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

Anchorage Field Office
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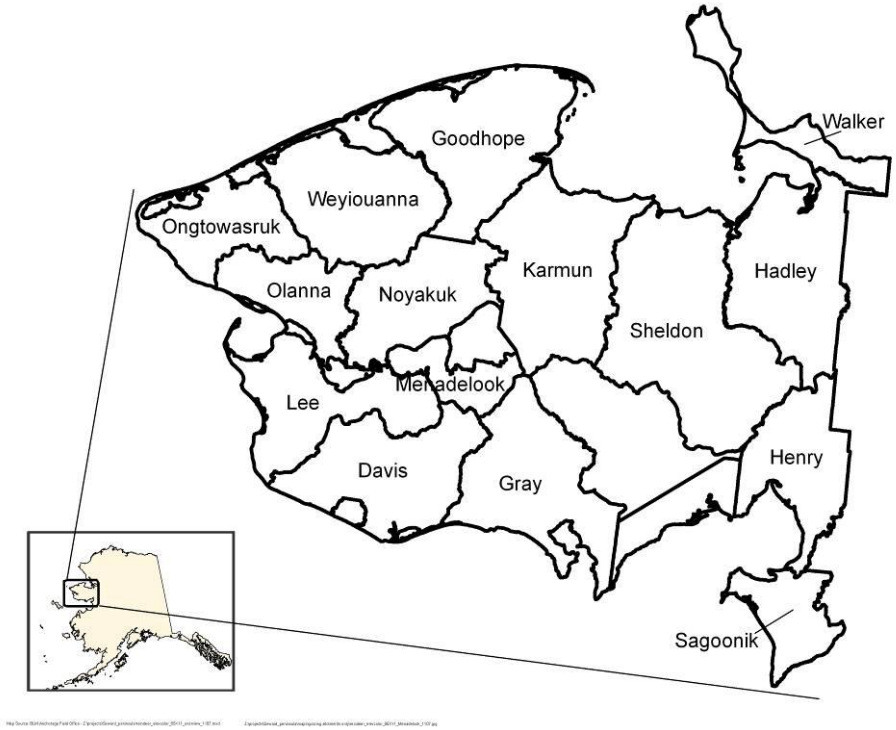
http://www.blm.gov/ak/st/en/fo/ado.html

Environmental Assessment: AK-010-08-EA-001
Reindeer Grazing Permits on the Seward Peninsula

Applicant: Clark Davis	Case File No.: F-035186
Applicant: Thomas Gray	Case File No.: FF-024210
Applicant: Nathan Hadley	Case File No.: FF-085605
Applicant: Merlin Henry	Case File No.: F-030387
Applicant: Julia Lee	Case File No.: F-030165
Applicant: Roger Menadelook	Case File No.: FF-085288
Applicant: James Noyakuk	Case File No.: FF-019442
Applicant: Leonard Olanna	Case File No.: FF-011729
Applicant: Palmer Sagoonick	Case File No.: FF-000839
Applicant: Douglas Sheldon	Case File No.: FF-085604
Applicant: John A. Walker	Case File No.: FF-087313



Location: Bureau of Land Management managed lands on the Seward Peninsula

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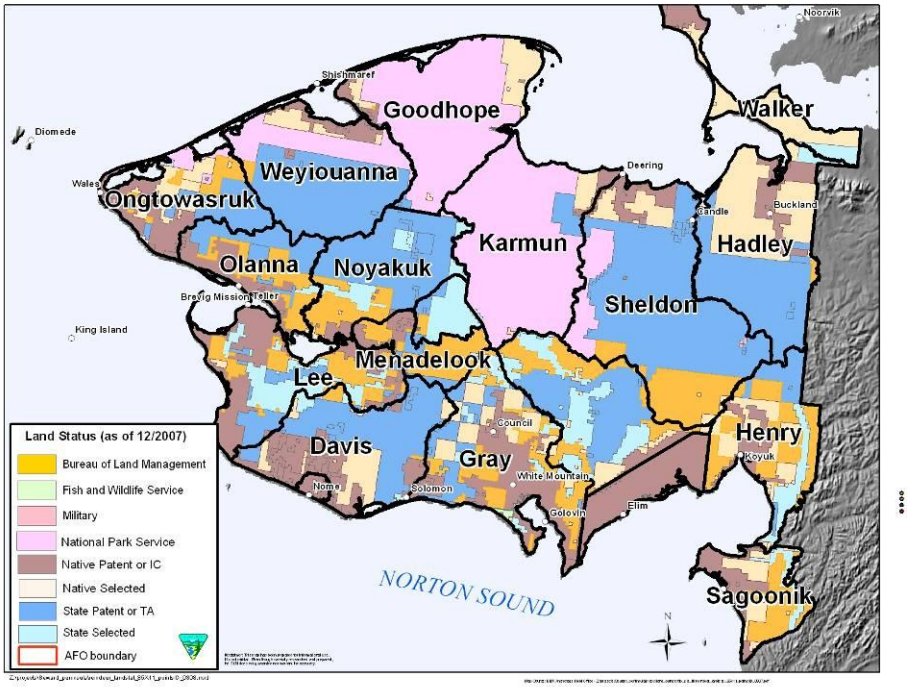
1.0 INTRODUCTION

Reindeer were first brought into Alaska on September 21, 1891 at Unalaska Island in the Aleutians. The next year, 171 animals were introduced to the Seward Peninsula at Port Clarence.[1] Today, reindeer herding remains an avocation and a tradition of Alaska Natives on the Seward and adjacent Baldwin peninsulas where there are fifteen reindeer grazing allotments under permit.[2]

1.1 Land Status

When reindeer were introduced on the peninsulas, all the land was under federal management. Today the land is owned and/or managed by the State of Alaska, Native Corporations, private parties, and agencies of the United States Department of the Interior.



[1] Later known as "Teller Reindeer Station" so named in honor of H.M. Teller, the Senator from Colorado who sponsored a bill to allocate six thousand dollars for the purchase of reindeer from Russia for importation to Alaska, *see* Sheldon Jackson, (*Fifth Annual*) *Report on introduction of reindeer into Alaska*, 54th Cong., 1st Sess., Sen. Exec. Doc. No. 111 (Washington, DC, 1896), 11-3.

[2] A history of reindeer herding in Alaska may be found at: http://www.uaf.edu/snras/afes/pubs/bul/bul59.pdf *Eskimos, Reindeer, and Land*, Stern, Arobio, Naylor and Thomas, University of Alaska, School of Agriculture & Land Resources Management, December, 1980.

