

Appendix C

ANILCA 810 Analysis of Subsistence Impacts

1 ANILCA Section 810 Analysis of Subsistence Impacts

The U.S. Fish and Wildlife Service (Service), acting for the Secretary of Interior, is required by Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA) to evaluate the effects on subsistence uses and needs in determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands on national wildlife refuges in Alaska. The evaluation of effects of the Proposed Action and alternatives identified in the *Proposed Land Exchange Yukon Flats National Wildlife Refuge Final Environmental Impact Statement* (Land Exchange EIS) on subsistence uses and needs is documented below. If this evaluation concludes with a finding that the Proposed Action or its alternatives would result in a significant restriction to subsistence uses and needs, and we wish to proceed, we must initiate further procedural requirements of Section 810.

The Service is considering a proposal to exchange certain lands within the Yukon Flats National Wildlife Refuge (Refuge) with Doyon, Limited (Doyon). Doyon is an Alaska Native regional corporation established under the Alaska Native Claims Settlement Act of 1971 (ANCSA), and the largest private landowner in the Refuge.

From the time the Refuge was established in 1980, Doyon has been interested in acquiring federal oil and gas interests in the south-central portion of the Refuge (U.S. Fish and Wildlife Service 2005). The Service declined early proposals to exchange an oil and gas lease for conservation easements on Doyon lands, but is considering a fee title exchange of lands.

In 2004, following years of negotiations, both parties tentatively agreed upon the terms of a proposed land exchange, as detailed in the Agreement in Principle (Appendix A). If approved, the land exchange could be completed by the end of 2010, and oil and gas exploration on the lands received by Doyon could follow within a few years.

Chapters 3 and 4 of the Land Exchange EIS provide a detailed description of both the affected environment of the Yukon Flats National Wildlife Refuge area and the potential adverse effects to subsistence of the alternatives. This analysis uses the detailed information presented in the Land Exchange EIS to evaluate the potential impacts to subsistence pursuant to Section 810(a) of ANILCA.

1.1 Subsistence Evaluation Factors

Section 810(a) of ANILCA requires that an evaluation of subsistence uses and needs be completed for any Federal determination to “withdraw, reserve, lease, or otherwise permit the use, occupancy or disposition of public lands.” As such, an evaluation of potential impacts to subsistence under ANILCA § 810 must be completed for the Land Exchange EIS. ANILCA requires that this evaluation include findings on three specific issues:

- The effect of such use, occupancy, or disposition on subsistence uses and needs;
- The availability of other lands for the purpose sought to be achieved; and
- Other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes (16 United States Code [USC] § 3120).

ANILCA Section 810 Analysis of Subsistence Impacts

The evaluation and findings required by ANILCA § 810 for each of the four alternatives in the Land Exchange EIS (including the No Land Exchange [No Action] Alternative) and the cumulative case are considered in this ANILCA § 810 analysis.

A finding that the Proposed Action or other alternatives may significantly restrict subsistence uses imposes additional requirements, including provisions for notices to the State and appropriate regional and local subsistence committees, a hearing in the vicinity of the area involved, the making of a determination as required by Section 810(a)(3), or prohibition of the action. If a determination is made it shall show that:

- Such a significant restriction of subsistence uses is necessary, and consistent with sound management principles for the utilization of the public lands;
- The proposed activity would involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition; and
- Reasonable steps would be taken to minimize adverse effects upon subsistence uses and resources resulting from such actions.

To determine if a significant restriction of subsistence uses and needs may result from any one of the alternatives discussed in this EIS, including their cumulative effects, the following three factors in particular are considered:

- A reduction in subsistence uses due to factors such as direct impacts on the resource, adverse impacts on habitat, or increased competition for the resources.
- A reduction in the subsistence uses due to changes in availability of resources caused by an alteration in their distribution, migration, or location.
- A reduction in subsistence uses due to limitations on the access to harvestable resources such as physical or legal barriers.

A significant restriction to subsistence may occur in at least two instances: (1) when an action substantially may reduce populations or their availability to subsistence users, and (2) when an action may substantially limit access by subsistence users to resources. Chapter 3 (Affected Environment) of the Land Exchange EIS provides information regarding areas and resources important for subsistence use, and the degree of dependence of affected villages on different subsistence populations. Chapter 4 (Environmental Consequences) provides much of the data on the effects on subsistence under each alternative, and was used to determine whether the action would cause a significant restriction to subsistence. The information contained in the Land Exchange EIS is the primary data used in this analysis.

A subsistence evaluation and findings under ANILCA § 810 also must include a cumulative impacts analysis. Section 1.2, below, begins with an evaluation and finding for each of the four alternatives discussed in the Land Exchange EIS. Finally, the cumulative case, as discussed in Chapter 4 of the Land Exchange EIS (Environmental Consequences), is evaluated. This approach helps the reader to separate the subsistence restrictions that would potentially be caused by activities proposed under the four alternatives from those that would potentially be caused by past, present, and future activities that could occur, or have already occurred in the surrounding area.

When analyzing the effects of the four alternatives, the analysis includes all villages associated with the Refuge: Arctic Village, Beaver, Birch Creek, Central, Chalkyitsik, Circle, Fort Yukon, Stevens Village, and Venetie. However, particular attention is paid to those communities who have the potential to be most directly affected by the Proposed Action – Beaver, Birch Creek, and Fort Yukon. These communities are adjacent to the core lands where Doyon may locate and/or produce oil and gas resources.

1.2 ANILCA 810(a) Evaluations and Findings for the Four Alternatives and the Cumulative Case

The following evaluations are based on information relating to the environmental and subsistence consequences of the Proposed Action (Agreement in Principle), Land Exchange with Non-Development Easements Alternative, Land Exchange Excluding the White-Crazy Mountains Alternative, No Land Exchange (No Action) Alternative, and the cumulative case as presented in Chapter 4 of the Land Exchange EIS. The evaluations and findings focus on potential impacts to the subsistence resources themselves and access that relates to subsistence use.

