



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

in cooperation with the
U.S. Department of the Interior
Minerals Management Service

January 2004

Northwest National Petroleum Reserve-Alaska

Integrated Activity Plan/ Environmental Impact Statement

Record of Decision



The Bureau of Land Management Today

Our Vision

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

Our Mission

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

Our Values

To serve with honesty, integrity, accountability, respect, courage, and commitment to make a difference.

Our Priorities

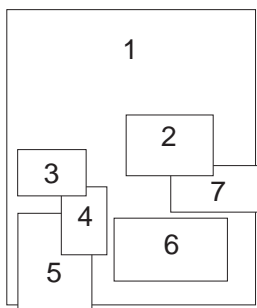
To improve the health and productivity of the land to support the BLM multiple-use mission.

To cultivate community-based conservation, citizen-centered stewardship, and partnership through consultation, cooperation, and communication.

To respect, value, and support our employees, giving them resources and opportunities to succeed.

To pursue excellence in business practices, improved accountability to our stakeholders, and deliver better service to our customers.

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Photo of Northwest NPRA

Photo of drilling rig

Photo of Native Subsistence

Photo of Polar Bear

Photo of Caribou

Photo of King Eider

Photo of low-ground-pressure vehicle

Northwest National Petroleum Reserve-Alaska
Integrated Activity Plan/Environmental Impact
Statement

Record of Decision

Gale A. Norton
Secretary of the Interior

Date

Prepared by:
U.S. Department of the Interior
Bureau of Land Management

In Cooperation with:
U.S. Department of the Interior
Minerals Management Service

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Summary

This Record of Decision (ROD) documents the Secretary of the Interior's decision to approve, with minor modifications (see Appendix A), the Preferred Alternative as described in the Final Northwest National Petroleum Reserve-Alaska (Northwest NPR-A) Integrated Activity Plan/Environmental Impact Statement (IAP/EIS). This plan, which was prepared by the Bureau of Land Management (BLM), describes the future multiple use management of 8.8 million acres of the NPR-A, consistent with current statutory direction for its management. The plan emphasizes restrictions on surface activities, consultation with local residents, and coordinated scientific studies to protect wildlife habitat, subsistence areas, and other resources. At the same time, it makes all BLM-administered lands within the Northwest NPR-A available for oil and gas leasing although it defers leasing for 10 years on approximately 1,570,000 acres (about 17%) of the planning area near Wainwright. In addition, leasing on that part of the Colville River Special Area within the planning area (440,000 acres) will be deferred until the Combined South NPR-A IAP/Colville River Management Plan is complete. The findings in the Final Northwest NPR-A IAP/EIS and the decisions reflected in this ROD were based upon an open and collaborative public process. Several Federal agencies, the State of Alaska, the North Slope Borough (NSB), Alaska Native regional and community organizations, and thousands of individuals and institutions shared their knowledge and insights about the planning area with BLM.

Plan Foundation. The Northwest NPR-A IAP/EIS fulfills a mandate of President Bush's May 2001 National Energy Policy directing the Secretary of the Interior to “consider additional environmentally responsible oil and gas development, based on sound science and the best available technology, through further lease sales in the National Petroleum Reserve-Alaska.”

In a 1981 amendment to the Naval Petroleum Reserves Production Act (NPRPA), 42 U.S.C. 6508, Congress directed BLM to undertake oil and gas leasing in NPR-A. North Slope oil production, centered at Prudhoe Bay, is central to the Nation's domestic oil supply. The North Slope contributes about 16 percent of America's current domestic oil production. The oil industry has discovered and developed other fields to the east and west of Prudhoe. However, production is in decline from these older fields and there are indications that the Northwest NPR-A contains oil and natural resources that could help stem this decline.

Management Alternatives. The Final Northwest NPR-A IAP/EIS analyzed a “No Action Alternative” and four other alternative future management plans for making part or all of the Northwest NPR-A planning area available for oil and gas leasing in a manner consistent with responsible protection of other important surface resources. Each alternative offered a different approach to conducting “an expeditious program of competitive leasing of oil and gas” (a goal of the NPRPA) and protecting surface resources from “unnecessary and undue degradation,” as required by the Federal Land Policy and Management Act (FLPMA). Each alternative also included management actions and mitigation measures that would broadly apply to the Northwest NPR-A planning area. The IAP/EIS also included land allocation decisions, stipulations, and required operating procedures (ROP’s) specific to portions of the planning area. These decisions, stipulations, and ROP’s address many of the issues identified by the public during scoping and include decisions the BLM must address in land management plans.

Notable Areas. The planning process identified several portions of the Northwest NPR-A planning area that have particularly important surface values. A small portion in the extreme northeast part of the planning area lies within the Teshekpuk Lake Special Area, which is designated to protect water

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bird habitat. The northern bank of the Colville River, in the southernmost part of the planning area, rests within the Colville River Special Area, designated to protect raptors. The Kasegaluk Lagoon at the far northwestern corner of the planning area offers primitive recreation experiences, including kayak and small boat paddling along the coast. It is also rich in wildlife, including migratory birds and marine mammals, and features marine tidal flats that are rare on the North Slope. The hills and mountains in the southern part of the planning area have special values. These hills and mountains are particularly remote, lying far from any of the region's communities, and rarely visited, even by subsistence hunters. The hills also feature good hiking and scenic vistas in high terrain. These lands were considered for Wilderness designation under Alternative C.

Subsistence. Subsistence activities, particularly hunting and fishing, in the planning area are exceedingly important to local residents, who are primarily the Inupiat — the Native people of Alaska's North Slope. Subsistence hunting and fishing are central to the Inupiat ages-old cultural system. Moreover, subsistence activities provide critical sustenance for people who reside off Alaska's road network at an extreme distance from the Nation's food-distribution system.

Stipulations and ROP's. The following stipulations and required operating procedures will apply to oil and gas leases issued within the planning area, including leases on split estate lands (i.e. federal sub-surface). Among other requirements of the IAP/EIS, stipulations and ROP's protect surface resources and subsistence activities throughout the Northwest NPR-A. The plan protects key surface resource and use areas that were identified through the planning process and imposes strict restrictions on surface activities. The areas and resources receiving special protections include wetlands, fish and wildlife habitat (including habitat for threatened and endangered species), subsistence use and access areas, water quality, vegetation, cultural and paleontological resources, and scenic and recreation values. Within the lease deferral area the plan establishes a new 102,000-acre Kasegaluk Lagoon Special Area that is subject to a no-permanent surface occupancy stipulation. Outside the deferral area, additional no-surface occupancy stipulations are imposed along coastal areas, key rivers and deep water lakes. In total, these restrictions apply to approximately 1,515,000 acres (16% of the planning area). Stipulations and ROP's provide clearly defined setbacks, restrictions, and guidance for all aspects of oil and gas and related operations.

Study Areas and Special Restrictions. The plan also identifies special study areas for brant and caribou. Multi-year surveys are required on a planning area-wide basis to prevent the taking of spectacled and Steller's eiders (listed as threatened species under the Endangered Species Act) and yellow-billed loons. Special restrictions are imposed on oil and gas development activities within the Colville River Special Area to minimize loss of raptor foraging habitat and within the Teshekpuk Lake Special Area to protect birds. Other protective measures include designating the planning area as "limited" for recreational use of off-highway vehicles and identifying "Visual Resource Management" areas. No wilderness study areas or wild and scenic rivers are proposed.

Decision

The plan described in this ROD is hereby adopted for future management of the Northwest NPR-A. This plan includes the features and conditions of the “Preferred Alternative” described in the *Northwest National Petroleum Reserve-Alaska Final Integrated Activity Plan/Environmental Impact Statement*, with minor adjustments explained in Appendix A.