For a history of reindeer importation to Alaska, the reader is referred to: http://www.baiki.org/content/alaskachron/1900.htm

Table 1. Land ownership within the fifteen allotments, October 2007

Land Ownership[3]	Acres	Percent
BLM Managed	1,625,299	13%
Military	8,653	< 1%
Fish and Wildlife Service	7,708	< 1%
National Park Service	2,509,954	20%
Native Patent or IC	2,109,696	17%
Native Selected (BLM administered)	1,698,905	13%
State Patent or TA	4,021,927	32%
State Selected (BLM administered)	637,114	5%
Totals	12,619,256	100%

As a consequence of changes in land ownership and management responsibilities, the Bureau of Land Management, the State of Alaska's Department of Natural Resources, and the National Park Service entered into a Memorandum of Understanding which allows for cooperative permitting and management of reindeer grazing on public lands, Federal and State.[4] Under the agreement, allocation of permit administration is based on predominate land ownership or management responsibility within each allotment boundary. By the terms of the agreement, the Bureau of Land Management is the Lead Agency responsible for administering the permitting process for the Gray, Henry, Menadelook, Noyakuk, Sagoonik and Walker grazing allotments; the State of Alaska's Department of Natural Resources is the Lead Agency responsible for administering the permitting process for the Davis, Hadley, Olana, Lee (Kakaruk) and Sheldon grazing allotments; and the National Park Service is the Lead Agency responsible for administering the permitting process for the Goodhope, Karmun, Ongtowasruk and Weyiouanna grazing allotments.

[3] BLM administered lands are lands selected from the Federal public domain for conveyance to either the state of Alaska under the Alaska Statehood Act, Public Law 85-508, 72 Stat. 339, July 7, 1958, or the Native community under the Alaska Native Claims Settlement Act, December 18, 1971 or the Native Allotment Act of May 17, 1906. BLM managed lands are lands of the Federal public domain that have not been set aside of conservation under the Alaska National Interest Lands Conservation Act, Public Law 96-487, 94 Stat. 2371, December 2, 1980, or for conveyance to either the State of Alaska or the Native community. BLM administered lands require a concurrence from the State of Alaska on proposals to use State selected lands, ANILCA 906(k)(1)(B), and consultation with ANCSA Native Corporations on proposals to use Native selected lands. 43 CFR §2650.1(a)(2)(i).

[4] MOU, AK 025-2003-05, dated October 9, 2002.

1.2. Relationship to Statutes, Regulations, Policies, Plans or Other Environmental Analyses

1.2.1. Statutory and Regulatory Authority

The Federal Land Policy and Management Act directs the Secretary of Interior to manage Federal public lands under principles of multiple use and sustained yield while preventing unnecessary or undue degradation of the lands, 43 U.S.C. §1732(b). The Reindeer Industry Act authorizes the Secretary's regulation of reindeer grazing on Federal public lands on the peninsulas, 25 U.S.C. §500m. The Secretary regulates reindeer grazing on BLM lands on the peninsulas in accordance with the provisions of 43 CFR Part 4300.

1.2.2. Policy

The purpose statement of the Reindeer Industry Act of 1937 provides:

> A necessity for providing *means of subsistence* for the Eskimos and other natives of Alaska is hereby declared to exist. It is also declared to be the policy of Congress, and the purpose of this subchapter, to establish and maintain for the said natives of Alaska a self-sustaining economy by acquiring and organizing for and on behalf of said natives a reindeer industry or business, by encouraging and developing native activity and responsibility in all branches of the said industry or business, and by preserving the native character of the said industry or business thus established.
>
> [Emphasis added. 25 U.S.C. §500]

1.2.3. Plans

The allotments all fall within the boundary of BLM-Alaska's Northwest Management Framework Plan dated September 1982.

The allotments also fall within the planning area of BLM-Alaska's Kobuk Seward Resource Management Plan, which will supersede the Northwest Management Framework Plan. The Environmental Protection Agency published notice of the filing of the final Kobuk Seward Resource Management Plan and Environmental Impact Statement on September 28, 2007, F.R. Volume 72, Number 188, Pages 55244-55246. The plan was closed to protests on October 28, 2007 and awaits final action on protests before receiving BLM-Alaska's State Director's approval and issuance of a Record of Decision. Until superseded by the Kobuk Seward Resource Management Plan, the Northwest Management Framework Plan provides the basis for considering the propriety of permitting reindeer grazing on BLM lands within the Kobuk Seward Resource Management Plan's planning area, 43 CFR 1610.8 (a).

1.2.4. Environmental Analyses

The National Environmental Policy Act of 1969 requires that the BLM analyze the environmental effects of activities it authorizes on the public lands to determine whether they will have a significant affect on the quality of the human environment, 42 U.S.C. §4332. In managing the environment, the BLM is required to "…. prevent unnecessary or undue degradation of the land[s]," 43 U.S.C. §1732(b). In Alaska the BLM is also required "…. to cause the least adverse impact possible on rural residents who depend upon subsistence uses of the resources of [the public] lands ….," 16 U.S.C. §3112(1).

The effects on the land, rural residents and the resources upon which they rely and the affect on the human environment associated with reindeer grazing have been analyzed with respect to each allotment every five years since 1992. The effects on the land, rural residents and the resources upon which they rely and the affect on the human environment from reindeer grazing on the peninsulas were analyzed in BLM-Alaska's Kobuk Seward Resource Management Plan and Final Environmental Impact Statement.[5]

The Affected Environment and Environmental Consequences Chapters of this document tier[6] off of the Kobuk Seward Resource Management Plan and Final Environmental Impact Statement. The issues identified and discussed in the Kobuk Seward Resource Management Plan and Final Environmental Impact Statement relevant to Reindeer Grazing are incorporated by reference.[7]

1.3. Plan Conformance

1.3.1. Management Framework Plans

The Bureau's multiple use planning regulations provide that:

> Until superseded by resource management plans, management framework plans may be the basis for considering proposed actions and …
>
> 3) … [a] determination shall be made by the District or Area Manager whether the proposed action is in conformance with the management framework plan. Such determination shall be in writing and shall explain the reasons for the determination.
>
> [43 CFR §1610.8 (a) (3)]

[5] http://www.blm.gov/ak/st/en/prog/planning/ksp/ksp_documents/ksp_prmp_feis.html

[6] 40 CFR §1502.20

[7] 40 CFR §1502.21

BLM-Alaska's Northwest Management Framework Plan contemplates reindeer grazing as a legitimate land use on the peninsulas, *see* Range Objective 1.