Subsistence activities and uses could be directly and indirectly affected by the proposed land exchange and oil and gas exploration and development activities. Direct effects, which are “caused by the action and occur at the same time and place” (40 Code of Federal Regulations [CFR] 1508.8), on subsistence uses would result from changes in resource availability, access, or competition. Indirect effects include subsistence users’ response to direct effects, contamination concerns, and changes in culturally significant activities associated with subsistence practices. These include harvesting, processing, transferring knowledge, autonomy, traditional diet, and integrity of culturally significant places. Indirect effects on subsistence users also could result from indirect effects on resources, such as responses to potential habitat fragmentation, disturbance, or changes in movement patterns.

1.2.1 Evaluation and Findings for the Proposed Action – Agreement in Principle

The Agreement in Principle between Doyon and the Service (as fully described in Chapter 2 of the Land Exchange EIS) would provide Doyon title to lands within the Refuge that may hold developable oil and gas resources. (Note: As discussed in Section 4.4.3.5 of the Land Exchange EIS, development of natural gas in the core lands is unlikely and is not considered in the Land Exchange EIS.) In exchange, the Service would receive lands characterized as priority habitat for fish and wildlife. Under terms of the Agreement, the proposed land exchange would proceed in two Phases.

Under Phase I of the Proposed Action, Doyon would receive 110,000 acres (surface and subsurface; core exchange lands), and oil and gas interests in an additional 97,000 acres (no surface occupancy; halo lands). The Service would receive a minimum of 150,000 acres of land with priority fish and wildlife habitat, which would equal or exceed the appraised value of the lands transferred to Doyon. The amount of land that the Service could receive would be adjusted upward based on appraised land values to make the exchange equal in value. Doyon also would allocate its remaining Alaska Native Settlement Claims Act (ANSCA) 12(b) entitlements (approximately 56,500 acres) to an area outside the Refuge. Each party would exchange approximately 132,000 acres to consolidate land ownerships and facilitate land management. Doyon would reserve a subsistence easement on all lands conveyed to the Service, which mirrors federal subsistence provisions of ANILCA Title VIII. The Service would reserve a public use

easement (approximately 1-mile wide) along the segment of Beaver Creek flowing through the core lands transferred to Doyon.

Phase II of the Proposed Action would occur if Doyon locates and produces oil resources on the Phase I exchange lands (core lands and halo lands). Under Phase II terms, Doyon would pay the Service a production payment of 1.25% of the wellhead value of produced oil. Doyon would sell up to an additional 120,000 acres to the Service, and would retain a subsistence easement on the lands sold. If oil resources are located and produced from the core land or halo lands, an access route would have to be provided. Two routes are proposed: a northern route across Refuge land, and a southern route across Bureau of Land Management (BLM) land. If a pipeline right-of-way (ROW) crosses Refuge land, Doyon would increase the production payment to the Service to 1.5%, and transfer to the Service one section of land (640 acres) for each linear mile of ROW crossing Refuge lands along the northern route.

1.2.1.1 Evaluation of the Effect of Such Use, Occupancy or Disposition on Subsistence Uses and Needs

The analysis of the Proposed Action on subsistence presented in Land Exchange EIS Section 4.21.1 considers the effects of Phase I (proposed land exchange and subsequent seismic surveys and exploratory drilling) and Phase II (small or large field development, and oil spills) on subsistence.

Phase I Effects

Effects on subsistence from Phase I land exchanges are primarily related to access and management that change with ownership. Doyon lands are generally closed to the public, and use of Doyon lands within the Refuge is subject to Doyon land management policies. Doyon lands are private lands that fall under the dual management system of State hunting/fishing/trapping regulations and Federal fishing regulations. Under ANILCA Title VIII, rural residents have priority use of Service lands in times of resource shortages that require restrictions on consumptive use. Lands transferred to Doyon during the exchange would be closed to the general public, which could decrease competition (currently little competition is known to occur) or the potential for future competition for subsistence resources if trespass provisions were enforced. Subsistence use on Refuge land is regulated under Federal subsistence hunting, fishing, and trapping regulations. However, Service lands are open to the public, and hunting and fishing are allowed on refuges under State regulations, unless preempted by Federal regulations. With the land exchange, more land closer to the villages would be under Federal jurisdiction than at present; these lands would be open to the general public for recreational use, unless preempted by Federal regulations.

Lands being transferred from Doyon to the Service would be more accessible by general season hunters and fishermen, which could result in an increase in competition between subsistence users and the general public. The level of general season hunting, fishing, or other recreational activities is currently very low in the Refuge. Moose, one of the more important subsistence species, are found in relatively low numbers across the Refuge and numbers have been decreasing in recent years. Because of low numbers and the Federal subsistence priority, the western part of the Refuge, including the core lands, is currently closed to moose hunting except by area residents (residents of Beaver, Birch Creek, and Stevens Village). If allocation of fish and wildlife resources becomes necessary for other species, local residents would have priority on, and access to, more public land than they do now. However, because more public land would be

near the villages, an opportunity exists for non-local residents to hunt closer to the villages in areas local residents have traditionally viewed as theirs than at present. This creates a potential increase in user conflicts within the Refuge.

Use of the lands to be exchanged under the Proposed Action by village residents is detailed below:

- **Beaver:** The potential for increased competition resulting from the land exchange associated with Beaver subsistence use areas would be greatest in areas south of the community on lands that would go to the Service because these are moderate to high subsistence use areas for bear, moose, fish, furbearers and small land mammals, and low use areas for berry picking.
- **Birch Creek:** The area west of Birch Creek to be exchanged to the Service contains moderate to high subsistence use areas along the Birch Creek waterway and banks for moose, bear, upland birds, and low use areas for wood, plants, furbearers, and small mammals. The land exchange could increase public access and competition in this area. The core lands going to Doyon contain low use areas for moose, bear, furbearers, small land mammals, and upland birds. The land exchange would decrease public access to this area and put the land under Doyon land policies, but would not have rural residents' subsistence hunting and trapping preference afforded on Service lands under ANILCA. Subsistence use of halo lands east of Birch Creek is moderate for moose, bear, and upland birds and low for the area south of Birch Creek where subsistence uses intersect with halo lands. Because Doyon would only receive the subsurface rights, this land exchange should not affect subsistence uses.
- **Fort Yukon:** Use areas that overlap with lands that would go to the Service are generally located away from the community. No direct effects would occur to subsistence harvest areas used within the last ten years in the core lands, and Fort Yukon has little activity in the halo lands.
- **Stevens Village and Chalkyitsik:** Current subsistence use information for these villages is not available, but land exchanges would occur in historic use areas for these communities. The exchange would result in more lands going to the Service near these two communities, especially Stevens Village, than going to Doyon. Transferring more lands near the communities to the Service than to Doyon in the land exchange could allow more general season hunters access to these villages' subsistence use area. Consolidation lands are primarily near these two communities, and consolidation lands transferring to Doyon are closer to the communities. This could benefit those local harvesters who hunt closer to the community because Doyon can limit access on its lands.
- **Arctic Village and Venetie:** Documented historic use areas for Arctic Village and Venetie subsistence use areas do not overlap with the exchange lands, and thus would not be directly affected.
- **Central and Circle:** Residents of Circle and Central also may occasionally trap along streams that border the eastern boundary of the lands that would be acquired by Doyon; however, documented use is extremely limited and shows no overlap with core lands. Circle and Central residents use Birch Creek for hunting and trapping, though probably not downstream of the confluence with Preacher Creek. The upper Birch Creek-Preacher Creek area is within the traditional use area of Circle residents. Moose, bear, and waterfowl hunting and furbearer trapping could occur in this area. Lands that are currently under Doyon or village corporation

ownership could be accessible to residents of Central (who are non-shareholders) if those lands transfer to the Service.

Little to no current subsistence use areas overlap the core areas for residents of Beaver, Birch Creek, or Fort Yukon. No historic use of the core area by residents of Chalkyitsik, Stevens Village, Venetie, or Arctic Village has been documented. While residents of Circle and Central may have historically used the area, no documentation of that use exists. Subsistence users tend to concentrate their efforts along river corridors; the Yukon River corridor is the most heavily used area. The primary direct effect of Phase I of the Proposed Action on current subsistence uses is that the majority of lands being exchanged that are used for subsistence are going to the Service, and would be open to the public. If the general public can access these lands, the potential exists for user conflicts with local subsistence harvesters in their current and traditional subsistence use areas. Lands historically, but not currently, used for subsistence that would go to the Service could affect Gwich'in cultural identity and tend to be viewed as limiting future options to return to those lands.

Indirect effects on subsistence resulting from Phase I of the Proposed Action would relate to historic subsistence use areas on exchange lands. Historic use areas for Stevens Village, Chalkyitsik, Beaver, Birch Creek, and Fort Yukon residents overlap exchange lands. While residents of Circle and Central may have historically used the area, no documentation of that use exists. These historic use areas primarily overlap exchange lands going to the Service. If public access increases, a sense of intrusion by outsiders onto traditional Gwich'in subsistence lands could result. The core land that would go to Doyon is in the Fort Yukon and Birch Creek historic use areas for trapping, furbearers, and moose, but the land exchange would have little indirect affect on Fort Yukon and Birch Creek residents unless they decide to return to this area. Although these areas have not been used in the last 10 years, rural subsistence users continue to identify culturally with these traditional harvest areas, and may use these areas again if needs or conditions warrant. Indirect effects could include local hunters avoiding Service lands if non-local hunters were present; also local hunters may attribute changes in wildlife abundance or distribution to management changes.

Under the Proposed Action, a change in land ownership would have no effect on fish and wildlife populations or their habitat. However, with the completion of the core land exchange under Phase I, a corridor of private lands (village corporation and Doyon lands) would be created from border to border through the middle of the Refuge. This corridor of private lands would be under State management jurisdiction, except for fishing. If State and Federal hunting, fishing, or trapping regulations diverge, subsistence users could be affected by different season dates or bag limits on corporation or Federal lands. These lands also would not be afforded the rural resident priority available on Federally managed lands.

Seismic surveys and exploratory drilling that could result from the land exchange could cause habitat fragmentation and temporary wildlife displacement. Subsistence activities that could occur during the winter season and could be affected by seismic exploration include furbearer trapping, fishing, and hunting. Seismic surveys and exploratory drilling are not considered a substantial barrier between communities and subsistence resources. Seismic surveys and exploratory drilling that could occur under Phase I would not be expected to affect subsistence use because these activities would be limited to the core lands, which have low subsistence use, would occur during winter, and would be short-term (3-4 years duration).

Clearing vegetation for seismic surveys in an intersecting pattern of lines in varying lengths could cause habitat fragmentation and erosion and deposition of soils into stream and lake beds. Constructing snow roads and ice pads for exploratory drilling could cause additional fragmentation, as well as non-point source pollution from incidental fuel spills. The area is forested with spruce, aspen and birch. Regrowth of vegetation along cleared trails could take 20 to 50 years or more. Subject to Doyon land management policies, cleared trails could provide new access routes into previously inaccessible areas, which could benefit subsistence users. However, new trails also could provide non-local users an access route, because access by non-local users would be difficult to enforce on private lands. Wildlife species would not be directly harmed or killed by activities, but could be temporarily or permanently displaced from developed areas, depending upon the degree of habitat disturbance and on-going activities. Important subsistence wildlife species in the area include moose, bear, furbearers, and waterfowl. Fish habitat also could be affected from stream sedimentation, which could destroy fish spawning habitat and impact invertebrate food resources. The effects of the Proposed Action on habitat and fish and wildlife resources are fully discussed in the Land Exchange EIS Sections 4.11 through 4.15. Wildlife leaving the area and loss of fish habitat could adversely affect subsistence users if it occurred in a moderate to high use areas. However, the core lands that Doyon would receive are less used for subsistence than areas closer to the villages; therefore, little to no effect to subsistence use from resource displacement would be expected.