This ROD concludes the IAP/EIS process. It fulfills the National Environmental Policy Act (NEPA) requirements associated with management planning on the BLM-administered public lands in the Northwest NPR-A, including identification of lands to make available for oil and gas leasing. It also serves as the NEPA documentation for the first oil and gas lease sale currently expected to occur in June 2004. Subsequent lease sales may also be held within the portion of the planning area available for lease. The IAP/EIS may also serve as the NEPA documentation for future lease sales pending a determination by BLM that the EIS is adequate at the time of any future lease sale.

The BLM plan for management of the Northwest NPR-A is presented here and includes the stipulations and ROP's that are described in detail in Appendix B and shown on Map 1, Preferred Alternative.

Planning area. All BLM-administered lands (including federally-owned subsurface lands) within the Northwest NPR-A are made available for oil and gas leasing, although leasing is deferred for 10 years on approximately 1,570,000 acres (about 17% of the planning area) near Wainwright (see Map on page 9 of the Final Northwest NPR-A EIS/ROD). Prior to conducting any leasing in this deferral area, additional NEPA documentation will be completed and any necessary additional stipulations and ROP's will be established. Leasing is also deferred in the Colville River Special Area until the combined Southern NPR-A IAP/EIS and Colville River Management Plan is completed. The analysis in the River Management Plan will be used to supplement that contained in the Final Northwest NPR-A IAP/EIS in making decisions about what locations within the Special Area would be made available for future lease sales. The Kasegaluk Lagoon Special Area is designated as a new Special Area and made subject to a no-permanent surface occupancy stipulation. Additional no-surface occupancy stipulations are imposed along coastal areas, key rivers and deep water lakes. In total, these restrictions apply to approximately 1,515,000 acres (16% of the planning area). When combined, the various types of no-surface occupancy requirements apply to over three million acres (33 percent) of the planning area

Stipulations and ROP's. The stipulations and ROP's that are part of this plan impose restrictions on the establishment of permanent or temporary facilities on all deep water lakes (lakes with depths greater than 4 meters) and prohibit permanent facilities within ¼ mile of such lakes. No permanent facilities are permitted in the streambeds of rivers. A no-permanent-surface-occupancy setback of ½ mile is imposed on all major rivers (measured from the centerline of the river as determined by current hydrology at the time of application). Along rivers or river segments where subsistence concerns have been raised, setbacks for no-surface occupancy increase to ¾ mile. Along the Colville and the upper Ikpikpuk rivers, a 1-mile setback for no-surface occupancy is imposed to protect important raptor habitat. The stipulations and ROP's also combine to provide maximum protection for the Colville River, Teshekpuk Lake and the new Kasegaluk Lagoon Special Area lands that are located within the planning area.

Permanent support facilities along the entire coastal area of the planning area are to be located at least ¾ mile inland from the coastline, to the extent practicable. When technological limitations,

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economics, logistics, or other factors require that a facility be located within $\frac{3}{4}$ mile inland of the coast, the practicality of locating the facility at previously occupied sites, such as the former Cape Simpson, Peard Bay, or Wainwright DEW-line sites, must be considered. Use of existing sites within $\frac{3}{4}$ mile of the coastline is also acceptable where it is demonstrated that use of such sites would reduce impacts to shorelines or would be environmentally preferable. All lessees/permittees with activities in the immediate area are required to coordinate the use of sites with other prospective users.

On Dease Inlet, Admiralty Bay, Elson Lagoon, and associated barrier islands, the plan allows oil and gas exploration activities to take place only between October 15 and May 15 of each year. Special stipulations are imposed for exploration and development, including a setback of $\frac{3}{4}$ mile from shoreline seaward and around natural islands (excluding the barrier islands) within which no development can occur on or under the water. Specific standards in the stipulations and ROP's are to be met before authorization will be granted for permanent facilities within the setback area. These standards are set intentionally high, with the burden of proof resting with the lessee to demonstrate that approval by BLM is warranted. The standards address specific concerns raised by the North Slope Borough, local communities and residents about conflicts between oil and gas activities and seasonal concentrations of fish, wildlife, and waterfowl in the area; associated subsistence uses and access on these important water bodies; navigation hazards; spill response capabilities; and special consultation procedures.

Multi-year surveys are required on a planning area-wide basis to prevent the taking of spectacled and Steller's eiders (listed as threatened species under the Endangered Species Act) and yellow-billed loons (a BLM-designated sensitive species). The Final IAP/EIS "Preferred Alternative" identifies special study areas for brant and caribou where multi-year studies are required before the authorization of development activities. Within the brant study area, studies are to be directed at preventing the loss or alteration of habitat or disturbance of nesting and brood-rearing areas as a result of oil and gas activities. Within the caribou study area, the focus is to be on avoiding conflicts with caribou movement through insect-relief habitat.

The BLM will publish notice in the Federal Register that the 102,000-acre Kasegaluk Lagoon area is designated a "Special Area." Geophysical exploration within the Special Area is allowed, subject to applicable ROP's, but no-surface occupancy stipulations will be imposed.

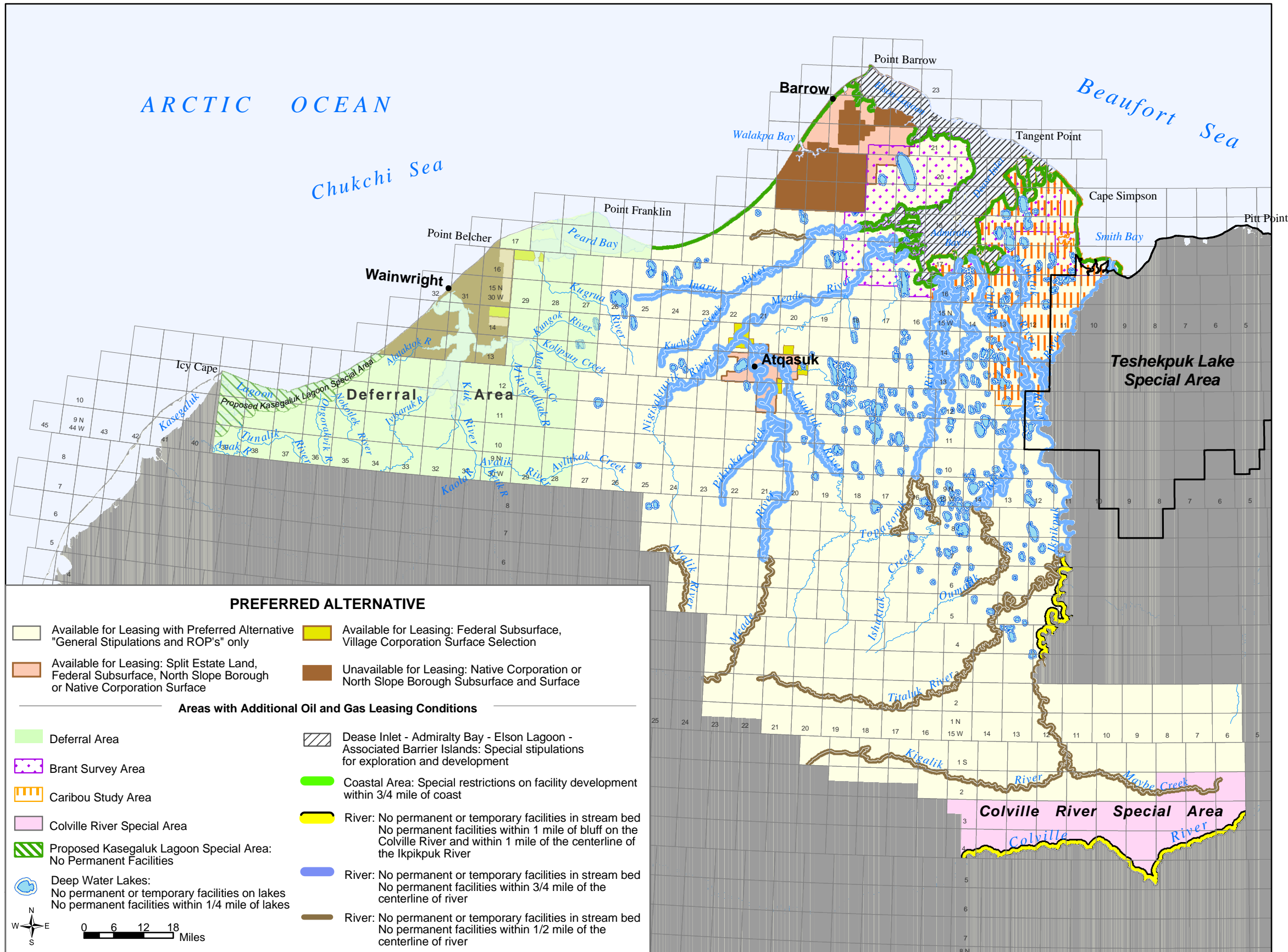
Overland travel and associated activities. Overland travel and associated activities for permitted uses are guided by specific ROP's. Under BLM's off-highway vehicle OHV classification system the planning area is designated as "Limited," confining recreational OHV use to winter use of snow machines and other low ground-pressure vehicles. Within the NPR-A, no summer recreational use of OHV's is permitted. The summer use of OHV's (including all-terrain vehicles and airboats) to support traditional subsistence activities and access is allowed. The use of airboats during the summer is limited to streams, lakes, and estuaries that are seasonably accessible by motorboat. To prevent impacts to soils, water quality, vegetation, and wildlife (in particular nesting waterfowl), airboat use in areas of seasonal flooding of tundra and temporary shallow waters adjacent to streams, lakes, and estuaries is prohibited.