1.4. Purpose and Need for the Proposed Action

Legislation since the Reindeer Industry Act, including the Alaska Native Claims Settlement Act and Title VIII of the Alaska National Interest Lands Conservation Act, forms a continuous pattern of congressional efforts to promote Native Alaskan cultural and economic well-being.

The decision to introduce reindeer into Alaska and onto the peninsulas was made by Congress in the 1890s. The decision to promote the Reindeer Industry and to allocate federal public land for reindeer grazing was made by Congress with passage of the Reindeer Industry Act of 1937. The foregoing coupled with the multiple use and sustained yield provisions of the Federal Land Policy and Management Act reduces the decision here to prevention of unnecessary or undue degradation of the public lands, 43 U.S.C. 1732(b).

The University of Alaska, Fairbanks' Reindeer Research Program[8] has developed an expertise in reindeer husbandry and works closely with reindeer herders. Similarly, the United States Department of Agriculture's Natural Resources Conservation Service has developed an expertise in land health, germane to reindeer grazing on the peninsulas. In recognition of their expertise and in an attempt to avoid duplication of effort, the Bureau of Land Management is currently examining the prospect of establishing an agreement with the Conservation Service and the University, as well as with the Alaska Department of Natural Resources, the National Park Service, and the Kawerak Reindeer Herders Association to jointly manage reindeer grazing on the peninsulas.

The first step in that process is the development of a programmatic environmental assessment to discern whether there is a need for and if appropriate to establish land health standards and the scope and parameters of allotment management plans appropriate to reindeer grazing on the peninsulas. The second step in that process is to solicit the participation of the parties in the negotiation of an agreement to manage reindeer grazing on the peninsulas. The Conservation Service, the University, the Alaska Department of Natural Resources, the National Park Service, the Kawerak Reindeer Herders Association, and the Bureau of Land Management are all pursuing the development of the programmatic environmental assessment. The assessment is expected to be completed by December 31, 2008. The creation of a joint management agreement is a logical consequence of the process.

[8] http://reindeer.salrm.uaf.edu/

In the mean time, ten of the fifteen reindeer allotment permits require renewal and one requires a BLM concurrence, 43 CFR §4300.90. Preservation of the reindeer herders' interests in their allotments is in conformance with the Reindeer Industry Act of 1937, 25 U.S.C. §500.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1. Alternative A: the proposed action – continuance of prior authorizations[9]

Pending the development of the programmatic environmental assessment and the negotiation of a joint management agreement:

1. Where, in accordance with the terms of the 2002 Memorandum of Understanding, the BLM is the permit administrator or Lead Agency, the BLM *proposes* to re-issue reindeer grazing allotment permits to reindeer herders on the peninsulas that will allow for the continuance of range utilization at current levels of use - number of reindeer and size of range.

2. Where, in accordance with the terms of the 2002 Memorandum of Understanding, the State of Alaska's Department of Natural Resources is the permit administrator or Lead Agency, the BLM *proposes* to concur in the permits issued by the State of Alaska's Department of Natural Resources.

3. Where, in accordance with the terms of the 2002 Memorandum of Understanding, the National Park Service is the permit administrator or Lead Agency, the BLM *proposes* to concur in the permits issued by the National Park Service, an agency of the United States Department of the Interior.

2.1.1 Reindeer

Although they are called by different names in North America, wild caribou and reindeer are considered to be a single species throughout the world – the indigenous peoples of Europe distinguish caribou from reindeer by simply designating the former "wild reindeer."[10] Well adapted to winter conditions, they

[9] The permits will also authorize all current range improvements including but not limited to corrals and line-cabins, 43 CFR §§ 4300.42 and 4300.43 and the utilization of mechanized equipment, 4-wheelers, snowmobiles and light aircraft, to herd or push the reindeer.

[10] http://boreale.konto.itv.se/samieng.htm; "The reindeer is not really a domesticated animal, left on its own the wild nature takes over quickly."

are native species to the circumpolar tundra and boreal forest regions.[11] When the indigenous peoples of Europe began herding reindeer, five to seven thousand years ago, they mimicked the animals' natural migration patterns and moved them between winter and summer ranges. The same is true today. When Sheldon Jackson imported reindeer to Alaska in the 1890's he also brought with him Sami reindeer herders, indigenous peoples of Europe, to teach Alaska Natives reindeer herding techniques.[12]

2.1.2. The Allotments

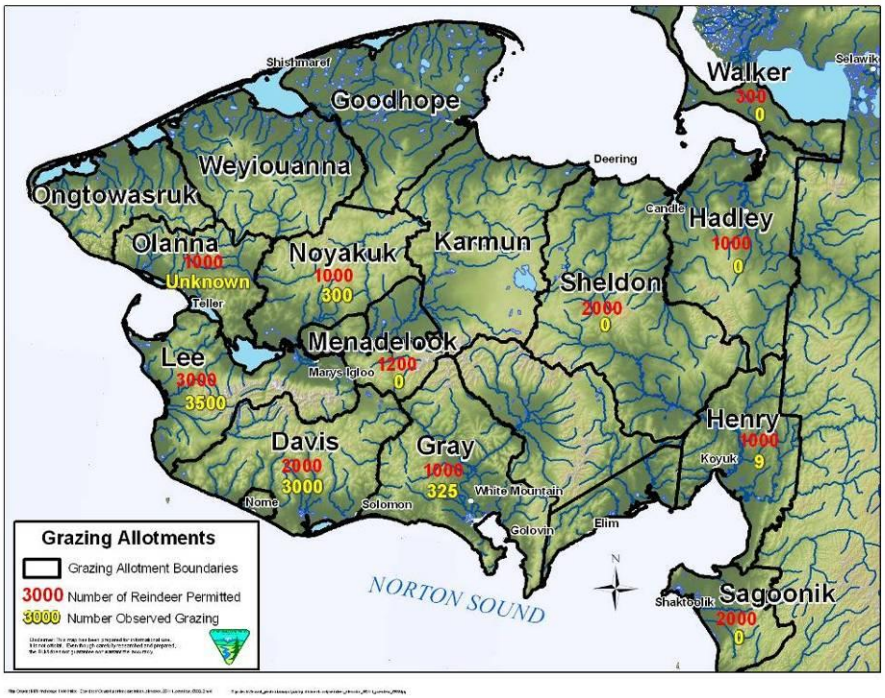
Table 2. Reindeer Grazing Allotment Permits.[1]