Creating a temporary access corridor from Circle into the Refuge could increase the potential for the general public to access Refuge lands from the road system; however, the extent to which this would occur is unknown. This route would minimize effects to current subsistence use areas of Stevens Village, Beaver, Birch Creek, Fort Yukon, or Chalkyitsik, but could affect subsistence use areas for Circle and Central residents. Although non-local hunters can access Refuge lands by boat from Circle, current non-local use is very low. Aircraft traffic and noise, especially low-flying aircraft, could affect subsistence users in areas where air traffic crosses high-use harvest areas. If aircraft access the area from the south, this effect should be minimal because subsistence use areas are primarily north of the core lands.

Phase II Effects

Direct effects of Phase II oil development (small or large field) would be limited to the vicinity of the access road, pipelines, airfield, above ground facilities, gravel pads, gravel mines, and utility corridors. Effects on habitat and fish and wildlife populations would be similar to those discussed above in Phase I. However, placing gravel for roads and pads would probably leave permanent scars on the landscape. The risk of direct loss or reduction of subsistence fish and wildlife populations from oil field development is low, but many species may avoid areas surrounding the development, because of habitat loss, human activity around the development, or noise. The effects of the Proposed Action on habitat and fish and wildlife resources are fully discussed in Land Exchange EIS Sections 4.11 through 4.15. Direct effects of oil development to subsistence would be minimal because:

- the development is limited to the core lands and located away from highly used subsistence harvest areas,
- the area of subsistence resource disturbance would be relatively small,
- the development would affect comparatively few users, and

- the development would affect only a few subsistence resources.

Little or no direct effect on subsistence users residing in villages within or near the Refuge would occur from Phase II activities. The few residents who currently use the core area could lose access to subsistence harvest areas because resource users typically avoid development areas by several miles, as seen on the North Slope (e.g., Alpine Field). Gravel roads and corridors could allow access by a variety of on- and off-road vehicles, potentially increasing local and outside competition for some resources. If development is limited to the core lands, the effect of increased access would be limited to moose, bear, upland birds, and fur trapping subsistence use areas. A road into the core area could make Dall sheep more accessible to local and non-local hunters. Closing the road to the general public would mitigate this effect. Gravel pads and roads could change the availability and movement patterns of game animals by providing refuges from insects that cause animals to use developed areas and move away from where subsistence hunters might find them; pipelines next to roads could also alter game animal movements. Development company policies against trespassing could limit subsistence users' access. Because a corridor of private lands would bisect the Refuge, wildlife species movements across the area could be affected if substantial infrastructure is developed within the core area and/or other private lands.

The sale of an additional 120,000 acres of Doyon holdings in the Refuge to the Service would also occur under Phase II of the Proposed Action. A direct effect on subsistence users would result from changes in management (as discussed above). Most of the lands sold to the Service would be located closer to the center of the Refuge and the Yukon River, and include more moderate to high subsistence use areas. Generally, the subsistence users focus efforts along the rivers and surrounding lakes, land, and wetlands, so not all of the land in these townships going to the Service would be used for subsistence.

Constructing an access road along either of the two proposed routes (southern route through BLM's White Mountains National Recreation Area, or northern route through the Refuge) could pose the greatest source of effect on subsistence users. The road would connect remote Refuge land with the Alaska road system. However, Doyon proposes that the road would be a private road and not accessible to the public. If the road crosses Federal public land (either BLM or Refuge land), it is uncertain whether the road could be closed to the public; but once the road enters private land, Doyon could close it. Having road access to Refuge lands could increase the potential for user conflicts between local subsistence users and non-local users (primarily hunting). If Doyon finds and develops oil resources from the core lands and halo lands, it would have to apply for a ROW permit to construct the access road and pipeline across federal land. Issues surrounding impacts to subsistence users resulting from road construction would be addressed in a subsequent Environmental Assessment or EIS for the ROW permit.

Oil spills could potentially affect subsistence species and subsistence harvest patterns, depending on the amount and location of the spill. Oil spilled into the waterways and lakes of the Refuge could have long-term adverse effects for subsistence resources including fish, moose, furbearers and small land mammals. These effects would occur downstream from the spill area and could leave the Refuge if the spill occurs during break-up or open water periods. Current subsistence uses by Beaver, Birch Creek, and Fort Yukon residents occur largely along downstream waterways, with high overlaps near the mouth of Beaver Creek (which flows through the core land exchange) and along the Yukon River. Subsistence users would be concerned about an oil spill contaminating subsistence resources during and after clean up efforts, and these concerns may cause changes in harvest patterns to avoid areas and resources viewed as contaminated. If cleanup involved burning spilled product, air quality and hydrocarbon fallout issues could cause

subsistence users to avoid areas perceived as polluted by the cleanup activities. However, the likelihood of a major spill is considered to be low, and is fully discussed in Land Exchange EIS Section 4.5. As evaluated in Land Exchange EIS Section 4.21, oil spills typically associated with an oil field development should not affect subsistence resources or human health.

1.2.1.2 Evaluation of the Availability of Other Lands for Oil and Gas Exploration and Development

Many national wildlife refuges in Alaska have large amounts of private lands within their boundaries. Alaska's refuges were created to conserve natural habitats and the many species of fish, wildlife, and plants they support. Yet, many Alaska refuges are checkered with private lands, the majority under Native corporation ownership. These for-profit corporations commonly seek ways to generate revenue and shareholder income while conserving traditional Native culture and lifestyle.

One of the issues facing the refuge system is finding ways to fulfill its conservation mission while accommodating the needs of neighboring landowners whenever possible. The land exchange would add priority habitat and consolidate land ownership patterns within the Refuge, while increasing the amount of public lands managed in accordance with the Refuge purposes and allowing for resource development on lands under Native corporate ownership.

Other Federal conservation units created by ANILCA near the Refuge are managed by the BLM, National Park Service, or the Service. These Federal lands have land use planning documents in place that specify the amounts and types of activities that can or cannot occur within each unit. No other suitable lands with appropriate ownership for the purposes sought are known within the area.

