increased number of landings (and, thus, takeoffs) to a moderate level. For recreationists, landing areas were located so as to minimize the impact to recreation users as much as possible; also, Eagle Glacier and Berners Bay were not included as part of an expansion that was requested by operators, thus avoiding areas used by recreationists.

Further, the 2002 FEIS contained the following mitigating measures to minimize impacts to recreationists. Operators are required to:

- a. maintain a buffer distance of 1,500 feet (vertically and horizontally) from trails, cabins, and recreation sites
- b. Not land at the Mendenhall Glacier Recreation Area.
- c. Limit minor development activities to areas that have natural physical barriers or terrain that prevent sight and sound from these activities to other use areas.

6.5.3.8. Monitoring Requirements and Results

The 2002 ROD states that the Forest Service will monitor activities to “determine whether the mitigating measures described in Chapter 2 of the FEIS are effective and meet the intent of the special use permit stipulations.” Monitoring activities will include field observations, on-site inspections, and reviewing comments provided by Juneau residents and forest users. (Forest Service, 2002a) The Forest Service actively monitors the area for compliance with the authorizations. (Driscoll, 2006).

6.5.4. Trends

In the 2003-2007 EIS for the Juneau Icefield, the U.S. Forest Service states that, *the number of commercial helicopter landing tours on the Juneau Icefield has grown somewhat proportionately with the increase in cruise ship passengers to Juneau over the last 15 years. According to Juneau Convention and Visitors Bureau (JCVB) statistics (JCVB, 1999), the number of cruise ship passengers*

increased an average of 10 percent annually between 1982 and 1999. The number of icefield landings has grown an average of 9 percent each year, while the number of service days (the number of helicopter tour passengers) has averaged a 12 percent annual growth.

On the Tongass website (as of May 2004), the Juneau Ranger District's fact sheet on *Helicopter Flightseeing on the Juneau Icefield* characterizes the current controversy with helicopter tours and residents complaints about noise:

Noise reduction is an issue the community continues to address. Solutions are neither simple, nor fast. [The Forest Service is] working with the community leadership in resolving [the] helicopter issue. The [City and Borough of Juneau] collected baseline flightseeing noise data, identified remote heliport sites, explored tax incentives for acquisition of "quiet technology," and developed a long-term tourism plan . . . The Forest Service is a cooperating agency . . . to study alternative means of reducing helicopter noise with funding from . . . the FY2003 Omnibus Appropriations Act. The act directed the Forest Service to issue a contract for \$350,000 with the City of Juneau to prepare an environmental impact statement (EIS) to mitigate the impacts . . . Western Federal Lands Highway Department . . . is contributing almost \$1 million to this effort . . . At this point, a definite proposed action has not been yet identified and it is uncertain whether the environmental analysis will take the form of an environment assessment (EA) or an EIS. As the appropriations act was specific to the preparation of an EIS, the \$350,000 contributed by the Forest Service will not be tapped until a Notice of Intent to prepare an EIS is published in the Federal Register.

6.6. Petersburg – Summer

Temsco offers summer heli-tours from Petersburg to National Forest land, primarily on the Stikine Icefield. The Forest Service has not placed any limits on the number of clients or operating hours to date. Temsco has transported upwards of 800 clients. The USFS permit limits the season of use and contains wildlife stipulations to protect a variety of wildlife.

6.6.1. Petersburg as a Destination

Petersburg is on Mitkof Island, in the heart of the Tongass National Forest. Petersburg is primarily a fishing community, although pleasure cruisers are also found in Petersburg's water. Large cruise ships are not able to navigate the Wrangell Narrows. (Petersburg, 2006) Temsco's heli-tours visit the Stikine Icefield, particularly Patterson Glacier. (Temsco, 2006)

The Forest Service describes the Stikine Icefield as "one of the few remnants of the once-vast ice sheets that covered much of North America during the Pleistocene age. It covers 2,900 square miles along the crest of the Coastal Mountains that separate Canada and the U.S., extending 120 miles from the Whiting River to the Stikine River." At the south end of Thomas Bay is Patterson Glacier. It "provides a unique opportunity to see outwash plains, buried forests, and timber management areas." (Forest Service, 2006d)

6.6.2. Regulatory and Decision-Making Framework

Temsco has operated in the Stikine Icefield for more than 10 years. The first few years were authorized under temporary one-year permits. In 1997, an Environmental Assessment was written for the district's outfitter/guide use activities (formerly called the Stikine District, it is now broken into the Petersburg and Wrangell Districts). With the approval of the EA, a five year permit was issued to Temsco. At the end of the five-year period, the EA was reviewed and revised, although no revisions affected the Patterson Glacier or the helicopter use. During that revision process, a one-year permit was again issued. Once the revised EA was approved, Temsco was again authorized under a five-year permit. (Beers, 2006)

6.6.3. Permitted Activities¹⁵

As mentioned, Temsco has operated under authorization from the Petersburg District of the Tongass National Forest for more than 10 years. The most recent permit was issued in 2004, for a period of five years. The following information is based on a conversation with Russell Beers, Petersburg Ranger District.