Lead Agency	Permit Holder	Admin Action	Allotment Acreage[2]	BLM Acres[2]	Reindeer Permitted[3]	Reindeer Grazing[4]
DNR	Davis	Renewal	955,504	190,902	2,000	3,000
BLM	Gray	Renewal	1,041,123	489,455	1,000	325
DNR	Hadley	Renewal	1,102,907	463,220	1,000	0
BLM	Henry	Renewal	702,283	505,395	1,000	9
DNR	Lee	Concurrence	833,662	371,124	3,000	3,500
BLM	Menadelook	Renewal	300,944	189,935	1,200	0
BLM	Noyakuk	Renewal	761,621	239,648	1,000	300
DNR	Olanna	Renewal	523,156	172,275	1,000	Unk[5]
BLM	Sagoonick	Renewal	395,703	274,283	2,000	0
DNR	Sheldon	Renewal	1,692,084	355,032	2,000	0
BLM	Walker	Renewal	359,302	268,859	300	0
Totals			**8,668,289**	**3,520,128**	**15,500**	**7,134**

[1] The allotment permits administered by the National Park Service are current and are not reflected here.
[2] Approximate acreage, includes BLM unencumbered, State selected, and Native Selected lands as of October 2007.
[3] Figures based on previous BLM authorizations and current National Park Service issued permits. The Alaska Department of Natural Resources does not limit the number of reindeer grazing on an allotment.
[4] Estimates based on reports to BLM, observations, and information provided by Kawerak Reindeer Herders Association (Kimberly Carter, February 2008).
[5] There are no estimates available for the number of reindeer grazing on this allotment.

[11] Source: http://www.nps.gov/archive/bela/html/rangifer.htm#top and http://www.oloft.com/casestudy.html

[12] Source: http://www.baiki.org/content/alaskachron/pre1890.htm



Allotments administered by BLM and the Alaska Department of Natural Resources: red numbers are the number of animals permitted on an allotment; yellow numbers are the reported number of animals resident on each allotment.

2.1.3. Herding

In the non-winter months reindeer feed on grasses, sedges, shrubs, forbs, flowering plants, fungae, horsetails and the leaves of willows; which allow them to buildup winter fat stores. They have prehensile lips and are selective grazers, choosing the most nutritionally dense plants and plant parts.

During winter months, reindeer must dig through deep, crusty snow to feed on various lichens and shrubs.

Today, helicopters are sometimes used to drive reindeer. In addition, herders push their deer on foot, or with 4-wheelers or snowmobiles.

Corralling of reindeer occurs once or twice a year for husbandry purposes. It also occurs during times of predation and to avoid emigration of reindeer with the Western Arctic Caribou herd. This corral is outside of Nome.

Noyakuk corral and line-cabin, Imuruk basin. Corralling facilitates the accurate marking of stock and the making of counts and ownership records.

Noyakuk corral chute, Imuruk Basin.

Noyakuk line-cabin, Imuruk Basin.

Reindeer herding occurs on large acreages, in a country of sparse settlement and poor transportation facilities with travel over the range, often under adverse conditions. Consequently there is a need for the erection of shelters or cabins for the herders here and there on the range. At least three main cabins are needed on the average allotment—one headquarters cabin on the summer range, one headquarters cabin on the winter range, and one cabin on the calving grounds. In addition to these, and depending upon the size and character of the allotment, the construction of several subsidiary cabins or shelters at strategic points over the range facilitate the work of moving herds about the range and handling them with less confinement and disturbance. In some instances, tents may suffice, but a permanent shelter is preferable, as it is more comfortable and will permit the storage of necessary supplies at favorable periods in the year and save much labor where transportation is difficult.

Without cabins on the winter range, reindeer may be held on the same ground both summer and winter, resulting in damage to the range and jeopardy to herds when the snow crusts over. Proper winter range lies in the hills back of the coast, where there are protected areas with an abundance of reindeer moss.

The University of Alaska, Fairbank's Reindeer Research Program assists herders with reindeer husbandry. Here, blood samples are drawn to monitor the incidence of brucellosis and other diseases. The Natural Resources Conservation Service, assists herders in range management.

In conjunction with the University of Alaska Fairbanks, the herder on the Henry reindeer allotment is experimenting with a small scale feed-lot operation to assess the prospects of alternate operations that may avoid emigration of reindeer with the Western Arctic Caribou Herd. Although feed-lot operations are beyond the scope of this assessment, the scale of this experiment, nine animals, does not engender levels of environmental concern beyond that of a normal reindeer herding operation.

2.1. Alternative B: the no action alternative – discontinuance of prior authorizations

Under this alternative, the Bureau of Land Management would not permit the grazing of reindeer on BLM lands on the peninsulas. This alternative would undermine the purpose of the Reindeer Industry Act and is inconsistent with the provisions of BLM-Alaska's Northwest Management Framework Plan and the forthcoming Kobuk Seward Resource Management Plan. Discontinuance of prior authorizations would jeopardize the open range charter of reindeer grazing on the peninsulas as some means would have to be developed to prevent reindeer from encroaching on BLM lands.

2.2. Issues of Environmental Concern

Socioeconomic – Although the extent of or duration of adverse economic or social effects alone are not individually or cumulatively relevant to an analysis of the relationship of people with the environment, it remains that discontinuance of the authorizations would result in substantial adverse socioeconomic and cultural consequences within the Native communities on the peninsulas. [13]

Vegetation – failure to rotate herds to alternate grazing areas could lead to overgrazing and riparian zone degradation.

Wildlife – continued emigration of reindeer with the Western Arctic Caribou Herd may result in the taking of wildlife in defense of property, as is the case in Europe, or the eventual demise of reindeer husbandry on the peninsulas.

[13] 40 CFR §1508.14

3.0 AFFECTED ENVIRONMENT

As stated in Paragraph 1.2.4, this section tiers off of and incorporates the analyses and discussions presented in the Kobuk Seward Resource Management Plan and Environmental Impact Statement.

3.1. Ecosystem Provinces[14]

Alaska's Ecosystem Provinces

Two of the above Ecosystem Provinces are found on the peninsulas, the Seward Peninsula Tundra – Meadow Province and the Bering Tundra (Northern) Province.

3.1.1. Seward Peninsula Tundra – Meadow Province

Land-surface form.--This area contains extensive uplands of broad convex hills and flat divides 500-2,000 ft (150-600 m) high, cut by sharp V-shaped valleys. Isolated groups of rugged glaciated mountains with peaks 2,500-4,700 ft (800-1,400 m) in elevation reach above coastal lowland and interior basins. The bedrock is chiefly metamorphic, with massive granitic intrusions. Periglacial processes predominate, and ice-wedge polygons are common.