Visual Resource Management (VRM). VRM classes describe a range of objectives for managing the quality of an area's scenic (visual) values while providing for various levels of human use. The lands along the Colville River area are designated VRM Class I, which will preserve the existing character of the landscape while allowing a very low level of visual change. Identified estuarine areas and lands along the 21 rivers eligible for designation as wild and scenic rivers are designated VRM Class III. In VRM Class III areas, BLM will partially retain the existing character of the landscape

and allow a moderate level of visual change. These VRM classes apply to all lands within 3 miles of the banks of all identified water bodies. The remainder of the planning area is designated VRM Class IV, where major modifications of the existing scenic character can occur.

Conclusion. This decision satisfies the goals of the NPRPA to conduct an expedited program of oil and gas leasing, while providing maximum protection to the important surface values of Special Areas. It places strict restrictions on activities and imposes all practicable mitigation measures and monitoring to ensure adequate protection of the environment of the planning area overall and the avoidance of unnecessary and undue degradation. The BLM's obligations to protect threatened and endangered species, subsistence uses and resources, wild and scenic rivers, and wetlands and floodplains resources also have been satisfied.

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Source: USDO, BLM, 2003

Map 1. Northwest National Petroleum Reserve - Alaska Record of Decision Preferred Alternative

Alternatives

The alternatives presented in the IAP/EIS are consistent with the purposes of the statutes governing the NPR-A. Each alternative offers a different approach to serving the "total energy needs of the nation" and balancing the goal of providing maximum protection to the surface resource values of the designated Special Areas and protecting all surface resources from "unnecessary and undue degradation" as required by the Federal Land Policy and Management Act (FLPMA).

Preferred Alternative: Under the Preferred Alternative, all BLM-administered lands (including Federally-owned subsurface) within the Northwest NPR-A planning area would be made available for oil and gas leasing; however, leasing would be deferred for 10 years on approximately 1,570,000 acres (about 17%) of the planning area near Wainwright. Within the lease deferral area, the Preferred Alternative recommends the establishment of a 102,000-acre Kasegaluk Lagoon Special Area that would be subject to a no-permanent-surface occupancy stipulation. Outside the deferral area, additional no-surface occupancy stipulations would be imposed along coastal areas, key rivers, and deep-water lakes. In total, these restrictions would apply to approximately 1,515,000 acres (approximately 16% of the planning area). Stipulations and required operating procedures would provide clearly defined setbacks, restrictions (including seasonal restrictions), and guidance for all aspects of oil and gas and related operations. These measures would provide protection for important natural resources including water quality, vegetation, wetlands, fish and wildlife habitat (including habitat for "Threatened and Endangered" species), cultural and paleontological resources, subsistence uses and access, and scenic and recreation values. The Preferred Alternative would identify special study areas for brant and caribou. Multi-year surveys would also be required on a planning-area-wide basis to prevent the taking of spectacled and Steller's eiders — listed as threatened species under the Endangered Species Act — and yellow-billed loons. Special restrictions would also be imposed on oil and gas development activities within the Colville River Special Area to minimize loss of raptor foraging habitat. Other protective measures would include designating the planning area as "Limited" for recreational use of off-highway vehicles (OHV's) and identifying Visual Resource Management (VRM) areas. No Wilderness Study Areas (WSA's) or Wild and Scenic Rivers (WSR's) are proposed under this alternative.

No Action Alternative: The No Action Alternative reflects current BLM management of the planning area. Under this alternative, no new oil and gas leasing would occur; no new designations such as Special Areas, WSA's, or WSR's would be proposed; no VRM classifications or OHV designations would be made; and no rights-of-way would be designated. Existing Special Area designations for the Colville River and Teshekpuk Lake areas and stipulations BLM applies when permitting activities would continue to provide protection of surface resources. Stipulations listed in the 1983 oil and gas leasing EIS for the NPR-A apply under this No Action Alternative. However, because oil and gas leasing do not occur under this alternative, the stipulations from that EIS have no practical effect. Because no new oil and gas activities are proposed under the No Action Alternative, it would have the least impacts on the environment. While this alternative would be environmentally preferable, it would not satisfy the agency's management objectives of making lands available for leasing. Under this alternative, two options exist with regard to seismic activity. Winter seismic activity could occur throughout the planning area (the existing management situation), or seismic activity could be prohibited.

Alternative A: Alternative A would make all BLM-administered lands in the planning area available to oil and gas leasing. Under this alternative, no Special Areas, WSA's, or WSR's are proposed. The entire planning area would be open to OHV use. Protective measures include applying stipulations

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and required operating procedures, and identifying VRM areas. Additional protection may be introduced following future additional NEPA analysis on specific activities.

Alternative B: Alternative B would make 96 percent of the BLM-administered lands in the planning area (100 percent of the area of high oil and gas potential) available for oil and gas leasing. The proposed Kasegaluk Lagoon Special Area would not be available for leasing and no permanent oil and gas facilities would be allowed either in the Special Area or — excepting two right-of-way sites to be designated near Peard Bay and near Wainwright — in and along the shores of the coastal bays and lagoons (including islands in those bays and lagoons). Stipulations and required operating procedures would place further restrictions on the placement of permanent oil and gas facilities around lakes, rivers, and important habitat. Offshore exploratory drilling would only be allowed in winter in the coastal bays and lagoons from bottom-fast ice pads, natural islands, and human-made gravel islands. Protective measures include applying the relevant stipulations and ROP's, recommending the Kasegaluk Lagoon area be designated a Special Area, limiting OHV and airboat use, and identifying VRM areas. Additional protection may be introduced following future additional NEPA analysis on specific activities.