6.6.3.1. Authorized Aircraft

Unknown.

¹⁵ There is no significant state land in this area; thus, no operator registered for state land using helicopter support.

6.6.3.2. Permit Period

The five-year permit allows Temsco to operate generally from May through September.

6.6.3.3. Use Days and Landings

Temsco is authorized two landing sites at Patterson Glacier. Temsco requests a specific number of service days for each year based on its projected use and is authorized by the Forest Service for that number. On average, the use is approximately 300 to 800 clients per year. Temsco projects 1,300 service days in 2006, but will likely use half that amount.

6.6.3.4. Acreage

No information.

6.6.3.5. Fees

Temsco is charged a minimum fee of \$100 or a per client fee based on the Forest Service published Fee Schedule, whichever is greater. The Forest Service has applied a permit fee rate of \$2.83/client day. Temsco pays in advance for projected use (for 2006, Temsco paid \$3,679) and is credited for any days not used, with prior approval.

6.6.3.6. Wildlife Impact Mitigation.

The permit requires at least 1,500 feet, horizontally and vertically to be maintained between helicopters and observable animals and areas of known animal concentrations, including known bald eagle nests.

6.6.3.7. Human Conflict Mitigation.

Human conflicts are minimal. Recreationists that use the area generally fall within two groups: mountain goat hunters and mountain climbers. The hunters typically stay in areas around the terminus of the Patterson Glacier, so they are not affected by the helicopter activity. Mountain climbers generally use an area north of Patterson Glacier around Bear Glacier, so the impact is minimal. No special mitigation measures are included in Temsco's permit for human conflicts.

6.6.3.8. Monitoring Requirements and Results

In the 2004 Tongass Monitoring and Evaluation Report, one issue raised was “whether the Forest is being managed in accordance with the prescribed Recreation Opportunity Spectrum class in Recreation and Tourism Standards and Guidelines” for the particular land use designation. The response included in the report was:

In 2004, The Petersburg and Wrangell Ranger districts revised the Stikine Area Outfitter and Guide Environmental Assessment (Stikine Area O/G EA) which was originally published in 1997. This document provided direction for the level of commercial recreation use on National Forest System lands in accordance with Forest Plan direction. Included [in] the consideration of the consistency with

Forest Plan direction was the accommodation of ROS classes [and] the development and monitoring of a recreation carrying capacity.

Monitoring Results

Overall, forest wide monitoring indicates that recreation visits to day use areas, campgrounds and cabins are either stable or decreasing on the forest. The reductions in use did not occur at all sites . . . Monitoring information will provide indications of trends over time of visitor use for some of the most popular recreation areas.

In the case of the updated Stikine Area O/G EA, it appears that use is still within the parameters of the original decision and consistent with Forest Plan direction. Some updating was required to factor in changes in the land base or use patterns. Also, comments from the general public were considered in this update. After the review of this information, the decision was reissued. (Forest Service, 2004c)

The Forest Service reviews the operation plans and attends some of the client briefings. To date, no negative comments or complaints have been received about Temsco's operation at the glacier. (Beers, 2006)

6.7. Seward – Summer

In Seward, Godwin Glacier Sled Dog tours offers summer flightseeing, glacier landing, sled dog tours, and an overnight stay on a glacier within Chugach National Forest. The flightseeing includes the ability to overfly, but not land, within Kenai Fjords National Park. The 2006 authorization limits helicopter-supported reaction to 1,200 helicopter landings and 3,200 client days on Godwin Glacier. Actual use is unknown but is expected to be substantially less. The Forest Service decision stipulates certain flight paths for purposes of minimizing wildlife impacts. It also includes that the flight path avoids residences and presumably high-use recreation areas.

6.7.1. Seward and Godwin Glacier as a Destination

Located about 126 miles south of Anchorage, Seward is at the head of Resurrection Bay on the Kenai Peninsula. It is also known as the Gateway to Kenai Fjords National Park. Along with access to the Park, Mt. Marathon as a backdrop to the town, and the Harding Icefield just down the coast, Seward is sometimes described as a “must see” for visitors. (Seward, 2006) Godwin Glacier lies within the Chugach National Forest, about seven miles from Seward. One of a few operators on the Kenai Peninsula, Godwin Glacier Dog Sled Tours is authorized to land at Godwin Glacier. While at Godwin Glacier, clients are able to walk around for an hour at the glacier or participate in dog sledding. The flightseeing tour also takes in the scenery of the Kenai Fjords National Park.

6.7.2. Regulatory and Decision-Making Framework

Decision Memoranda were issued for one year permits for dogsled tours on Godwin Glacier. These decision memoranda (dated January 1999 through May 2006) generally allowed for the development and continuation of guided dogsled tours on Godwin Glacier. Although the 2006 EA proposed a five-year permit period, the subsequent permit was issued only for a one-year period.