Climate.--The tundra climate is characterized by long, cold winters and short, cool summers. Nome has recorded a minimum temperature of -47F (-44C) and a maximum of 84F (29C). The average January temperature is about 3F (16C), and average temperatures in July are below 50F (10C). Average daily minimum temperatures in winter range from -11 to -2F (-24 to -19C), with an average daily maximum of 3 to 12F (-16 to -11C). Average daily minimum temperatures in

[14] Source: http://www.fs.fed.us/colorimagemap/ecoreg1_akprovinces.html

summer range from 34 to 43F (1 to 6C), with an average maximum of 55 to 63F (13 to 17C). The growing season is less than 2 months. Fairly heavy snowfall occurs in winter, with even heavier concentrations of rain in summer. Average annual precipitation is about 18 in (460 mm); average annual snowfall ranges from 39 to 78 in (1,000 to 2,000 mm).

Vegetation.--Vegetation exists in moist and wet tundra communities at lower elevations and alpine tundra communities in the high mountains. Vegetation is primarily composed of sedge tussocks interspersed with scattered willows and birches, with isolated spruce-hardwood forests.

Soil.--The Inceptisol soils are generally poorly drained and shallow; the entire peninsula is underlain by *permafrost*. On hillslopes and ridges they are formed in very gravelly residual material over weathered bedrock. At lower elevations, soils are formed mainly in colluvial and alluvial sediments.

Fauna.--Arctic foxes and Alaska hares are common here, and polar bears are often seen. Ribbon seals are characteristic of areas offshore. Musk ox were introduced in 1970.

Spectacled eiders, ruddy turnstones, and black turnstones are common breeding birds in the lowland tundra of this province. The rare arctic loon, which breeds only in western Alaska, is characteristic of this region. The only known breeding grounds of the very rare bristle-thighed curlew extend throughout this region.

3.1.2. Bering Tundra (Northern) Province

Land-surface form.--The Bering Tundra is a western extension of the arctic coastal plain, a broad lowland area rising gradually to the east. General topography is less than 1,000 ft (300 m) in elevation, broken in places by small mountain groups that rise 2,500-3,500 ft (800-1,100 m). Standing water is present in thousands of shallow lakes and marshes along the coast.

Climate.--The climate is less severe in the Bering Tundra than on the arctic slope, but it also has cold winters and generally cool summers. Temperatures range from a high of 90F (32C) in summer to a low of -70F (-57C) in winter. Annual precipitation averages 17 in (430 mm).

Vegetation.--Vegetation along the wet coastal areas is chiefly sedge and cottongrass; woody plants grow on higher sites. Birch-willow-alder thickets are extensive in transition zones between beach and forest.

Soils.--Coastal soils are wet, cool Inceptisols over silt, sand, and marine sediments. Ground water throughout the area is limited, but some is present in the

major river valleys. Surface water on the Seward Peninsula ceases to flow in winter, but further south it flows year-round. *Permafrost* is continuous under most of the area.

Fauna.--River bottom lands provide excellent habitat for furbearers, game birds, and moose. Upland and coastal areas support brown and black bear, wolf, wolverine, coyote, caribou, reindeer, snowshoe hare, red fox, lynx, beaver, moose, squirrels, mice, weasel, mink, and marten. Along the northern Bering Sea coast, polar bear, walrus, and arctic fox are occasionally found.

Coastal areas provide extensive and excellent habitat for migrating waterfowl and shore birds. Other bird species in the area include ospreys, falcons, grouse, ravens, golden eagles, and various hawks and owls.

3.2. Critical Elements of the Human Environment

The following discussion is organized around the ten significance criteria described in 40 CFR § 1508.27 and incorporated into the Bureau of Land Management's 14 Critical Elements of the Human Environment list (H-1790-1), supplemental Instruction Memorandums, Acts, Regulations and Executive Orders. There is a fifteenth Critical Element of the Human Environment in Alaska, Subsistence, Title VIII, ANILCA.

In keeping with Paragraph 1.4, the following have been analyzed with the assumptions that:

1. there is no environmental or substantial difference between caribou and reindeer;
2. both are native or appropriate species for introduction to tundra and boreal forest environments;
3. the reindeer herding traditions of the indigenous peoples of Europe were assimilated by the Native peoples of Alaska; [15]
4. after 117 years of their presence on the peninsulas, the environmental effects of reindeer' presence, including disease transference from a non-indigenous population to an indigenous population, have stabilized;

with the result being that the only effects for analysis are those brought about by human domestication of reindeer: herding to different areas of an open range and occasional corralling. Both are necessary consequences of traditional reindeer husbandry and promotion of the reindeer industry under the Reindeer Industry Act.

[15] It is conceivable that the phenomena would have eventually made its way across the Bering Sea to Alaska as a natural occurring event associated with the subsistence lifestyle of circumpolar indigenous peoples (cross culturalization).

The following are either not present or will not be affected by the Proposed Action:

1. Air Quality
2. Areas of Critical Environmental Concern[16]
3. Cultural Resources
4. Environmental Justice
5. Floodplains
6. Invasive, non-native species
7. Native American Religious Concerns
8. Prime or Unique Farmlands
9. Subsistence, Title VIII, ANILCA
10. Wastes, Hazardous or Solid
11. Threatened or Endangered Species
12. Water Quality (Surface and Ground)
13. Wetlands/Riparian Zones
14. Wild and Scenic Rivers
15. Wilderness

3.3. Non-critical Elements of the Human Environment

The following Non-critical Elements of the Human Environment may be affected by the Proposed Action or the No Action Alternative.

3.3.1. Socio-economics[17]

The reindeer herding industry is a vital part of the social and economic environment on the Seward Peninsula. It has become an integral part of the contemporary lifestyle, integrated into the social organization, culture, values and seasonal round of subsistence activities of most people in the region.

Reindeer herding provides meat, reindeer by-products, income and employment to the people of the area. The industry provides private sector employment in a region where public sector employment is the norm. There are no known alternative industries or activities shown to be as economically and socially

[16] Under the preferred alternative of BLM-Alaska's Kobuk Seward Resource Management Plan, when all conveyances in the area have been completed, 82,000 acres within the Davis and Lee grazing allotments would be designated an Area of Critical Environmental Concern to protect, *scenic, cultural, botanical and geological resources*. The Plan recognizes reindeer grazing as a compatible use within the Area of Critical Environmental Concern.