1.2.1.3 Evaluation of Other Alternatives that would Reduce or Eliminate the Use, Occupancy, or Disposition of Public Lands Needed for Subsistence Purposes

Alternatives that would reduce or eliminate the use of public lands needed for subsistence are presented and analyzed in Chapters 2 and 4 of the Land Exchange EIS. These alternatives represent a range of potential options that could occur within the Refuge, along with management actions that would protect specific resource values following current national guidelines. Additional alternatives that were considered but not analyzed in detail are discussed in Land Exchange EIS Section 2.5.

1.2.1.4 Findings

The effects of the Proposed Action fall below the level of significantly restricting subsistence uses and needs. The impacts to subsistence resources and access discussed above are likely not significant. This finding applies to all villages located within or near the Refuge.

1.2.2 Evaluation and Findings for the Land Exchange with Non-Development Easements Alternative

Under the Land Exchange with Non-Development Easements Alternative (as fully described in Land Exchange EIS Section 2.4.2), the Service would transfer lands to Doyon as described under Phase I of the Agreement in Principle. However, instead of selling an additional 120,000 acres to the Service in Phase II, Doyon would donate non-development easements on those 120,000 acres to the Service under Phase I. Doyon also would reduce the production payment to 0.25% of the wellhead value of oil produced on the core and halo lands. The easements would provide habitat protection by precluding oil and gas exploration and/or development and other commercial

activities including gravel mining, commercial timber harvest, road construction, and water withdrawals. However, no general public access would be allowed on easement lands, and subsistence activities would be under State jurisdiction (except for fishing) rather than Federal jurisdiction. No permanent structures, except for camps and cabins for traditional activities and home sites, would be allowed. Doyon would control access and surface activities on easement lands rather than the Service. If oil resources were located and produced from the core exchange and halo lands, an access route would have to be provided. Two routes are proposed: a northern and a southern route. If the northern route across Refuge lands is selected, Doyon would increase the production payment to the Service to 0.5% and convey to the Service 640 acres of land for every linear mile of ROW crossing the Refuge. If the southern route is chosen, the production payment would remain at 0.25% and no land would be conveyed to the Service for the ROW.

1.2.2.1 Evaluation of the Effect of Such Use, Occupancy or Disposition on Subsistence Uses and Needs

The analysis of the Land Exchange with Non-Development Easements Alternative in the Land Exchange EIS Section 4.21.2 considers the effects of Phase I (proposed land exchange and subsequent seismic surveys and exploratory drilling) and Phase II (small or large field development, and oil spills) on subsistence.

Phase I Effects

The effects of Phase I of the Land Exchange with Non-Development Easements Alternative on subsistence would be the same as those described above for Phase I of the Proposed Action because the lands involved in the initial exchange would be the same. However, in the Land Exchange with Non-Development Easements Alternative, Doyon would donate conservation easements on 120,000 acres of Doyon lands in Phase I, rather than selling these lands to the Service in Phase II. Under terms of the non-development easement, these lands would be precluded from future oil and gas exploration and development, other mineral exploration, gravel mining, commercial timber harvest, road development, and water withdrawals. Therefore, these lands would be protected from development and continue to be available for subsistence use by local residents, but would remain under Doyon management and State jurisdiction for hunting and trapping regulations. While these lands would be closed to non-shareholder use, they would not have the rural preference afforded on Federal lands under ANILCA except for fishing. The potential effect of user conflicts on the 120,000 acres would be lessened because access to these lands could be restricted by Doyon.

The location of these lands relative to subsistence use areas is described under Phase II of the Proposed Action (the 120,000 acres going to the Service). Some of the non-development easement lands would be in areas with moderate to high current overlaps with subsistence use areas for residents of Beaver, Birch Creek, and Fort Yukon, and within the historic use area of Chalkyitsik.

The effects resulting from seismic surveys and exploratory drilling on fish and wildlife habitat and populations and subsistence users would be the same as described above for the Proposed Action.

Phase II Effects

The effects of oil development on subsistence under Phase II of the Land Exchange with Non-Development Easements Alternative would be the same as those under Phase II of the Proposed

Action. However, unlike the Proposed Action, Doyon would not sell additional lands to the Service if oil was produced. This alternative could have less direct effect on subsistence users in Beaver, Birch Creek, and Fort Yukon than the Proposed Action because the lands would not be open to the public as under Federal land management. However, these lands also would not have the rural preference afforded on Federal lands under ANILCA, except for fishing. This also would likely positively affect Chalkyitsik subsistence users because several townships in which land would be sold to the Service under the Proposed Action are north of that community. By only allowing conservation easements on these lands, shareholders may retain exclusive subsistence uses without outside interference if private land closures are enforced.

The effects resulting from oil field development (small or large field), road access, and oil spills on fish and wildlife habitat and populations and subsistence users would be the same as described above for the Proposed Action.

1.2.2.2 Evaluation of the Availability of Other Lands for Oil and Gas Exploration and Development

Many national wildlife refuges in Alaska have large amounts of private lands within their boundaries. Alaska's refuges were created to conserve natural habitats and the many species of fish, wildlife, and plants they support. Yet, many Alaska refuges are checkered with private lands, the majority under Native corporation ownership. These for-profit corporations commonly seek ways to generate revenue and shareholder income while conserving traditional Native culture and lifestyle.

One of the issues facing the refuge system is finding ways to fulfill its conservation mission while accommodating the needs of neighboring landowners whenever possible. The land exchange would add priority habitat and consolidate land ownership patterns within the Refuge, while increasing the amount of public lands managed in accordance with the Refuge purposes and allowing for resource development on lands under Native corporate ownership.

Other Federal conservation units created by ANILCA near the Refuge are managed by the BLM, National Park Service, or the Service. These Federal lands have land use planning documents in place that specify the amounts and types of activities that can or can not occur within each unit. No other suitable lands with appropriate ownership for the purposes sought are known within the area.