As a basis for the 1998 and 1999 permits, the decision memoranda cited the Helicopter Glacier Tours Final Environmental Impact Statement for the Juneau Ranger District of the Tongass National Forest (1995) and Decision Memos for Dogsled Tours on Norris and Taku Glaciers on the Juneau Ranger District of the Tongass National Forest (1997 and 1998) and individual EAs that were written for commercially guided helicopter skiing on the Glacier and Seward Ranger Districts of the Chugach National Forest (1998 and 1999).

The 2000 through 2006 memoranda stated that the activity fell within a *category of actions established by the Chief of the Forest Service, which can be categorically excluded from documentation in an Environmental Assessment (EA) or an Environmental impacts Statement (EIS). At the discretion of the responsible official, a project or case file and a decision memo are not required for this decision, but have been prepared to document potential impacts from helicopter supported activities on Godwin Glacier. The applicable category of action for this decision is identified in Forest Service Handbook 1909.15 section 31.IB(8). The actions described in this section do not individually or cumulatively have a*

significant effect on the quality of the human environment and therefore, may be categorically excluded from documentation in an EIS or and EA

An environmental assessment was written for the 2006 permit.

As with other national park systems in Alaska, no helicopter landings are allowed in the Kenai Fjords National Park. Thus, any helicopter tours must use landing sites outside of the Park for operations. In addition to guided dogsled tours in the Chugach National Forest, the Godwin Glacier Dog Sled Tours provides flightseeing tours of the Kenai Fjords National Park.

6.7.3. Permitted Activities¹⁶

Godwin Glacier Dogsled Tours has been issued one-year permits since 1999 for landing on Godwin Glacier and conducting guided dogsled tours. The following information provides details of these permits and associated decision memoranda.

6.7.3.1. Authorized Aircraft

None listed.

6.7.3.2. Permit Period

Although the term of the permit expires each December 31, the operating period is generally from Mid-May to September. The 2006 permit requires that operations must start after 8:00 a.m. from the Seward airport.

6.7.3.3. Use Days and Landings.

The following chart shows the number of authorized use days and landings (if included in the permit). Reported use is available under a FOIA request to the Forest Service.

6.7.3.4. Acreage

The 2001 through 2005 permits listed 3 acres. The remaining permits, including 2006, did not include an acreage value.

6.7.3.5. Fees

Each permit included the greater of a \$100.00 base fee or a variable rate. The 1999 and 2000 permits included a variable rate fee based on the adjusted gross revenue.

¹⁶ The Alaska Department of Natural Resources does not require a permit for commercial recreation day use of state land (outside the park), but does require commercial recreation operators to register. In their registration, the following operators indicated that they may use helicopters: Alaska River Adventures (2004), Alaskan Adventure Tours (2006), and Alpine Air (2004) registered in Game Management Unit 7. See Appendix C for activities, projected use, and other means of access used. It is unknown whether these operators do use helicopters in this area or not; however, they are not expected to be large-volume heli-supported recreation operators.

The 2001 through 2006 permits included a per client fee based on the Alaska Region Flat Fee Schedule.

**Table 6-8. Chugach National Forest
Authorized Use at Godwin Glacier**

Permit	Authorized	
	Client Days	Landings
1999	5,700	
2000	1,850	
2001	2,200	
2002	2,200	
2003	3,200	1,200
2004	3,200	1,200
2005	3,200	1,200
2006	3,200	1,200

In the Cordova District Forest Service 2001 bid prospectus, it included the current fee schedule (see Appendix F). It also stated that “prospectus applicants may offer larger fees . . . The Regional Forester will annually adjust the amounts within the Flat fee schedule using the Implicit Price Deflator-Gross National product index. The Regional Forester may also make periodic adjustments to fee schedules based on updated appraisals.” The fee rate under this schedule for heli-tours is \$2.61/client day.

6.7.3.6. Wildlife Impact Mitigation.

Mitigation measures for wildlife were included in all permits. The 2006 Decision Memo and permit requires that,

- a) The Fourth of July Creek drainage up to the glacier will be followed, when possible, to maximize the distance between the helicopter and animals on the slopes. (This flight path is generally outside the forest boundary, but is incorporated into the terms and conditions of the special use permit.)
- b) Pilots will follow flight path that avoids mountain goats and their habitat as much as possible (avoiding ridge tops). The same flight path to and from the glacier will be maintained to allow animals to become habituated to the standardized movement and noise.
- c) Except for takeoffs and landings, maintain a minimum of 1,500 vertical and horizontal distances from the ground.
- d) Hovering, circling or harassing wildlife in any way is not permitted.
- e) Flight patterns to and from the Seward Airport will follow pre-established landing patterns to protect bald eagle habitat near the runway.

6.7.3.7. Human Conflict Mitigation.

Beginning with the 2000 permit, mitigation measures were included to reduce conflicts with local residents. The 2006 Decision Memo and permit requires that,

- a) Flying over residential areas will be avoided.
- b) One-half mile distance will be maintained from popular hiking trails (Mt. Alice trail or Iditarod National Historic Trail) and any observed recreation use.
- c) Flight paths will stay close to south side of Fourth of July Creek drainage to avoid flying over or near Spring Creek Correctional Center.