Under the Plan and until conveyances are complete, the use of off highway vehicles, such as the 4-wheelers used by the herders, is unrestricted provided such use does not cause or contribute to water quality degradation, alteration of drainage systems, significant rutting, ground disturbance, or thermal erosion. However, once conveyances are complete and the designation is made the plan proposes to restrict the use of such vehicles to existing trails from May 15 to October 31. Such a restriction may prove to be impracticable and an unreasonable constraint on herders and may warrant consideration of an exception in the proposed off-highway vehicle plan for the area particularly given the provisions of the Reindeer Industry Act.

[17] Socioeconomic Evaluation of Reindeer Herding in Northwestern Alaska, Naylor, Stern, Thomas and Arbio, 1980.

compatible or acceptable to the people of the region as herding. It provides employment in an otherwise limited employment situation. Villages have become dependent on their local herds. Current herding practices are rational within this current sociocultural context and economic system of northwestern Alaska. The price received for meat has increased along with personal income levels, consumer preference for reindeer meat over imported meats, and the prices to be paid for such import substitutes. Rising production costs for labor, fuel and equipment tend to maintain small herd operations at marginal levels.

The industry provides a source of high-quality red meat protein as an alternative to imported meats and to local wildlife that has increasingly come under more government control. Reindeer meat has thus become a significant part of the Native diet; in fact, its consumption has steadily increased. While all Natives participate in subsistence activities and in the cash/wage economy to some degree, herding provides a primary means of income.

3.3.2. Vegetation

Arctic tundra is located in the northern hemisphere, encircling the North Pole and extending south to the coniferous forests of the taiga. The arctic is known for its cold, desert-like conditions. The growing season ranges from 50 to 60 days. Summer temperatures enable this biome to sustain life. Rainfall may vary in different regions of the arctic. Soil is formed slowly. A layer of permanently frozen subsoil or permafrost exists, consisting mostly of gravel and finer material. When water saturates the upper surface, bogs and ponds may form, providing moisture for plants. There are no deep root systems in the vegetation of the arctic tundra; however, there are still a wide variety of plants that are able to resist the cold climate. There are about 1,700 kinds of plants in the arctic and subarctic, and these include: low shrubs, sedges, reindeer mosses, liverworts, and grasses, 400 varieties of flowers, crustose and foliose lichen.

All of the plants are adapted to sweeping winds and disturbances of the soil. Plants are short and group together to resist the cold temperatures and are protected by the snow during the winter. They can carry out photosynthesis at low temperatures and low light intensities. The growing seasons are short and most plants reproduce by budding and division rather than sexually by flowering.

Lichens are spore-bearing rather than seed-bearing plants. They exist as a cooperative packet of fungal and algal components. Lichens regenerate both vegetatively (by fragments, and by microscopic units of fungi and algae called isidia and soridia), and by sexual reproduction (spores). The lichens most often selected by reindeer and caribou (the "reindeer lichens") are in the genus *Cladina*. For Alaska these species are: *Cladina rangiferina, C. stygia, C. arbuscula, C. mitis* and *C. stellaris.* These *Cladina* species grow very slowly even under favorable conditions, approximately 5 mm per year. Lichens are opportunistic, going dormant when dry or frozen, and recovering quickly when moistened and above freezing, able to resume photosynthesis. Lichens in general are more productive in a coastal climate, compared to an interior climate, due to higher relative humidity and precipitation levels.

Reindeer and caribou depend heavily on lichens during the winter. During the spring, summer and fall they forage on a variety of plants, including sedges and grasses, terrestrial forbs, aquatic plants, shrub birch and willow twigs, and even mushrooms. In a site

that has not been grazed for many years reindeer lichens will create deep mats, and the dead portion of the lichen strand is usually longer than the live portion. With light grazing some of the live portions can be cropped off and lichens lightly scrambled. With heavy grazing comes trampling and cratering. Lichen biomass is removed, and some lichen biomass is fragmented. Fragmented lichen can easily blow away and desiccate too severely to recover.

Reindeer are very selective eaters and tend to pick only the plants or plant parts that are the most nutritious. The University of Alaska Fairbanks Reindeer Research Program is currently investigating the seasonal shifting of diet composition and habitat selection of free-ranging reindeer on the Seward Peninsula in relation to the seasonal changes in species composition and plant characteristics between habitats.[18]

Monitoring of reindeer grazing allotments on the Seward Peninsula by the Bureau of Land Management and the Natural Resource Conservation Service from the late 1980s through 2004 has documented locations with moderate to severe impacts on vegetation from reindeer. This damage includes trampled and fragmented lichens, cratering to organics or mineral soil, and heavily browsed willows and dwarf Arctic birch (Meyers 1995, 1996, 1997a). However, given sufficient years of rest from grazing those areas will recover fully (Swanson et al. 1985). An improvement in condition is apparent at some of these sites (Meyers 2003b, Meyers 2004d) due to the steady drops in size or complete absence (on some grazing allotments) of Seward Peninsula reindeer herds (Finstad et al. 2005, Meyers 1997b).

Since 1987, reindeer numbers on the Seward Peninsula have decreased by 75% (Finstad et al. 2005) due to mixing with caribou herds, leaving their usual grazing ranges, and often dying partly due to animal and human predation (Fitzgerald 2002). Over 16,000 reindeer have disappeared since 1987, with some herders losing 45-85% of their animals, while six herders have lost all of their reindeer (Fitzgerald 2002). As a consequence, reindeer ranges on the Seward Peninsula have been lightly grazed or ungrazed by reindeer during the last 10-15 years.

The Natural Resources Conservation Service has an Environmental Quality Incentives Program that works with herders to gather information regarding sensitive areas that may need protection. Together they use a process to determine sampling locations, take lichen measurements, estimate biomass, and look at adjacent sites to confirm findings. This information is mapped to indicate similarity index, apparent trend, rangeland health and utilization. The Natural Resources Conservation Service then meets with the herder to finalize a contract. The Environmental Quality Incentives Program is a cost share program that

[18] Source: http://reindeer.salrm.uaf.edu/range_and_nutrition/

provides incentive payments to herders. Eight herders on the Seward Peninsula currently participate.

Reindeer herders on the peninsulas have historically herded their reindeer to various locations throughout their allotment areas on seasonal and annual rotations. These strategic herding activities are designed to maximize the opportunities for adequate forage, range recovery after grazing, and protection from migrating caribou. The herders have been practicing these herding strategies on the peninsulas for more than 100 years.