1.2.2.3 Evaluation of Other Alternatives that would Reduce or Eliminate the Use, Occupancy, or Disposition of Public Lands Needed for Subsistence Purposes

Alternatives that would reduce or eliminate the use of public lands needed for subsistence are presented and analyzed in Chapters 2 and 4 of the EIS. These alternatives represent a range of potential options that could occur within the Refuge, along with management actions that would protect specific resource values following current national guidelines. Additional alternatives that were considered but not analyzed in detail are discussed in Land Exchange EIS Section 2.5.

1.2.2.4 Findings

The effects of the Land Exchange with Non-Development Easements Alternative fall below the level of significantly restricting subsistence uses and needs. The impacts to subsistence resources and access discussed above are likely not significant. This finding applies to all villages located within or near the Refuge.

1.2.3 Evaluation and Findings for the Land Exchange Excluding the White-Crazy Mountains Alternative

Under this alternative (as fully described in Land Exchange EIS Section 2.4.3), approximately 26,500 acres of the core lands within the Service-recommended White-Crazy Mountains Wilderness area would be excluded from the proposed land exchange. Under Phase I of this alternative, Doyon would receive 83,500 acres (surface and subsurface) and oil and gas interests in an additional 105,000 acres (no surface occupancy). The Service would receive a minimum of 115,000 acres from Doyon, but the acreage could be adjusted upwards based on land appraisals to make the exchange equal in value. Doyon also would allocate its remaining ANSCA 12(b) entitlements (approximately 56,500 acres) to an area outside the Refuge System. Each party would exchange approximately 132,000 acres to consolidate land ownerships and facilitate land management. Doyon would reserve a subsistence easement on all lands conveyed to the Service, which mirrors federal subsistence provisions of ANILCA Title VIII. The Service would reserve a public use easement (approximately 1-mile wide) along the segment of Beaver Creek flowing through the lands transferred to Doyon. Phase II of the Land Exchange Excluding the White-Crazy Mountains Alternative would occur if Doyon located and produced oil resources on the Phase I exchange lands (core lands and halo lands). Under Phase II terms, Doyon would pay the Service a production payment of 1.25% of the wellhead value of produced oil. Doyon would sell an additional 81,000 acres to the Service, and would retain a subsistence easement on the lands sold. If oil resources were located and produced from the core land exchange and halo lands, an access route would have to be provided. Two routes are proposed: a northern route across Refuge land, and a southern route through the BLM's White Mountains National Recreation Area. If the northern pipeline ROW route was selected, Doyon would increase the production payment to the Service to 1.5%, and transfer to the Service one section of land (640 acres) for each linear mile of ROW crossing Refuge lands along the northern route. If the ROW were granted for the southern route, there would be no additional compensation to the Service.

1.2.3.1 Evaluation of the Effect of Such Use, Occupancy or Disposition on Subsistence Uses and Needs

The analysis of the Land Exchange Excluding the White-Crazy Mountains Alternative on subsistence presented in Land Exchange EIS Section 4.21.3 considers the effects of Phase I (proposed land exchange and subsequent seismic surveys and exploratory drilling) and Phase II (small or large field development, and oil spills).

Phase I Effects

The effects of Phase I of the Land Exchange Excluding the White-Crazy Mountains Alternative on subsistence would be less than those under Phase I of the Proposed Action because some lands in the core land exchange area would no longer be available for development. The amount of lands in the core land exchange area would be reduced by 26,500 acres on the south side of the core lands. Excluding this area would maintain a corridor of Federal land connecting lands on either side of the core exchange area. However, the southern and northern ROW routes would still go through this area. The excluded lands are those farthest from the affected communities, and are areas with the least subsistence use in the core land exchange area. Phase I of the Land Exchange Excluding the White-Crazy Mountains Alternative could affect a few subsistence users at the distant edge of their use area.

The effects of seismic surveys and exploratory drilling conducted under Phase I of the Land Exchange Excluding the White-Crazy Mountains Alternative would be the same as Phase I of the

Proposed Action. Reducing the amount of core lands exchanged with Doyon would provide no added benefit to subsistence users because the excluded lands are a distant area of low subsistence use.

Phase II Effects

The effects of oil development on subsistence under Phase II of this alternative would be similar to those under Phase II of the Proposed Action. Less direct effect on subsistence uses could occur because of less core exchange lands going to Doyon; however, the lands retained by the Service are in an area of the White-Crazy Mountains with relatively little subsistence use.

Under Phase II of the Land Exchange Excluding the White-Crazy Mountains Alternative, Doyon would sell less land to the Service if oil was produced on exchange lands. Lands that the Service would purchase are within the current use areas of Beaver and Fort Yukon, and the historic use area of Chalkyitsik. Lands that the Service would not purchase under this alternative are within the current use area of Beaver, Birch Creek, Fort Yukon, and possibly Circle. This alternative could have less direct effect on subsistence users in Beaver and Fort Yukon than the Proposed Action because the lands would not be open to the public as it would be under Federal land management. However, these lands also would not have the rural preference afforded on Federal lands under ANILCA. Direct effects from a shift to Federal management on the purchased lands could increase competition for subsistence resources between the public and Fort Yukon and Beaver residents. The land sales could also affect Chalkyitsik subsistence users in the same manner.

1.2.3.2 Evaluation of the Availability of Other Lands for Oil and Gas Exploration and Development

Many national wildlife refuges in Alaska have large amounts of private lands within their boundaries. Alaska's refuges were created to conserve natural habitats and the many species of fish, wildlife, and plants they support. Yet, many Alaska refuges are checkered with private lands, the majority under Native corporation ownership. These for-profit corporations commonly seek ways to generate revenue and shareholder income while conserving traditional Native culture and lifestyle.

One of the issues facing the refuge system is finding ways to fulfill its conservation mission while accommodating the needs of neighboring landowners whenever possible. The land exchange would add priority habitat and consolidate land ownership patterns within the Refuge, while increasing the amount of public lands managed in accordance with the Refuge purposes and allowing for resource development on lands under Native corporate ownership.

Other Federal conservation units created by ANILCA near the Refuge are managed by the BLM, National Park Service, or the Service. These Federal lands have land use planning documents in place that specify the amounts and types of activities that can or cannot occur within each unit. No other suitable lands with appropriate ownership for the purposes sought are known within the area.