The 2006 Decision Memo provided other mitigation measures taken by the company to reduce noise impacts to residents:

In past years, the pilot was not allowed to fly more than a certain distance over water due to FAA regulations on the type of skids the helicopter was equipped with. During the 2006 Season, the permit holder has equipped the helicopter with the appropriate skids to fly over Resurrection Bay. (Forest Service, 2006b)

6.7.3.8. Monitoring Requirements and Results

The 2006 Decision Memo lists two evaluations that were conducted/written:
A field survey for sensitive plants was completed on March 6, 2003 and a Biological Evaluation and assessment for threatened, endangered, and Forest Service sensitive wildlife species was completed on May 5, 2005. These evaluations and assessment indicate that there would be no adverse effects to these species from the proposed action.

6.8. Skagway – Summer

Skagway is a destination for a number of cruise ships that form the client base for summer helicopter operations by Temsco Helicopters on Tongass National Forest. The helicopter tours allows visitors to see Taiya Inlet, the ghost town of Dyea, and the Chilkoot Trail. The tours also land at one of six glacier sites. The Forest Service authorizes activities between 8 AM and 7:30 PM. The Forest Service permit authorizes up to 4,460 landings. In 2005, Temsco reported using 3,330 landings and transporting 16,397 clients. The permit contains stipulations to protect wildlife. Most of the landings are on glacier areas that do not significantly affect high use recreation areas.

6.8.1. Skagway as a Destination

Skagway is located in the Upper Lynn Canal and is considered the northern most point in Southeast Alaska. Skagway was the gateway to the Klondike Gold Rush and serviced by the narrow gauge railroad built in 1898. The historic train (the White Pass and Yukon Route Railway) is still a visitors attraction as it rides through scenic mountain passes from Skagway to Carcross, Canada. The helicopter tour allows visitors to see the Taiya Inlet, the ghost town of Dyea, and the Chilkoot Trail. Visitors gain access to the Valley of the Glaciers only by helicopter.

Skagway Chamber of Commerce states that tourism is Skagway's primary economic base. “The City of Skagway, National Park Service, and local residents have succeeded in retaining Skagway's 1898 Gold Rush atmosphere. Over 900,000 visitors are expected during the summer season. Skagway is the point of embarkment for the famous Chilkoot and White Pass Trails.” (Skagway, 2006)

6.8.2. Regulatory and Decision-Making Framework

A decision notice and finding of no significant impact (FONSI) was issued by the Forest Service (Juneau Ranger District) on November 3, 1995 and modified on March 7, 1996, based on an appeal received by the Regional Forester. Since that time, the Forest Service has continued to issue authorizations based on this FONSI.

6.8.3. Permitted Activities¹⁷

6.8.3.1. Authorized Aircraft

Unknown.

¹⁷ The Alaska Department of Natural Resources does not require a permit for commercial recreation day use of state land (outside the park), but does require commercial recreation operators to register. In their registration, the following operators indicated that they may use helicopters. Alaska Mountain Guides & Climbing School (2004), Glacier Valley Tours (2006) and Glacier Valley Tours/Alaska Cross Country Guiding (2004), registered in Game Management Unit 1D. See Appendix C for activities, projected use, and other means of access used. It is unknown whether these operators do use helicopters in this area or not; however, they are not expected to be large-volume heli-supported recreation operators.

6.8.3.2. Permit Period

Based on the 1996 FONSI, the season generally runs from May through September each year. Landings are allowed between 8:00 a.m. and 7:30 p.m., seven days per week.

6.8.3.3. Use Days and Landings.

As stated in the FONSI (and as amended), the Forest Service has authorized landings on the following sites (numbers are based on the 1999 landing authorizations):

- a) An unnamed glacier next to Laughton Glacier – 100 landings,
- b) East Fork Glacier – 340 landings,
- c) Denver Glacier (four sites) – 1,160 landings,
- d) Schubee Glacier (three sites) – 1,020 landings,
- e) Glacier Station Landing Area – 360 landings, and
- f) Meade Glacier – 1,480 landings.

Actual usage is reported at the end of each season. Between the years 1996 and 1999, the permittee was authorized the following landings.

Table 6-9. Skagway Area Authorized Landings 1996-1999

Landing Site	1996	1997	1998	1999
Unnamed Glacier	100	100	100	100
East Fork Glacier	170	220	267	340
Denver Glacier (4 Sites)	380	580	770	1,160
Schubee Glacier (3 Sites)	350	520	683	1,020
Glacier Station Landing Site	270	300	330	360
Meade Glacier	500	1,480	1,480	1,480
Totals	1770	3200	3630	4460

For the years 2001 through 2005, actual usage is shown on the charts below, as provided by Mike Driscoll, Juneau District, U.S. Forest Service:

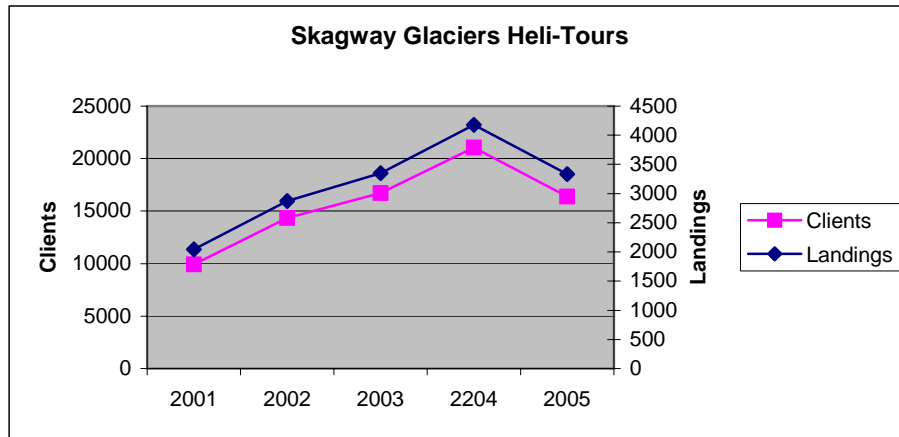


Table 6-10. Skagway Glacier Heli-Tours Reported Use

Temsco	2001	2002	2003	2204	2005
Landings	2,043	2,871	3,351	4,177	3,330
Clients	9,925	14,351	16,705	21,031	16,397

6.8.3.4. Acreage

Acreage not included in FONSI.

6.8.3.5. Fees

In the Cordova District Forest Service 2001 bid prospectus, it included the current fee schedule (see Appendix F). It also stated that “prospectus applicants may offer larger fees . . . The Regional Forester will annually adjust the amounts within the Flat fee schedule using the Implicit Price Deflator-Gross National product index. The Regional Forester may also make periodic adjustments to fee schedules based on updated appraisals.” The fee rate under this schedule is \$2.61/client day for heli-tours. Based on this rate, Temsco has paid between \$25,000 and \$55,000 annually.

6.8.3.6. Wildlife Impact Mitigation.

Only 100 landings are allowed on the unnamed glacier next to Laughton Glacier to reduce impacts to mountain goats. Further, pilots must maintain a 1,500 feet vertical and horizontal clearance of key mountain goat areas, any sensitive bird nesting areas, and from observed mountain goats, brown and black bears, wolves, moose, sea lions, and other marine mammals. Flight paths will avoid mountain goat kidding areas between May 15 and June 15. Flight paths must avoid any eagle nest by at least one-quarter mile and avoid hovering near and circling any eagle nest. Helicopters must

not hover, circle or harass wildlife, particularly mountain goats, eagles, bears, sea lions, and other marine mammals.

6.8.3.7. Human Conflict Mitigation.

The permittee, Temsco, is required to meet with the National Park Service each year before the start of the operating season, to ensure that helicopter take-off and landing times lessen the noise impacts of NPS interpretive sessions at the visitors center.

Landings at the unnamed glacier, East Fork, Denver, or Schubee Glaciers originating from Skagway will not directly impact any recreation trails or facilities. Impacts to recreationists in the Dyea Skagway area will be minimal for any landings at the Glacier Station Landing site.

Flights to the unnamed glacier, East Fork, Denver and Schubee Glaciers proceed over the waterfront area of town and will not impact residents of Skagway. Flights to/from Glacier Station Landing will impact residents slightly.

The most direct impact to area residents and recreationists are the flights to/from Meade Glacier, since it passes directly over the Katzehim River corridor. No special mitigation measures were included for this conflict.

6.8.3.8. Monitoring Requirements and Results

The permittee is to develop a training video (or other interpretive communication) for helicopter pilots and the general public about aircraft behavior in regards to wildlife.

The Forest Service will investigate any valid complaints received by other user groups.

6.8.4. Trends

It is expected that interest in the Valley of the Glaciers will continue to rise as long as there are cruise passengers interested in shore excursions in Skagway. Last year, the use rate was approximately 75% of the authorized landings and 62% for number of clients (service days). The previous year, the number of landings and clients bumped against the maximum allowable. As interest increases, there may be pressure on the Forest Service to increase the number authorized. However, the Forest Service will not increase maximum allowable landings and clients without a new NEPA analysis. (Driscoll, 2006)

6.9. Valdez and Thompson Pass – Winter

Valdez is an international heli-ski destination and five companies offer heli-skiing in the area on a combination of federal land managed by BLM and the Forest Service and on state land managed by DNR.

In 2005, the Forest Service issued a five-year permit to H2O Guides as a result of a bid prospectus. Only five helicopters are allowed in the area at one time. The permittee may not exceed the number of persons per day (in given areas) and is limited to a total of 225 service (client) days each year. The permit includes stipulations to protect wildlife, with mountain goats being the primary species of concern.

In 2006, BLM authorized a total of 17 client groups per day with 5 or 6 clients per group (depending on the company). BLM permits include stipulations to protect wildlife, with mountain goats being the primary species of concern.

DNR does not limit clients or groups. Three of the operators that reported use of state land reported a total of 1,356 clients in 2005. There is likely significant overlap between clients that use federal and state land because land ownership does not follow geographic features.