Alternative C: Alternative C would make 47 percent of the BLM-administered lands in the planning area available for oil and gas leasing while emphasizing protection of specific surface resources through barring lease sales, excluding permanent oil and gas facilities, or both, in potentially sensitive areas. The areas withheld from leasing include all those identified as being of concern including: estuarine areas, deep-water lakes, and river and riparian habitat; caribou movement and migration areas; raptors, loons, brant, and eiders; cultural and paleontological resources; subsistence cabins and camps; three proposed WSA's; and one proposed wild river and 21 proposed scenic river corridors. In addition, under this alternative, Federal subsurface oil and gas below surface lands owned or selected by the Alaska Native Claims Settlement Act village corporations for Atqasuk, Barrow, and Wainwright would not be available for leasing.

Under Alternative C, less than 2 percent of the area considered as being high in oil and gas resource potential would be made available for leasing. Except for two right-of-way sites to be designated on previously disturbed ground near Peard Bay and near Wainwright, permanent oil and gas facilities would be prohibited in and along the shore of major bays and lagoons (including islands in those bays and lagoons). Other protective measures include applying relevant stipulations and ROP's, limiting OHV and airboat use, and identifying VRM areas. If Congress were to adopt recommendations in this alternative to create three Wilderness Areas, then all oil- and gas-related structures, as well as ice roads, ice pads, and seismic studies would be prohibited in those areas. Before such Congressional designation however, ice roads, ice pads, and seismic studies could be allowed in the proposed wilderness additions, if they could be shown not to impact permanent wilderness values. Additional protection could be introduced following future additional NEPA analysis on specific activities.

Of the action alternatives, Alternative C is the environmentally preferable one because it would forbid oil and gas leasing, the most likely activity to create environmental impacts, in 53 percent of the planning area, including all of the most sensitive areas. This alternative, however, was not chosen because it would not adequately fulfill the legislative direction and the purposes and objectives of this action to make lands in the NPR-A available for oil and gas development.

Management Considerations

The Northwest NPR-A IAP/EIS fulfills a mandate of the President's National Energy Policy directing the Secretary of the Interior to “consider additional environmentally responsible oil and gas development, based on sound science and the best available technology, through further lease sales in the National Petroleum Reserve-Alaska.” In a 1981 amendment to the Naval Petroleum Reserves Production Act (NPRPA), 42 U.S.C. 6508, Congress directed BLM to undertake oil and gas leasing in NPR-A. This plan helps to meet the total energy needs of the nation by making 100 percent of the planning area available for leasing including lands nearest existing leases in the Northeast NPR-A.

Federal Law, including the NPRPA, the Federal Land Policy Management Act (FLPMA) ANILCA, NEPA and the Wild and Scenic Rivers Act, requires BLM to protect soil, water, air, vegetation, wildlife, archaeological and paleontological resources and subsistence uses. These resources are protected through prohibitions, restrictions, and stipulations on oil and gas and other activities that will minimize environmental impacts. Protections are provided through positive management approaches as well, such as Special Area designations and other management measures. To mitigate site-specific impacts, other protective measures may be required as a condition of approval of the Application for Permit to Drill.

Through a combination of prohibitions, restrictions, and stipulations restricting oil and gas facilities and other activities that might adversely impact wildlife habitat and subsistence use areas, as well as by positive management approaches, maximum protection of important surface resources is provided in Special Areas designated by the Secretary.

Subsistence Advisory Panel and Other Protections

Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA) mandates special consideration for subsistence resources and uses. Subsistence concerns were also identified early in the planning process as a major management consideration. The same responsibility and concerns were also prominent in the Northeast NPR-A planning area. In the Record of Decision for the Northeast NPR-A plan BLM indicated that it would institute a Subsistence Advisory Panel, whose purpose is to advise both industry and the agency on potential conflicts between proposed development activities and subsistence activities. That panel has been operating for some time now and has proved invaluable in dealing with subsistence-related issues in the Northeast NPR-A. The BLM will expand the responsibilities of the Subsistence Advisory Panel to include the Northwest NPR-A and will rely on the panel during the consultation process for development in the Northwest NPR-A.

Several ROP's provide additional consideration of subsistence users. ROP E-1 ensures subsistence hunter access to traditional hunting areas. ROP E-7 establishes minimum pipeline heights to ensure free movement of caribou and hunters, ROP H-1 provides guidelines for consultation with subsistence users, ROP I-1 requires that the employees of developers receive orientation training that includes information about the local subsistence-based culture.

Endangered Species Consultation - Spectacled and Steller's Eiders

Section 7(a)(2) of the Endangered Species Act (ESA) requires Federal agencies to consult with the U.S. Fish and Wildlife FWS (FWS) and National Oceanic and Atmospheric Administration, Fisheries (NOAA Fisheries), as appropriate, to ensure that their actions do not jeopardize the continued existence of species listed as threatened or endangered under ESA, or destroy or adversely modify

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their critical habitat. A Biological Assessment was completed by the BLM and is included in the Final IAP/EIS. This assessment, with respect to a reasonably foreseeable development scenario, determined that the actions in the IAP may have an affect on the threatened spectacled and Steller's eiders. Although a small amount of habitat may be disturbed, or modified by the reasonably foreseeable development scenario, the Planning Area has no designated critical habitat.

The FWS issued their Biological Opinion (BO) on January 6, 2004 (Appendix C). The FWS concluded that leasing, exploration, and the reasonably foreseeable development scenario described in the Biological Assessment is unlikely to jeopardize the continued existence of the species, or result in the destruction or adverse modification of designated critical habitat. BLM has adopted the following Reasonable and Prudent Measures, and Terms and Conditions described in the Biological Opinion:

Reasonable and Prudent Measures

1. To minimize the likelihood that migrating spectacled or Steller's eiders will strike drill rig or tower structures, BLM and the FWS will cooperatively develop a lighting/marketing protocol intended to reduce radiation of light outward from structures and to increase the visibility of structures to migrating eiders.
2. To reduce temporary impacts to productivity resulting from disturbance within 200 meters of occupied spectacled or Steller's eider nests, from May 20 through August 1, ground level activity (by vehicle or on foot) will be restricted to existing thoroughfares and construction of permanent facilities, placement of fill, alteration of habitat, and introduction of high noise levels is prohibited.
3. One or more BLM compliance specialists will monitor industry compliance with stipulations, ROP's, and enforceable elements of the assumptions listed in Appendix 4 of the BO at sites of oil and gas industry activity.

Terms and Conditions

1. To minimize the likelihood that migrating spectacled or Steller's eiders will strike structures associated with drilling and support activities, BLM and FWS will cooperatively develop a lighting/operating protocol to be used on all drilling and tower structures. The FWS and BLM will work together to identify when and where the protocol should be applied. Any protocol developed will be in compliance with Federal Aviation Administration (FAA) regulations. The lighting protocol shall contain the following 2 components:
 - A. The radiation of light outward from drilling structures will be minimized. This will be achieved by shading and/or light fixture placement to direct light inward and downward to living and work surfaces while minimizing light radiating upward and outward.
 - B. Structures will be lighted and/or marked to improve visibility to migrants according to a strategy to be jointly developed by BLM and the FWS.
 - 1) This strategy will be developed using available information on bird avoidance measures including, but not limited to, results of the ongoing study of lighting regimes for Northstar Island being conducted by BP Alaska, ABR, Inc., and the FWS.

2) A draft strategy will be provided by the FWS to BLM by 31 May 2004; the final strategy must be mutually agreed upon by the BLM and FWS by 1 August 2004, or a later date that is mutually agreed upon.

3) This strategy applies to all drilling and tower structures used throughout the Northwest Planning Area after September 1, 2004.

4) Any lighting requirements resulting from this strategy need not apply between October 31 and May 1, because listed eiders are not thought to be present in the Northwest Planning Area during this period.

5) This strategy will be modified, as appropriate, if significant new information on bird avoidance measures becomes available during activities covered by this consultation. BLM and the FWS will develop modifications to the strategy jointly.