1.2.3.3 Evaluation of Other Alternatives that would Reduce or Eliminate the Use, Occupancy, or Disposition of Public Lands Needed for Subsistence Purposes

Alternatives that would reduce or eliminate the use of public lands needed for subsistence are presented and analyzed in Chapters 2 and 4 of the Land Exchange EIS. These alternatives

represent a range of potential options that could occur within the Refuge, along with management actions that would protect specific resource values following current national guidelines. Additional alternatives that were considered but not analyzed in detail are discussed in Land Exchange EIS Section 2.5.

1.2.3.4 Findings

The effects of the Land Exchange Excluding the White-Crazy Mountains Alternative fall below the level of significantly restricting subsistence uses and needs. The impacts to subsistence resources and access discussed above are likely not significant. This finding applies to all villages located within or near the Refuge.

1.2.4 Evaluation and Findings for the Preferred Alternative - No Land Exchange (No Action) Alternative

Under this alternative (as fully described in Land Exchange EIS Section 2.4.4), the Service would not enter into a land exchange with Doyon. Consolidation exchanges could take place; however, none are planned under this alternative. No oil or gas would be explored for or developed on Refuge land proposed for exchange with Doyon. However, Doyon has stated its intention to pursue oil and gas exploration on lands it currently owns within the Refuge, regardless of whether the land exchange proceeds. Oil development would occur only if technically and economically recoverable reserves were discovered on Doyon lands. If production occurs on Doyon-owned lands inside the Refuge, the Service would be required to provide access across Refuge lands (subject to reasonable regulations to protect Refuge resources), but would not be entitled to production payments or other forms of compensation. The EIS acknowledges that Doyon may develop its current land holdings with or without the land exchange. Potential impacts of oil and gas development on Doyon lands are discussed in the Cumulative Effects analysis in Section 4.24 of the Land Exchange EIS.

1.2.4.1 Evaluation of the Effect of Such Use, Occupancy or Disposition on Subsistence Uses and Needs

Under the No Land Exchange Alternative (full analysis presented in Land Exchange EIS Section 4.21.4), no land exchange would occur between Doyon and the Service. Ownership and management of lands would remain the same, and oil and gas exploration and development would not occur on Federal lands in the core land exchange area or surrounding halo lands. No change on subsistence uses and needs in the area villages would result from the No Land Exchange Alternative. The possibility that Doyon could explore and develop lands it currently owns within the Refuge without a land exchange with the Service and resulting potential effects on subsistence users are considered in the cumulative effects analysis below.

1.2.4.2 Evaluation of the Availability of Other Lands for Oil and Gas Exploration and Development

Many national wildlife refuges in Alaska have large amounts of private lands within their boundaries. Alaska's refuges were created to conserve natural habitats and the many species of fish, wildlife, and plants they support. Yet, many Alaska refuges are checkered with private lands, the majority under Native corporation ownership. These for-profit corporations commonly seek ways to generate revenue and shareholder income while conserving traditional Native culture and lifestyle.

One of the issues facing the Refuge System is finding ways to fulfill its conservation mission while accommodating the needs of neighboring landowners whenever possible. The land

exchange would add priority habitat and consolidate land ownership patterns within the Refuge, while increasing the amount of public lands managed in accordance with the Refuge purposes and allowing for resource development on lands under Native corporate ownership.

Other federal conservation units created by ANILCA near the Refuge are managed by BLM, National Park Service, or the Service. These federal lands have land use planning documents in place that specify the amounts and types of activities that can or can not occur within each unit. No other suitable lands with appropriate ownership for the purposes sought are known within the area.

1.2.4.3 Evaluation of Other Alternatives that would Reduce or Eliminate the Use, Occupancy, or Disposition of Public Lands Needed for Subsistence Purposes

Alternatives that would reduce or eliminate the use of public lands needed for subsistence are presented and analyzed in Chapters 2 and 4 of the Land Exchange EIS. These alternatives represent a range of potential options that could occur within the Refuge, along with management actions that would protect specific resource values following current national guidelines. Additional alternatives that were considered but not analyzed in detail are discussed in the Land Exchange EIS Section 2.5.

1.2.4.4 Findings

Under this alternative, ownership and management would remain the same and the oil and gas exploration and development would not occur on Federal lands in the core area or surrounding halo lands. The effects of the No Land Exchange Alternative would not significantly restrict subsistence uses and needs.

1.2.5 Evaluation and Findings for the Cumulative Case

Under the Cumulative Effects Analysis (fully described in Land Exchange EIS Section 4.24), past, present, and reasonably foreseeable future activities were considered. Past activities included previous exploration activities and seismic surveys, and purchases of Alaska Native allotments within the Refuge. Present activities were considered in Chapter 3 of the Land Exchange EIS as part of the Affected Environment. Reasonably foreseeable future activities considered under cumulative analysis are an Alaska natural gas pipeline to transport natural gas to market from the North Slope; formation of a Yukon Flats Borough; additional purchases of Native allotments from willing sellers; and additional oil and gas exploration and development on private lands (Doyon and village corporation lands) within the Refuge, and subsequent ROW access to developments on private lands. Doyon has indicated that it intends to explore for oil resources on Native lands within the Refuge with or without the land exchange. The cumulative effects analysis examines the case of development with no land exchange and the case of development on private lands in addition to development on the exchanged lands. A recent analysis of potential reserves with the Yukon Flats shows that Doyon owns 1.055 million or more acres of land with oil potential near Stevens Village, Beaver, Birch Creek, and Fort Yukon. Doyon has identified eight potential access routes from the Trans-Alaska Pipeline to their lands within the Refuge that show oil and gas potential.

1.2.5.1 Evaluation of the Effect of Such Use, Occupancy or Disposition on Subsistence Uses and Needs

Under the Cumulative Effects Analysis (fully described in Land Exchange EIS Section 4.24), past, present, and reasonably foreseeable future activities were considered. The main effects would be changes in management that change with ownership and the potential for oil development. It is

important to note that the evaluation of effects is highly speculative, depending on how development proceeds.