6.9.1. Valdez and Thompson Pass as a Destination

Because of the deep snowfall each year (the deepest single snowfall ever recorded in Alaska was in Thompson Pass at 62 inches), the Valdez/Thompson Pass area provides world class heli-ski opportunities. As mentioned previously in this report, the World Extreme Skiing Championship has been held in the Thompson Pass area between 1991 and 2000, along with considerable media coverage. (Hamby, 2006) One operator reports that it is able to fly 80% of the season, with up to 5,000 vertical feet runs and caters to advanced and expert skiers, “capable of black diamond terrain in a variety of snow conditions.” (VHSG, 2006)

6.9.2. Regulatory and Decision-Making Framework

In March 1998, a Decision Memo was issued by the Forest Service to authorize heli-ski tours on Chugach National Forest land for less than a one-year period, with the option for a second temporary use permit of the same duration the next year. In a November 2001 Decision Memo, the Forest Service determined that there was enough interest in the area to warrant a bid process for issuing an authorization. The Forest Service determined that it was “categorically excluded from further documentation and approved for use for a single operator and a single year” – the 2002 operating season. (Forest Service, 2001a) In November 2002, the Forest Service issued a Decision Notice and Finding of No Significant Impact for another one-year permit term (2003 operating season) based upon an Environmental Assessment written in that same year.¹⁸

¹⁸ Although the Forest Service issued another one-year permit in 2004 and a five-year permit in 2005, it is unknown whether these were based on an EA and decision memoranda. None was provided as a result of a FOIA request. In the 2002 FONSI, the manager allowed for subsequent permits (up to 5-years) to be issued “contingent upon successful operations and acceptable performance by the permit holder, and no changes in impacts.” (Forest Service, 2002a)

DNR adopted the Thompson Pass Special Use Area (11 AAC 96.014)(b)(13) in anticipation of the need to manage recreation activities in the area, including heli-skiing. DNR does not require permits to land or operate a helicopter in the area.

BLM issued a Record of Decision authorizing up to five heli-ski operators. The ROD expires in 2007; BLM will reevaluate the 2004 Environmental Assessment. (Hamby, 2006)

In an internal Department of Transportation and Public Facilities memo, Daniel Urbach, the Airport Design Group Chief, recommended that a cooperative procedure for the use of the airport would be necessary. The cooperative procedure might include that each operator would agree to use separate areas for take off and landings. He also stated that the airport might be able to accommodate two skiing operations to continue the airport for public use. However, he also pointed out that two operators were not as safe as only one and that long-term leases should be employed. The airport could also allow a summer flightseeing operation in the same locale. (Urbach, 1995)

6.9.3. Permitted Activities¹⁹

The Chugach National Forest authorizes only one operator on its lands. From 1998 until 2002, Valdez Heli-Ski Guides was the single heli-ski operation for the Chugach National Forest area. In 2003 and 2004, H2O Guides was issued one-year permits for heli-ski operations.²⁰ A five-year permit was issued to H2O Guides as a result of a bid prospectus.

In 2004, BLM issued four operators permits for a three-year period. See Table 6-11 and Table 6-13 for authorization information.

DNR, Division of Mining, Land and Water (DMLW) issued land use permits to four operators for varying periods for heli-ski operations and associated warming huts, storage sheds, and temporary camps. See Table 6-11 and Table 6-14 for authorization information.

¹⁹ The Alaska Department of Natural Resources does not require a permit for commercial recreation day use of state land (outside the park), but does require commercial recreation operators to register. In their registration, the following operators indicated that they may use helicopters. AK Bear Paw Drifters (2006), Alaskan Adventure Tours (2006), Alpine Air (2004), Backcountry Safaris (2004), H2O Guides (2006), and Nova River Runners (2004) registered in Game Management Units 6, 11, and 13D. See Appendix C for activities, projected use, and other means of access used. It is unknown whether these operators do use helicopters in this area or not; however, they are not expected to be large-volume heli-supported recreation operators.

²⁰ In 2003, DNR issued a five-year permit (to expire May 31, 2007) to Points North Heli-Adventures for a fuel cache and two-person tent for an emergency cache in the Cordova area. It is unknown at the time of this writing whether Points North Heli-Adventures is associated with H2O Guides or is a separate operator in the area. USFS information indicates that there is only one operator on USFS land. The DNR permit is for an operating period of March 1 through May 31 each year.

6.9.3.1. Authorized Aircraft

The Forest Service encourages its permittees to use an A-Star helicopter because they carry more passengers and generate less noise than other helicopters. Only five helicopters are allowed in the area at any one time.

Under BLM permits, Valdez Heli-Ski Guides and Valdez H2O Guides use A-Star helicopters. Each is authorized to use two helicopters. Alaska Rendezvous Guides and Alaska Backcountry Adventures are authorized one helicopter each.

Note that another operator, Valdez Heli-Camps, is currently not under permit by BLM. It operates two helicopters in the area.