C. Crane booms and/or drill rigs will be lowered any time there are no construction or drilling activities slated to occur for 30 days. This restriction applies only when spectacled and Steller's eiders may be present (15 May to 30 September).

2. Temporary impacts to spectacled and Steller's eider productivity due to disturbance and direct habitat impacts must be minimized by ensuring protection of females with nests. In portions of the Northwest Planning Area where summer support activity occurs, FWS-approved nest surveys must be conducted during mid-June of each year in which activities take place between May 30 and August 31. Ground-level activity (by vehicle or on foot) within 200 meters of occupied spectacled or Steller's eider nests, from May 20 through August 1, will be restricted to existing thoroughfares and construction of permanent facilities, placement of fill, alteration of habitat, and introduction of high noise levels will be prohibited. Activity in marine and inter-tidal areas that occurs within 200 meters of shore also will require surveys. The protocol and timing of nesting surveys for spectacled and Steller's eiders will be determined in cooperation with the FWS, and must be approved by the FWS. Surveys should be supervised by biologists who have previous experience with spectacled and/or Steller's eider nest surveys.

3. One or more BLM compliance specialists will monitor industry compliance with stipulations, ROP's and enforceable elements of assumptions listed in Appendix 4 of this BO at sites of oil and gas related activity. BLM will provide the FWS with a copy of the monitoring plan. Stipulations in special need of compliance monitoring include D-2 and K-1, 2, 3, 6 and 8. ROP's in need of compliance monitoring include A-1 through 7, E-9, 10, 11 and F-1. All acts of noncompliance or nonconformance to the ROP's, stipulations and enforceable elements of assumptions mentioned above will be reported in writing to the Field Supervisor, U.S. Fish and Wildlife FWS, Fairbanks Fish and Wildlife Field Office, 101 12th Ave., Box 19, Fairbanks, AK 99701. In the event that noncompliance/nonconformance issues arise, BLM and the FWS will cooperatively develop a strategy to eliminate the problem.

The FWS believes that no more than 117 spectacled eiders and 9 Steller's eider will be incidentally taken during the life of the proposed project. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of

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consultation and review of the reasonable and prudent measure provided. The Federal action agency must provide, without unreasonable delay, an explanation of the causes of the take and review with the FWS the need for possible modification of the reasonable and prudent measure. If Steller's and/or spectacled eiders are encountered injured or killed through collisions with oilfield structures, the operator will contact the Fairbanks Fish and Wildlife Field Office, Endangered Species Branch, Fairbanks, Alaska at (907) 456-0499 for instruction on the handling and disposal of the injured or dead bird.

Bowhead Whale

The BLM conducted informal consultation pursuant to Section 7 of the ESA for the bowhead whale, which resulted in a determination by BLM and NOAA Fisheries, of no effect.

Wetlands and Floodplains Findings Summary

Oil and gas leasing occurs in phases, therefore, additional approvals and permits must be obtained from BLM (and other regulatory agencies) before any construction activity takes place. These approvals and permits would require additional NEPA reviews and further evaluation of Wetlands and Floodplains impacts. Therefore, Executive Orders 11988 and 11990 are not specifically applicable to the approval of this plan. However, because future activities are contemplated under this plan, that could impact Wetlands and Floodplains, BLM has chosen to complete the impact analysis and make the findings contemplated by the Executive Orders.

These findings are based on a comprehensive impact analysis done in compliance with Executive Orders 11988 and 11990, Protection of Wetlands and Floodplains (see Final Integrated Activity Plan/Environmental Impact Statement Vol. 1 Section IV PP500-501 and Vol. 2 Section V.B.21 PP171-173, Section V.B.1 PP13-16, Section V.B.3 PP19-23, Section V.B.4 PP25-34, Section V.B.5 PP34-39, Section V.B.7 PP47-56).

Wetlands (Executive Order 11990)

Executive Order 11990 concerning the protection of Wetlands requires that BLM consider factors relevant to the proposal's effect on the survival and quality of the Wetlands. Factors to be considered include the following:

1. Public health, safety, and welfare, including water supply, quality, recharge and discharge; pollution; flood and storm hazards; and sediment and erosion;
2. Maintenance of natural systems, including conservation and long term productivity of existing flora and fauna, species and habitat diversity and stability, hydrologic utility, fish, wildlife, timber, and food and fiber resources; and
3. Other uses of Wetlands in the public interest, including recreation, scientific, and cultural uses.

In furtherance of the National Environmental Policy Act of 1969 (42 U.S.C. 4331(b)(3) to improve and coordinate Federal plans, functions, programs and resources to the end that the Nation may attain the widest range of beneficial uses of the environment without degradation and risk to health or safety, the agency, to the extent permitted by law, shall avoid undertaking or providing assistance for new construction located in wetland unless the head of the agency finds:

1. there is no practicable alternative to such construction, and
2. the proposed action includes all practicable measures to minimize harm to Wetlands which may result from such use. In making this finding the head of the agency may take into account economic, environmental and other pertinent factors.

The following discussion summarizes the evaluation of impacts to Wetlands for the Preferred Alternative and the findings that are a result of that evaluation. In addition, specific protective mitigations developed to avoid or lessen impacts to Wetlands are presented.

The planning area consists of approximately 9.4 million acres of which 8.9 million acres may be classified as Wetlands. The long term effects of exploration and development activities, both direct and cumulative in nature, on wetland vegetation (5,300 acres), soils (600 acres), water resources (2,000 acres), and fresh and estuarine water quality (2,000 acres) are expected to be insignificant (negligible to minimal) in this vast area, and would be mitigated to the greatest extent practicable. The combined effect of exploration and development for multiple sales would also be unlikely to significantly impact any plant species or community, cause significant soil loss, or result in other than short term and localized loss of water resources or water quality. Therefore no significant impacts are expected that would affect public health, safety, and welfare through changes in the supply, quality, recharge or discharge and pollution of water, or, flood and storm hazards or sedimentation and erosion. No impacts will occur that would result in long term changes in the natural ecosystem, or, prevent normal uses of Wetlands by the public for recreational, scientific or cultural purposes.

The BLM has sought to avoid and minimize impacts to Wetlands caused by new construction by designing facilities with the smallest footprint possible. Total avoidance of Wetlands is impossible because approximately 95% of the planning area can be classified as Wetlands and it would not be possible to carry out the objectives of this plan without affecting any Wetlands. However, all practicable mitigation has been incorporated into this Record of Decision (please see mitigations presented after this discussion). The Preferred Alternative imposes no surface occupancy restrictions on 16% of the planning area outside the deferral area, and defines Stipulations and ROP's for setbacks, restrictions (including seasonal restrictions), and guidance for all aspects of oil and gas and related operations. Additional site-specific prohibitions and restrictions will be provided at the permitting stages, before any new construction is authorized to protect important natural resources including water quality, vegetation, and Wetlands.

Mitigations developed to protect the planning area and that provide protection for the function and values of Wetlands are described below.

- A. Waste Prevention, Handling, Disposal; Spills, and Public Safety
- B. Water Use for Permitted Activities
- C. Overland Moves and Seismic Work
- D. Oil and Gas Exploratory Drilling
- E. Facility Design and Construction
- G. Oil Field Abandonment
- H. Subsistence Consultation for Permitted Activities
- I. Orientation Programs Associated with Permitted Activities
- K. Area-Specific Lease Stipulations and Required Operating Procedures covering:
 - Rivers; Deep Water Lakes; Dease Inlet, Admiralty Bay, Elson Lagoon, and Associated Barrier Islands; Brant Survey Area; Caribou Study Area; Coastal Areas; Colville River Special Area; Kasegaluk Lagoon Special Area
- J. Endangered Species Act Section 7 Consultation Stipulation

This plan, including broad and site specific mitigations provides substantial protections against impacts to Wetlands. The plan as a whole has been found to have minimal to negligible impacts on the function and values that are provided by these Wetland resources. In addition to all the practicable mitigation included in the plan, Wetlands will receive further consideration before any ground-impacting activities are approved. This will be done through subsequent NEPA reviews and analysis,

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which is conducted before any construction or operation permits or approvals are issued. Compliance with the Executive Order will be undertaken at these subsequent stages through consideration of all practicable alternatives and additional mitigation in order to assure that all possible protection is provided for Wetlands functions and values.