Effects on subsistence from land exchanges in relation to management and ownership are primarily related to who has access to the lands. Doyon lands are generally closed to the public and because corporation lands are private, hunting and trapping regulations fall under State jurisdiction, and subsistence fishing regulations are under Federal jurisdiction. Refuge lands are open to the public for recreational activities. Though these lands are open to the public, ANILCA gives rural subsistence users a preference over other uses on Federal public lands and waters. Subsistence use on Refuge land is regulated under Federal subsistence hunting, fishing, and trapping regulations.

Lands surrounding villages currently have a checkerboard pattern of ownership. As lands are exchanged between the Service and Doyon, purchased by the Service from Doyon, reallocated outside the Refuge under ANCSA 12b, or consolidated between the Service and Doyon, this checkerboard pattern would be reduced. The resulting effect would be a larger contiguous block of Native-owned land immediately surrounding villages with little intervening Federal lands. While this block closely surrounds the village, lands that once were Native owned and surround this block are now Federally owned. Because of the reduced checkerboard pattern, subsistence users in some instances would have to cross the consolidated, contiguous block of Federal land to reach Native-owned lands. In addition, lands that would be transferred from Doyon to the Service would be closer to some of the villages and could allow access by general season hunters and fishermen, which could result in an increase in competition between subsistence users and the general public. The level of general season hunting, fishing, or other recreational activities is currently very low in the Refuge. If future allocation of subsistence resources becomes necessary, local residents would have priority on, and access to, more public land than they do now. If State and Federal hunting, fishing, or trapping regulations diverge, subsistence users could be affected by different season dates or bag limits. Private lands would not be afforded the rural residency priority for hunting and trapping available on Federally managed lands. Subsistence users may need to travel to Federal lands for subsistence hunting. For village residents, this may change harvest patterns and mean traveling farther, with additional costs, to access Federal lands and resources.

Lands transferred from the Service to Doyon in the exchange would be closed to the general public. Depending on Doyon land management policies, these lands could be accessible by local residents, which could decrease competition (currently little competition is known to occur) or the potential for future competition for subsistence resources.

As described in the Proposed Action and alternatives, if oil development is limited to the core exchange lands, the area of subsistence resource disturbance would be relatively minor, affect comparatively few users, and have minor affects on subsistence resources. As described under the No Land Exchange Alternative, Doyon may choose to pursue oil development on Doyon lands. Because Doyon lands are in close proximity to the villages and comprise a larger area with higher subsistence use, more subsistence users could be affected and could potentially have significant affects on local subsistence resources. If Doyon should pursue oil development on other lands owned within the Refuge in addition to the core exchange lands, subsistence resource disturbance could be substantial and could potentially affect many resource users and local subsistence resources.

Development of oil resources could have the potential to negatively affect fish and wildlife, and thus affect subsistence. These impacts would include habitat fragmentation, increased human access into fish and wildlife habitat, increased disturbance impacts, and possible alteration of behavior or movement patterns of fish and wildlife. Increased access may aid subsistence users in accessing their traditional harvest areas. However, this may also concentrate hunting and fishing along these access corridors, thus depleting resources from the area, and potentially shifting harvest from currently used harvest areas. Increased competition for subsistence resources also could result if access to the area for non-locals is provided by roads and trails. Increased development could result in increases in air pollution and potential increases in chemical spills and hydrocarbon releases. Concern in local villages about chemical contamination of water and subsistence resources could increase, particularly for downstream communities. Access to land could be reduced as subsistence users tend to avoid areas of oil development and infrastructure when harvesting resources. Changes to wildlife behavior patterns or movement, the understanding of which is critical to traditional knowledge, could interfere with the timing and location of successful harvests. This would require changes in harvest strategies and modifications to traditional hunting patterns with possible increased costs in time, fuel, cash, and safety for new areas away from development.

1.2.5.2 Evaluation of the Availability of Other Lands for Oil and Gas Exploration and Development

The Cumulative Case, as presented in the Land Exchange EIS, contains information on reasonably foreseeable activities that could have an effect on the management decisions being analyzed as part of the land exchange. The purpose of the Cumulative Case is to present known ongoing activity by all entities on all lands near or within the planning area, as well as those activities that have been proposed for the future and are likely to occur. The Cumulative Case is not an alternative specifying land uses and management that can be implemented; it is instead a discussion of impacts that could affect the management decisions contained within the alternatives. As such, no other lands are evaluated under the Cumulative Case.

1.2.5.3 Evaluation of Other Alternatives that would Reduce or Eliminate the Use, Occupancy, or Disposition of Public Lands Needed for Subsistence Purposes

Alternatives that would reduce or eliminate the use of public lands needed for subsistence are presented and analyzed in Chapters 2 and 4 of the Land Exchange EIS. These alternatives were created to represent a range of potential options that could occur within the Refuge, along with management actions that would serve to protect specific resource values following current national guidelines. Additional alternatives that were considered but not analyzed in detail are also discussed in the Land Exchange EIS Section 2.5.

1.2.5.4 Findings

Under the National Environmental Policy Act, when considering cumulative impacts for private actions, the analysis should use regional and local planning documents. When these are lacking, the analysis should refer to expected development trends. Doyon has stated their intention to pursue oil and gas exploration on Doyon lands within the Refuge, regardless of whether the exchange proceeds. The lands Doyon currently owns are in closer proximity to the villages and have higher subsistence use than the core lands Doyon would receive under the action alternatives. If substantial development were to occur solely on Doyon lands, or on Doyon lands in addition to the core exchange lands, this evaluation concludes that the action could result in changes in harvest strategies and modifications to traditional hunting patterns, with possible increased costs in time, fuel, cash, safety, the potential for increased competition, and possible

ANILCA Section 810 Analysis of Subsistence Impacts

changes in resource availability. However, these effects would result from actions taken on private lands rather than federal public lands. Therefore, this evaluation concludes that the cumulative impacts would not result in a significant restriction to subsistence uses on Federal public lands.