6.9.3.2. Permit Period

Table 6-11 shows the various operating seasons for permitted activities. BLM stipulated in its permits that the operating hours are between sunrise and sunset.

Table 6-11. Valdez-Thompson Pass Area Authorized Operating Seasons

Operator	Land Manager	Operating Season
Alaska Backcountry Adventures	BLM	Feb 15-May 15
Alaska Backcountry Adventures ¹	DNR – MLW	Feb 1-May 15
Alaska Rendezvous Guides	BLM	Mar 15-May 5
Valdez H2O Guides	BLM	Feb 15-May 15
Valdez H2O Guides	Forest Service	Feb 1-Apr 30
Valdez H2O Guides ²	DNR – MLW	Jan 1-May 15
Valdez H2O Guides ³	DNR – MLW	Mar 1-May 31
Valdez Heli-Camps ⁴	DNR – MLW	Jan 1-May 31
Valdez Heli Ski Guides	BLM	Feb 1-May 30
Valdez Heli Ski Guides ⁵	DNR – MLW	Feb 1- May 31

Source: Hamby, 2006; DNR files; Forest Service permits

Notes:

¹ ABA is authorized by DNR for a temporary camp in support of heli-skiing and the off-season storage of a generator building.

² H2O is authorized by DNR for a season temporary commercial recreation camp and fuel cache.

³ H2O is authorized by DNR for a radio repeater and conducting commercial heli-ski operation.

⁴ VHC is authorized by DNR for a shed and temporary warming hut from Jan 1 – May 31 and a radio repeater site and year-round base camp

⁵ VHSG is authorized by DNR for a radio repeater site and conducting commercial heli-ski operations

The Division of Parks and Outdoor Recreation has issued annual permits to Valdez H2O Heli-Adventures for the use of Blueberry Lake State Recreation Site as a base and staging area for its heli-skiing operation. (Sinclair, 2006)

6.9.3.3. Use Days and Landings.

The 2001 Forest Service Decision Memo, set a maximum of eight helicopters per day and 80 persons for the 89 service days, “based on the recreation carrying capacity for the area.” It also stated that “past permitted helicopter skiing used 3 to 4 ships and 470 client days, well within the established commercial carrying capacity (7,120

client days).” The 2002 FONSI changed the number of helicopters to five per day and 87 persons for the service days. The most recent permit to H2O Guides (issued in 2005) allows up to 87 persons at one time, distributed within 7 regions, for the 225 service days. Also in the 2005 permit is a maximum of 5 helicopters at any one time and limiting operating occurs between sunrise and sunset (daylight hours only). The following table lists the number of clients and use fees paid since 1998.

Table 6-12 . Valdez Area Reported Use on Federal Land Managed by USFS

Year	Operator	Total Clients	Rate base	Fee
1998	Valdez Heli-Ski Guides	826	3% Gross Receipts	\$2,228.40
1999	Valdez Heli-Ski Guides	164	\$7.75/client	\$1,271.00
2000	NO INFORMATION			
2001	NO INFORMATION			
2002	Valdez Heli-Ski Guides	568	\$8.10/client	\$4,600.80
2003	H2O Guides	188	\$11/client	\$2,068.00
2004	H2O Guides	165	\$11/client	\$1,815.00
2005	H2O Guides	323	\$11/client	\$3,553.00
2006	H2O Guides	156	\$11/client	\$1,716.00
	TOTAL RECEIVED			\$17,252.20

The following table lists the number of clients and groups per day authorized by BLM for each permittee. (Hamby, 2006)

Table 6-13. Valdez Area Authorized Use on Federal Land Managed by BLM

Operator	Land Manager	Clients per group	Groups per day
Alaska Rendezvous Guides	BLM	5	1
Alaska Backcountry Adventures	BLM	6	1
Valdez Heli Ski Guides	BLM	5	10
Valdez H2O Guides	BLM	5	5

In 2005, the total number reported on state land managed by DMLW was 1,356: Valdez Heli-Camps reported 381 clients and Alaska Backcountry Adventures reported 477 total clients in 2005. ABA has already reported 498 clients in 2006.

6.9.3.4. Acreage

The 2005 Forest Service permit to H2O Guides covers seven regions totaling 225,280 acres. Each region has limits on persons allowed at one time and must stay within the ROS II primitive guidelines.

For the balance of the Thompson Pass area, roughly 836,515 acres, the State of Alaska manages about 540,000 acres (about 65%), the Bureau of Land Management

manages roughly 282,000 acres (about 34%), and another 13,000 acres (about 1%) is privately held 1%. BLM expects to own only 10% of the total area (close to 86,000 acres) after land selections are conveyed. (Hamby, 2006)

6.9.3.5.Fees

H2O Guides prospectus submission for a five-year permit (issued in 2005) pays the Forest Service \$11 per client day; the permit limits the number of client (service) days to 225. Thus, the annual fee is a maximum of \$2,475.

On average, BLM has collected \$7,000 in special recreation permit fees annually. (Hamby, 2006)

DMLW use fees are listed in Table 6-14 below. Note that Valdez H2O has two separate permits from DMLW beginning in 2004; visitor day use fees are charged against the permit for the temporary commercial recreation camp.