Floodplains (Executive Order 11988)

Executive Order 11988 concerning the protection of Floodplains requires an agency to provide leadership and to take action to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by Floodplains in carrying out its responsibilities. In carrying out activities required by EO 11988, the agency has a responsibility to;

1. Evaluate the potential effects of any actions that may take place in a floodplain;
2. Ensure that its planning programs and budget requests reflect consideration of flood hazards and floodplain management; and
3. Prescribe procedures to implement the policies and requirements of EO 11988

Additional requirements are as follows:

4. Before taking an action, each agency shall determine whether the proposed action will occur in a floodplain and the evaluation required will be included in any statement prepared under Section 102(2)(C) of the National Environmental Policy Act (Section 4332(2)(C)).
5. If an agency has determined to, or proposes to, conduct, support, or allow an action to be located in a floodplain, the agency shall consider alternatives to avoid adverse effects and incompatible development in the Floodplains. If the head of the agency finds that the only practicable alternative consistent with the law and with the policy set forth in this Order requires siting in a floodplain, the agency shall, prior to taking action,
 - a. design or modify its action in order to minimize potential harm to or within the floodplain, consistent with regulations, and
 - b. prepare documentation explaining why the action is proposed to be located in the floodplain.

The following discussion summarizes the evaluation of impacts to Floodplains (and Wetlands) for the Preferred Alternative and the findings that are a result of that evaluation. In addition, specific protective mitigations developed to avoid or lessen impacts to Floodplains (and Wetlands) are presented.

The planning area consists of approximately 9.4 million acres of which 8.9 million acres may be classified as Wetlands which includes associated Floodplains. The long term effects of exploration and development activities, both direct and cumulative in nature, on these Floodplains are expected to be insignificant (negligible to minimal) in this vast area, and would be mitigated to the greatest extent practicable. The combined effect of exploration and development for multiple sales would also be unlikely to significantly impact any plant species or community, cause significant soil loss, or result in other than short term and localized loss of water resources or water quality. Therefore no significant impacts are expected that would affect public health, safety, and welfare through changes in the supply, quality, recharge or discharge and pollution of water, or, flood and storm hazards or sedimentation and erosion. No impacts will occur that would result in long term changes in the natural ecosystem.

The BLM has sought to avoid and minimize impacts to Floodplains and Wetlands caused by new construction by designing facilities with the smallest footprint possible. Total avoidance of Wetlands

and Floodplains is impossible because approximately 95% of the planning area can be classified as Wetlands of which Floodplains will remain a large part of that classification. Floodplains in the planning area are very extensive because the Planning Area is so flat and, the Preferred Alternative will likely require the location of some structures within Floodplains. However, all practicable mitigation has been incorporated into this Record of Decision (please see mitigations presented after this discussion). The Preferred Alternative imposes no surface occupancy restrictions on 16% of the planning area outside of the deferral area, and defines Stipulations and ROP's for setbacks, restrictions (including seasonal restrictions), and guidance for all aspects of oil and gas and related operations. Additional site-specific prohibitions and restrictions will be provided at the permitting stages, before any new construction is authorized to protect important natural resources associated with Floodplains and Wetlands.

Mitigations developed to protect the planning area and that provide protection for the function and values of Floodplains are described below.

- A. Waste Prevention, Handling, Disposal; Spills, and Public Safety
- B. Water Use for Permitted Activities
- C. Overland Moves and Seismic Work
- D. Oil and Gas Exploratory Drilling
- E. Facility Design and Construction
- G. Oil Field Abandonment
- H. Subsistence Consultation for Permitted Activities
- I. Orientation Programs Associated with Permitted Activities
- K. Area-Specific Lease Stipulations and Required Operating Procedures covering:
 - Rivers; Deep Water Lakes; Dease Inlet, Admiralty Bay, Elson Lagoon, and Associated Barrier Islands; Brant Survey Area; Caribou Study Area; Coastal Areas; Colville River Special Area; Kasegaluk Lagoon Special Area
- J. Endangered Species Act Section 7 Consultation Stipulation

This plan, including broad and site specific mitigations provides substantial protections against impacts to Floodplains. The plan as a whole has been found to have minimal to negligible impacts on the function and values that are provided by these resources. In addition to all the practicable mitigation included in the plan, Floodplains (and Wetlands) will receive further consideration before any ground-impacting activities are approved. This will be done through subsequent NEPA reviews and analysis, which is, conducted before any construction or operation permits or approvals are issued. Compliance with the Executive Order will be undertaken at these subsequent stages through consideration of all practicable alternatives and additional mitigation in order to assure that all possible protection is provided for the Floodplains (and Wetlands) functions and values.

Coastal Zone Consistency Determination

The BLM has notified the Alaska State Department of Natural Resources (DNR) that the Final IAP/EIS will be the NEPA foundation for at least one oil and gas lease sale and asked the State if it wants to complete the Coastal Zone Management Act consultation process on the ROD. The DNR has indicated by letter that the plan is too general as a basis for a State consistency determination on leasing at this time and the agency prefers to consult with BLM and provide its coastal zone consistency determination when a lease sale is proposed. The BLM plans to hold a lease sale in June of 2004. A coastal zone consistency determination will be sent to the State of Alaska in February for its review. The State's response is expected timely for the lease sale.

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Maximum Protection of Special Areas

Section 104 (b) of the NPRPA authorized the Secretary of the Interior to designate special areas certain areas containing significant subsistence, recreational, fish and wildlife, or historical or scenic values where all activities, including oil and gas exploration and development, shall be conducted in a way that will provide maximum protection to the natural and cultural resources present.

The Colville River Special Area was designated primarily to protect the peregrine falcon, which at one time was an endangered species and is still subject to intense monitoring studies to insure that its population numbers continue to grow. Through a combination of setbacks, timing restrictions, air-flight restrictions and guidance that are present in the stipulations and ROP's, this plan will provide maximum protection to the peregrine and its habitat. ROP E-7 identifies operating procedures that are designed specifically to protect falcons. Deferring leasing within the special area until a river management plan is prepared will also provide maximum protection.

Only a small portion of the Teshekpuk Lake Special Area is within the planning area. The Teshekpuk Lake Special Area was established to protect important nesting, staging and molting habitat for ducks geese and swans; brant are particularly important here. This is also important habitat for caribou. Setbacks from designated water bodies and other restrictions contained in ROP's E-10, E-11, E-12, K-1, and K-4 all provide maximum protection to waterfowl in general and to Steller's and spectacled eiders in particular, (which are threatened species). Stipulations K-5 and K-6 will provide maximum protection to caribou.

The Kasegaluk Lagoon Special area is being designated primarily because of high values for marine mammals. It also is a unique ecosystem for the arctic coast. Deferring leasing in this area for ten years and establishing a no-surface occupancy ROP provides maximum protection for the area.