The Bureau of Land Management collaborates with the Natural Resources Conservation Service to do range monitoring, pool resources, and contribute funding. These monitoring reports identify the percent lichen cover and utilization. The monitoring reports identify some areas experiencing heavy grazing and utilization, while other areas are showing little to no grazing use. The monitoring reports make recommendations for "resting" the heavily grazed areas. The 2007 monitoring conducted by Bureau of Land Management identified areas of high grazing utilization and lichen cover, as well as low to no grazing utilization or lichen cover.[19]

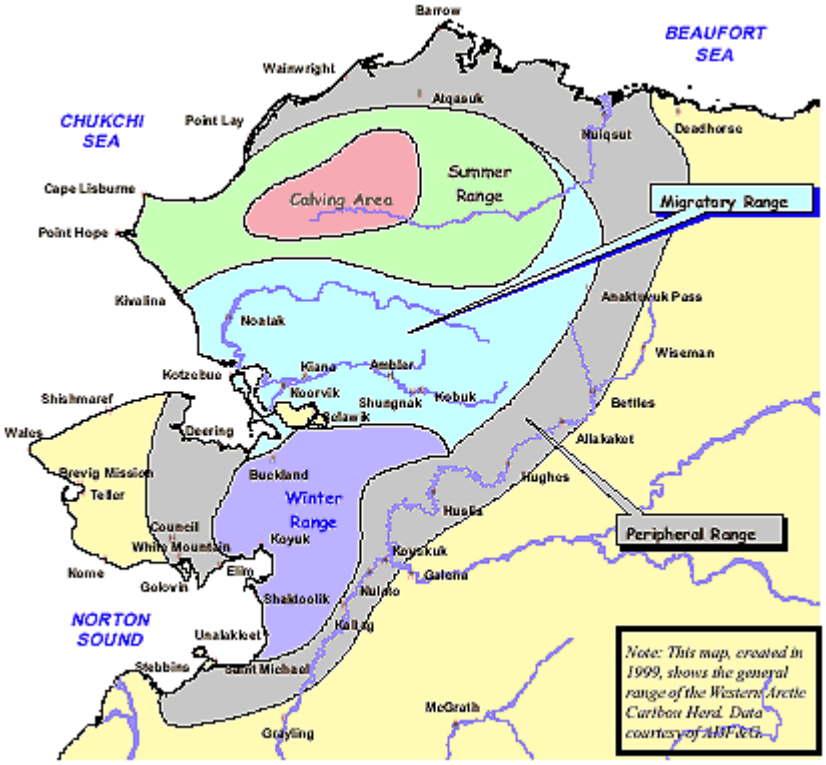
The Natural Resources Conservation Service works closely with the reindeer herders to develop range/allotment management plans based on range utilization, available lichen resources and biomass, and seasonal movements of the reindeer herds. Consideration is given to the seasonal movements of the Western Arctic Caribou Herd and the fact that they, and indigenous wild species, are free roaming and often cause heavy impacts to available lichen resources.

Fire can also play an important role in the recovery and or productivity of winter lichen area. Climate warming has been implicated as a factor that may reduce lichen abundance in the tundra ecosystem (Chapin et al., 1995) and may be contributing to slow recovery of lichens on burned tundra sites as well as declining lichen cover. In fact, experimental warming of research plots in arctic tundra communities by just 1-3º C produced substantial vegetation changes in a single year (Walker et al., 2006). Shrubs and graminoids increased in height and density, resulting in decreased cover of shade-intolerant lichens and bryophytes (Walker et al., 2006).[20]

[19] Monitoring Reports BLM/NRCS 2000-2007

[20] Slow Recovery of Lichen on Burned Caribou Winter Range in Alaska Tundra: Potential Influences of Climate Warming and Other Disturbance Factors: Jandt, Joly, Meyers, Racine, 2006

3.3.3. Wildlife



A comparison of the above map with that appearing in Paragraph 2.1.2. provides an indication as to why the allotments within the above map's gray band on the Seward Peninsula have no reindeer present; as suggested by the Sami author in footnote 10, *supra*, "…left on its own the wild nature takes over quickly." In this instance, reindeer have and continue to emigrate with caribou in the Western Arctic Caribou Herd's annual migrations.

Recall that domestic reindeer are essentially caribou without a herd history of migration. As long as they're isolated in good grazing areas they don't usually wander far, but if a massive herd of wild caribou migrates through the grazing area the reindeer are swept along. Once they're part of the wild caribou herd, they are lost to the reindeer herders.

In 2002 the Arctic Council surveyed the state of reindeer husbandry across the circumpolar north. Their findings found similar problems on both the Eurasian and North American continents: domestic herds were being overwhelmed by wild herds.

The Western Arctic Caribou Herd has grown to at least 490,000 animals and ranges over approximately 140,000 square miles of northwestern Alaska. Its summer range encompasses calving grounds and consists of the northern foothills and mountains of the Brooks Range west of the Trans-Alaska Pipeline. In most years during the 1980's through 1995 most of the Herd wintered in the Nulato Hills, just west of the allotment areas, and as far south as the Unalakleet River drainage. Since 1996 the Herd has shifted the southern extremity of its winter range from the Nulato Hills to the Seward Peninsula.[21]

In 1996-1997 the Herd began shifting its winter range northwest from the Nulato Hills to the Seward Peninsula. In no year prior to 1996-1997 did more than 9% of the Herd winter on the Seward Peninsula. In only one year since that time (1999-2000) did less than 20% of the Herd winter in this area and in 1996-1997 59% of the Herd wintered there. For several years after the shift began, 20-30% of the Herd still wintered in the Nulato Hills. Caribou have continued to abandon the Nulato Hills. Only 5% of collared caribou wintered in the Nulato Hills during 2001-2002 and none wintered there during 2002-2003. In recent years up to several thousand caribou, primarily bulls and immature cows, have reportedly summered on the Seward Peninsula as well.

During the winters of 2001-2002 and 2002-2003 substantial numbers of reindeer were lost from the Davis herd (Nome) when they joined the Western Arctic Caribou Herd. Only the Davis, Kakruk (Teller) and Ongtowasruk (Wales) herds were commercially viable in the spring of 2003.

Peninsula herders have already come up with some innovative methods to save their domestic stock. Satellite collars on both the Western Arctic herd and the domestic reindeer are used to track the movements of the two groups. Herders can monitor the information in real time on a website.

[21] Caribou Management Report of survey-inventory activities, 1 July 2000 – 30 June 2002, Carole Healy, Editor, Alaska Department of Fish and Game, Division of Wildlife Conservation, December 2003.

If the caribou are nearby, the herders can move their reindeer herds or shift them to safe areas on the western side of the peninsula. But if there isn't time to shift the herd or if the safe area is too far away, there's little that can be done to deflect the migrating caribou or discourage the reindeer from joining them.