Table 6-14. State DMLW Use Fees for Valdez/Thompson Pass Permits

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Alaska Backcountry Adventures	\$3,505			\$2,505	\$2,505	\$2,505	\$2,505	\$2,505	\$2,505	\$2505 + \$2/visitor day	\$2505 + \$2/visitor day
Valdez H2O Heli-Adventures						\$ 250	\$ 250	\$ 250	\$ 250	\$ 250	\$ 250
										\$ 500 + \$2/visitor day	\$ 500 + \$2/visitor day
Valdez Heli Camps				\$ 700	\$ 700	\$ 700	\$1,700	\$1,700	\$1,700	\$2,600	\$2,900 + \$2/visitor day
Valdez Heli Ski Guides							\$ 250	\$ 250	\$ 250	\$ 250	\$ 250
TOTALS	\$3,505			\$3,205	\$2,205	\$3,455	\$4,705	\$4,705	\$4,705	\$6,105 + visitor day fees	\$6,405 + visitor day fees

DPOR receives \$250 as a base rate plus an addition \$4 per client. The rate will increase to \$8 per client next year. (Sinclair, 2006)

6.9.3.6.Wildlife Impact Mitigation.

BLM special stipulations, based on Environmental Assessment AK-050-EA-05-02, limit activities to non-critical wildlife habitat areas as mapped and made a part of the permit. Pilots, clients, and custodial pets are required to maintain a minimum of one-half mile from all observed wildlife, one-half mile from any active eagle and osprey nest (April 15 through end of season) and one-half mile from any bear or wolverine dens that may have been observed or located through radio telemetry. Helicopters are required to maintain at least one-half mile horizontal and vertical distance.

In the 2004-2008 Land Use Permit to H2O Guides, the 2002-2004 and 2005-2006 Land Use Permits to Valdez Heli-Camps, DNR requires a 1 mile buffer from any observed mountain goats and one-half mile buffer from known mountain goat habitat. In addition a one-half mile buffer from all other wildlife encountered (including bears and eagles). No ski runs or heli-hikes are authorized in any goat habitat or in the buffers.

The 2005 permit issued by the Forest Service contains the following mitigation measures:

- Helicopters will not hover, circle, or harass wildlife or waterfowl in any way.
- Helicopters will maintain a minimum landing distance of ½ mile from all observed wildlife.
- Pilots will use flight paths that avoid mountain goats and their habitat and shall not land within ½ mile of any area marked winter goat habitat (see map in Appendix A). Helicopters will maintain a minimum vertical distance of 1,500 feet above observed mountain goats or Dall sheep and goat habitat areas. Helicopter landings will not occur any later than April 30th to avoid goat kidding period.
- Skiing will be limited to those identified runs outside goat habitat as shown on the map (see Appendix A). Skiers and operators will not approach within 330 feet of eagle or osprey nests and within 660 feet of goshawk nests.

6.9.3.7. Human Conflict Mitigation.

BLM special stipulations, based on Environmental Assessment AK-050-EA-05-02, require helicopters to maintain a 2,500-foot vertical and horizontal distance from all observed users (as weather and ceilings allow), conduct flights to limit encounters between parties, including unguided parties, and avoid flying over mountain tops accessible by cross-country skiers.

The 2005 permit issued by the Forest Service contains the following mitigation measures to minimize effects on recreation experiences and quiet:

- All helicopters will maintain a 2,500-foot vertical and horizontal distance from all observed users as weather and ceilings allow. Flight paths in and out of rural areas should not occur over residential areas.
- Individual parties will be no larger than 15 people and flights will be conducted in a manner to limit encounters between parties (including unguided parties) to one or less per day.
- Helicopters exiting from the Thompson Pass area will fly through Marshall Pass.

6.9.3.8. Monitoring Requirements and Results

BLM conducts ongoing evaluations of the number, appropriateness, and impact of the heli-ski permits. Comments and complaints will be reviewed and addressed, as received. (Hamby, 2006)

In its 2001 Decision Memo, the Forest Service stated that “continuing over-flights of known and potential goat winter habitat will be conducted this winter [2001] and spring [2002] to verify the presence of goats and further analyze areas for habitat suitability. Based on the continuing monitoring, authorization under this decision may be adjusted for more or less area as information is acquired. Recreation use data collected as a result of this permit will be used for future permits.” The 2002 FONSI added that “on-site inspection and monitoring of the permit operations [will] be conducted by Forest Service personnel during the operating season.”

6.9.4. Trends

The Valdez/Thompson Pass area will remain an attractive area for heli-skiers. Land management will be the next issue to face the area, since BLM will be settling land selections made by the state and native corporations. With those land transfers, BLM will no longer be the permitting agency for heli-skiing – which translates to no wildlife mitigation measures, no assigned operating areas or limited use. As the use in the area increases, DNR, in particular, may find it necessary to establish guide areas, limit landings, and/or set client use days in the lands already designated under the Thompson Pass Special Use Area.

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