Unnecessary and Undue Degradation

The BLM is required by FLPMA to avoid undue or unnecessary degradation in managing the public lands. The package of stipulations and ROP's establish many setbacks, restrictions and establish guidance whose purpose is to ensure that BLM complies with this requirement. In addition BLM is deferring leasing in particularly sensitive areas. Previous discussions in this document provide specific discussions of the many protections that are in place for the natural and cultural resources of the planning area. The analysis of impacts in the Final IAP/EIS indicates that levels of impacts for the various resources are very low. The plan will avoid unnecessary and undue degradation to any resources in or dependent on the planning area.

ANILCA: Section 810 Summary

The Alaska National Interest Lands Conservation Act (ANILCA) §810(a) requires that a subsistence evaluation be completed for the Northwest NPR-A IAP/EIS. ANILCA also requires that this evaluation include findings on three specific issues:

1. the effect of such use, occupancy, or disposition on subsistence uses and needs;
2. the availability of other lands for the purpose sought to be achieved; and
3. other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes (16 U.S.C. §3120).

The following discussion summarizes the ANILCA §810 evaluation for the “Preferred Alternative” as set out in greater detail in Appendix 5 of the Final IAP/EIS.

- a. *Without the Cumulative Case:* The effects of the plan adopted in this ROD fall below the "may significantly restrict" threshold, which is the test for a positive finding under ANILCA §810. Adequate stipulations and required operating procedures have been incorporated into the plan, including specific procedures for subsistence consultation with directly affected subsistence communities. The impacts to subsistence resources and uses for this alternative are minimal. This finding applies to villages in and near the planning area (Anaktuvuk Pass, Atkasuk, Barrow, Nuiqsut, Point Lay, and Wainwright).
- b. *With the Cumulative Case:* The effects of the cumulative case, presented in Section IV and V of the Final IAP/EIS, exceed the "may significantly restrict" threshold, and thus a positive ANILCA §810 determination must be made. Although the effects of the activities proposed under the plan adopted in this ROD fall below the threshold, adding them to those of the cumulative case results in a level of effects that "may significantly restrict" subsistence uses, with the potential to affect Barrow, Atkasuk, Nuiqsut, Wainwright, and Point Lay.

ANILCA §810(a) provides that no "withdrawal, reservation, lease, permit, or other use, occupancy or disposition of the public lands which would significantly restrict subsistence uses shall be effected" until the Federal agency gives the required notice and holds a hearing in accordance with §810(a)(1) and (2), and makes the three determinations required by §810(a)(3)(A), (B), and (C). The BLM has found in this subsistence evaluation that all the alternatives considered in the IAP/EIS (including the no-action alternative), when considered together with all the past, present, and reasonably foreseeable future cumulative effects discussed in the EIS, may significantly restrict subsistence uses. Therefore, BLM undertook the notice and hearing procedures required by ANILCA §810(a)(1) and (2), as described above, and now must make the three determinations required by §810(a)(3)(A), (B), and (C). 16 U.S.C. §3120(a)(3)(A), (B), and (C).

The BLM has determined that the final plan meets the following requirements (16 U.S.C. §3120(a)(3)(A), (B), and (C)) for Federal actions that may result in a significant restriction on subsistence uses:

1. *The significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands.*

The BLM has prepared the IAP/EIS to fulfill the mandates of the President’s energy policy and the responsibility to manage the NPR-A under the authority of two land management laws passed in 1976 – the Naval Petroleum Reserves Production Act (NPRPA) and the

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Federal Land Policy and Management Act (FLPMA). The management principles under which the northwest NPR-A planning area is to be administered call for an "expeditious program of competitive leasing of oil and gas" while providing for the maximum protection of significant surface values, including environmental, fish and wildlife, historical, scenic and subsistence values.

After considering a broad range of alternatives, the plan was developed to provide for oil and gas leasing and to put in place protective designations and measures for important subsistence resources and subsistence use areas. In addition, under the plan, leasing will be deferred for ten years on 1,570,000 acres in the western portion of the Planning Area, based in part on public testimony from residents of Point Lay and Wainwright. This deferral and other protective measures and stipulations are included in the plan specifically to ensure that subsistence resources and uses are not significantly restricted.

Only when the current plan is considered together with cumulative effects of possible oil and gas activities on adjacent lands that are not under BLM's control, does the possibility exist that all the activities combined may significantly restrict subsistence uses. This possible restriction on subsistence uses could be lessened somewhat by not making any of the planning area available for oil and gas leasing, but this would not accomplish the management objectives for the planning area as guided by the statutory and policy directives for which the IAP/EIS was undertaken. Moreover, even if BLM were to adopt the no-action alternative, the cumulative impacts on surrounding lands would still reach the may-significantly-restrict threshold under ANILCA §810. The effects of the actions approved in this plan on subsistence resources and uses have been found to be very minimal, and would not significantly contribute to the cumulative impacts on subsistence from other activities in the region

The BLM, therefore, has determined that the significant restriction that may occur under the plan when considered with the cumulative case is necessary, consistent with sound management principles for the utilization of these public lands.

2. *The proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition.*

Given the legislative mandates cited above and the management objectives for which the IAP/EIS was undertaken, the plan has identified the minimal amount of public lands necessary to accomplish these purposes. Factors considered in identifying areas available for leasing include: the location of high potential areas for oil and gas resources within the planning area, the location and amount of lands necessary for an economically feasible leasing program, the importance of surface resources and uses, and measures to reduce or eliminate the possibility of a significant restriction on subsistence. As a result, the process for determining which lands to offer for oil and gas leasing in the Northwest NPR-A did not focus solely on minimizing the total number of acres offered, although that was an important factor.

The plan balances the need to make sufficient lands available for leasing to achieve an economically feasible lease program with measures to place off-limits or restrict development activities on the lands that are most important for subsistence resources and uses. It has been determined that the plan makes available the minimal amount of public lands necessary to carry out a successful leasing program while still excluding or restricting oil and gas leasing and surface activities in the areas most important for subsistence resources and uses.

3. *Reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.*

The BLM received input on protections for subsistence from public scoping meetings in North Slope villages and in a workshop convened in Barrow with the NPR-A Subsistence Advisory Panel to further identify subsistence concerns and ideas on how to address these concerns. Subsistence Hearings, as required under §810(a), were held in conjunction with the public meetings for the draft IAP/EIS.

Based on this input, the plan, including its detailed stipulations, provides very significant protections for subsistence uses and resources. These include seasonal restrictions, setbacks in important subsistence use areas, operational constraints, and limitations on the amounts of water available for oil and gas uses. Consultation with North Slope communities, the North Slope Borough, and the NPR-A Subsistence Advisory Panel will continue as a crucial avenue of information exchange and oversight. In addition, “Stipulation H. Subsistence Consultation for Permitted Activities” requires the permittee to consult directly with affected communities at each subsequent stage of on-the-ground activities.

The plan as a whole has been found to have only minimal impacts on subsistence resources and uses. In addition, it has been determined that reasonable steps will be taken to minimize adverse impacts on subsistence uses and resources.

Mitigation and Monitoring

Stipulations designed to protect the resources and uses of the planning area are listed in Appendix B. These stipulations include restrictions and guidelines on waste and spill prevention, handling, and disposal; overland moves and seismic surveys; oil and gas exploratory drilling, facility design, construction and field abandonment; ground and air transportation; and other activities. The list also contains additional special stipulations to protect subsistence resources and activities and traditional land use sites. Additional protective measures may be developed as part of NEPA evaluations of subsequent permit authorizations, including exploration and development plans, and of any second or subsequent oil and gas lease sales. It has been determined that all practical means to avoid or minimize environmental harm from the plan in this ROD have been adopted in the IAP/EIS.

Monitoring will be undertaken to determine the status of the various resources in the planning area, to ensure compliance with and enforcement of plan decisions and with stipulations and ROP's attached to leases and land use authorizations, and to measure the effectiveness of protective measures.