Diseases and parasites that affect the reindeer population and are susceptible to migration into the caribou population are being addressed on a cooperative and scientific basis. Partnerships and assistance from United States Department of Agriculture's Animal and Plant Health Inspection Service for disease-free certification programs are underway with the Reindeer Herders Association and the University of Alaska Fairbanks Reindeer Research Program.[22]

To determine if diseases are present in the Western Arctic Caribou Herd, Alaska Department of Fish and Game biologists have systematically collected blood samples from the caribou since 1992. Jim Dau, Alaska Department of Fish and Game biologist suggests that data so far indicates that disease is currently not a problem for the Western Arctic Caribou Herd.[23]

The incidence of brucellosis in caribou is lower now than in the 1960's.[24] Reindeer herds with active vaccination programs have also experienced a significant reduction in the incidence of brucellosis.[25]

Chronic Wasting Disease has not been found in any wild or captive members of the deer family in Alaska. This includes caribou, reindeer, moose, Sitka black-tailed deer, and Roosevelt elk. The University of Alaska Fairbank's Reindeer Research Program and Kawerak's Reindeer Herders Association are working together to test reindeer on the Seward Peninsula. All tests have been negative so far. The State Veterinarian is testing privately-owned animals, and a certification program has been set up to monitor captive reindeer.[26]

[22] Managing Reindeer Health: A Workshop on Reindeer Diseases, July 2-3, 2003, Nome, Alaska, Workshop Summary.

[23] http://www.wildlifenews.alaska.gov/index.cfm?adfg=wildlife_news.view_article&issue_id=13&articles_id=15

[24] Draft Wildlife Management Report 2004-2006, ADF&G

[25] Email Finstad, UAF RRP, 2008

[26] http://wildlife.alaska.gov/pubs/trails/issue7.pdf, http://wildlife.alaska.gov/index.cfm?adfg=disease.cwd

4.0 ENVIRONMENTAL CONSEQUENCES

4.1. Alternative A: the proposed action – continuance of prior authorizations

4.1.1. Non-critical Elements of the Human Environment

4.1.1.1. Socio-economics

Continuance of prior authorizations would facilitate the availability of an alternate subsistence resource, support the local economy and encourage the continued development of traditional reindeer husbandry on the peninsulas, 25 U.S.C. §500.

4.1.1.2. Vegetation

It is reasonable to assume that range health could be adversely impacted through inappropriate grazing practices; however, herders are counseled in range management and reindeer husbandry by the Natural Resource Conservation Service and the University of Alaska, Fairbanks Reindeer Research Program. Moreover, the herders have been engaged in reindeer herding on the peninsulas for more than one hundred years with passage of the tradition from generation to generation. There is no reason to believe that the range is being mismanaged.

4.1.1.3. Wildlife

It is reasonable to surmise that the presence of reindeer on caribou range may displace the latter or adversely impact the latter's winter habitat; however, the large size of the caribou herd would suggest that impacts of reindeer on caribou habitat are diminutive and it is the reindeer that is at risk of displacement.

Muskoxen and reindeer are known to inhabit primarily upland habitats with low snow depth during the winter months. Studies have not directly linked competition of range forage due to reindeer preferring lichen and Muskoxen preferring sedges and moss. However, high densities of reindeer or Muskoxen may displace either of these species.

Emigration of reindeer with the Western Arctic Caribou Herd however has necessarily changed the gene pool within the Herd through interbreeding. This change from pure wild stock is likely irreversible.

4.1.2. Cumulative Impacts

Cumulative impacts result from the incremental impact of human activity when added to other past, present, and reasonably foreseeable future human activity. They can result from individually minor but collectively significant actions taking place over a period of time.[27]

[27] 40 CFR § 1508.7

The continued migration of the Western Arctic Caribou Herd onto reindeer ranges may result in less rotation of grazing areas by herders and an increase in range degradation. However, wild reindeer or caribou herds are known to fluctuate in herd size although there is little comprehension of the nature of the cycles. Should the herd size of the Western Arctic Caribou Herd decrease, reindeer are an appropriate substitute species in tundra and boreal forest environments.

4.1.3. Mitigation Measures

The following mitigation measures are recommended and are either in addition to or an enhancement of the mitigation measures contained in the proposed action or those contained in prior authorizations:

1. Herders should be required to periodically rotate their herd's summer and winter grazing areas to allow for vegetation and riparian zone recovery.
2. Camps and activities associated with reindeer herding, including corralling, should be located and conducted in a manner designed to minimize disturbance to riparian vegetation and stream banks.
3. Allotment management plans should continue to be developed to address rotational grazing, particularly with regard to critical winter lichen areas.

4.2. Impacts of Alternative B: the no action alternative – discontinuance of prior authorizations

As stated in Paragraph 2.2, under this alternative, the Bureau of Land Management would not permit the grazing of reindeer on BLM lands on the peninsulas. This alternative would undermine the purpose of the Reindeer Industry Act and is inconsistent with the provisions of BLM-Alaska's Northwest Management Framework Plan and the forthcoming Kobuk Seward Resource Management Plan.

4.2.1. Non-critical Elements of the Human Environment

4.2.1.1. Socio-economics

Although the extent of or duration of adverse economic or social effects alone are not individually or cumulatively relevant to an analysis of the relationship of people with the environment, it remains that discontinuance of the authorizations would result in substantial adverse socioeconomic and cultural consequences within the Native communities on the peninsulas.

4.2.1.2. Vegetation

While it is impossible to discern which animal, reindeer or caribou, is engaged in lichen utilization, it is reasonable to assume that discontinuance of prior authorizations and the elimination of reindeer from BLM lands would reduce the potential for overgrazing on those lands.

4.2.1.3. Wildlife

Discontinuance of the prior authorizations and the elimination of reindeer from BLM lands would reduce the level of competition amongst species dependant upon range resources.

5.0 CONSULTATION AND COORDINATION

5.1. Persons and agencies consulted

Alaska Department of Fish & Game
Alaska Department of Natural Resources
Bering Straits Native Corporation
Kawerak Reindeer Herders Association, Inc.
National Park Service
USDA, Natural Resources Conservation Service
University of Alaska Fairbanks, Reindeer Research Program

5.2. List of Preparers

Laurie Thorpe	Natural Resource Specialist
Thomas Sparks	Natural Resource Specialist
Geoff Beyersdorf	Subsistence
Bruce Seppi	Wetlands/Riparian Zones, Threatened or Endangered Species, Subsistence, Wildlife
James Moore	Planning and NEPA Coordinator