Monitoring of Listed Species under the Endangered Species Act (ESA)

In addition to applying ROP E-11, BLM will develop, jointly with the FWS, a long-term monitoring plan for spectacled and Steller's eiders that incorporates the FWS Migratory Bird Office surveys and recommendations from eider recovery teams.

Public Involvement

Public and government agencies provided valuable comments throughout the planning process. Public outreach is described in Section VI of the Final IAP/EIS. It consisted of the following.

Scoping. Formal scoping began when BLM published a Notice of Intent (Notice) to prepare the Northwest NPR-A IAP/EIS in the *Federal Register* on November 15, 2001. Publication of the Notice initiated a 45-day public scoping period; however, the formal public scoping period was extended to February 15, 2002. The Notice also included a call for nominations from the oil industry for lands within the planning area to be considered for oil and gas leasing. One hundred thirty-two individuals signed-in at eight originally scheduled meetings. An additional meeting was held to accommodate members of the Point Lay Tribal Council who were unable to return from Barrow in time for the public meeting in Point Lay. Four individuals attended that meeting. Twenty-one written comments were received during the scoping period.

Draft IAP/EIS Comments. The Notice of Availability of the Northwest NPR-A Draft IAP/EIS was published in the *Federal Register* on January 17, 2003. Comments on the Draft IAP/EIS were received via letters, e-mail, fax, website, and formal public meetings. Public meetings were held in Fairbanks (February 12, 2003), Anchorage (February 13, 2003); Point Lay (February 18, 2003), Wainwright (February 20, 2003), Anaktuvuk Pass (February 19, 2003), Atqasuk (February 24, 2003), Barrow (February 27, 2003); Nuiqsut (March 3, 2003), and Washington D.C. (March 13, 2003). The comment period closed April 2, 2003.

Approximately 97,000 individual comments were received via letter, e-mail, fax, website, and formal public meetings. Comments were received from states throughout the U.S, and from Canada, Mexico, and Europe. Approximately 87,000 comments arrived via e-mail. An additional 8,000 comments were received via facsimile. Many of the comments were prompted by campaigns organized by environmental organizations and contained identical statements. Comments were also made directly on the document on BLM's Draft IAP/EIS website. Nine public meetings/subsistence hearings were held during February 2003. More than 150 people made statements. The meetings were held in Anaktuvuk Pass, Anchorage, Atqasuk, Barrow, Fairbanks, Nuiqsut, Wainwright, and Point Lay, Alaska, and Washington, D.C

Development of the Preferred Alternative. After the public meetings and closing of the public comment period, the core planning team, agency resource staff and BLM management met to develop BLM's "Preferred Alternative." Proposals from the Alaska Audubon Society among others were considered in formulating the preferred alternative. Audubon's resource information was consistent with BLM/MMS information and that submitted by others, including the FWS, the State of Alaska, and the North Slope Borough (NSB). The Audubon recommendations for new special areas and corresponding restrictions were evaluated in light of the oil and gas resource information and information regarding surface resources in those areas. While BLM decided that some of the recommendations were more restrictive than necessary, BLM also acknowledged that it must look carefully at additional protections for brant, spectacled and Steller's eiders, yellow-billed loon, Peregrine falcon, caribou, and the coastal bays and lagoons in developing the "Preferred Alternative" and that some protections must be prescriptive and quantitatively defined (e.g., ½-mile setbacks on rivers).

In addition to public comment and general remarks on management philosophies and new alternatives, the State of Alaska, the Alaska Oil and Gas Association (AOGA), ConocoPhillips, the North Slope Borough, the Environmental Protection Agency, the Alaska Center for the Environment

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et al., the American Society of Mammalogists, and the FWS offered extensive comments specific to individual stipulations and ROP's. All these comments were considered in the development of the "Preferred Alternative," along with the numerous comments from the general public.

Consultation with Federally Recognized Tribes. Federally recognized Tribes have a special, unique legal and political relationship with the government of the United States as defined by the U.S. Constitution, treaties, statutes, court decisions, and executive orders. These definitive authorities are also the basis for the Federal Government's obligation to acknowledge the status of federally recognized tribes in Alaska.

The BLM consults with federally recognized tribes consistent with the Presidential Executive Memorandum on Government-to-Government Relations with Native American Tribal Governments, dated April 29, 1994; Executive Order 13175 on Consultation and Coordination with Indian Tribal Governments, dated November 6, 2000, and the January 18, 2001, Department of the Interior-Alaska Policy on Government-to-Government Relations with Alaska Native Tribes. The BLM formally consults with federally recognized Tribes in Alaska before undertaking activities that will have a substantial, direct effect on federally recognized tribes, their assets, rights, services, or programs. To this end, government-to-government meetings and consultation with seven federally recognized traditional governments occurred: Native Village of Anaktuvuk Pass; Native Village of Atkasuk; Native Village of Barrow; Native Village of Nuiqsut; Native Village of Point Lay; Native Village of Wainwright; and the Iñupiat Community of the Arctic Slope. The Final IAP/EIS provides additional detail on specific BLM Government-to-Government meetings with federally recognized tribes and state and local governments.

Throughout the planning process, comments and issues brought forward through formal Government-to-Government consultation with Native Tribal Governments consistently focused on a few topics. These issues included concerns about: (1) protection of subsistence resources; (2) effects of special designations, such as wilderness and Special Areas, on subsistence activities; (3) measures to prevent pollution and/or clean-up of spills; (4) anticipated levels of oil and gas and related activities (including seismic exploration) as a result of leasing new areas; (5) development of roads to villages; (6) status of NPR-A Energy Impact Funds; (7) use of traditional knowledge in making decisions; (8) impact of oil and gas-related activities on native allotments and subsistence cabins; and (9) local employment opportunities.

During meetings with tribal councils to discuss the BLM's "Preferred Alternative," tribal leaders from Atkasuk and Nuiqsut raised concerns about possible limitations on access to traditional subsistence areas. They were worried that as infrastructure expands westward into NPR-A, local residents would be prevented from hunting and fishing near oil and gas facilities because of higher security. Tribal leaders offered a few specific recommendations. These recommendations included prescribing higher minimum heights for pipelines, requiring operators to lower drilling rig towers during periods of caribou migrations to prevent deflecting caribou away from hunting areas, and requesting studies to determine appropriate water withdrawal limits for ice road construction. All comments and recommendations were verbal; no written comments were received.

Final IAP/EIS Comments. The BLM has received several letters from the public in the 30-day period since the final Northwest NPRA IAP/EIS was made available to the public. These letters object to the contents of BLM's preferred alternative as presented in the final IAP/EIS and restate arguments that were made by various organizations and individuals during the comment period on the draft IAP/EIS. None of the letters contain any suggestions for technical improvement of the document.

APPENDIX A: Modifications and Clarifications

The following list highlights clarifications and minor modifications that BLM has made to the “Preferred Alternative” presented in the Final IAP/EIS for adoption here as the Secretary’s decision.

Deferred Leasing in the Colville River Special Area. The plan has been modified to include a deferral of oil and gas leasing in the Colville River Special Area until the combined Southern NPR-A IAP/EIS and Colville River Management Plan is completed. This action responds to a Resolution passed by BLM’s Resource Advisory Council asking for such a deferral and results in an additional 440,000 acres of the planning area being placed in deferral status.

Required Operations Procedures. Four of the seven following ROP’s have been modified to clarify their intent or to add phrases that were accidentally omitted during the planning process. The fifth ROP (E-13) was intended to address cultural and paleontological resources, but was deleted early in the planning process. It is now being included in the plan as a ROP. The sixth ROP (K-1r) has been changed at the request of the North Slope Borough to provide a ½ mile setback for Niklavik Creek. The seventh ROP (A-2) is modified to establish an order of priority for the management of hazardous waste and to emphasize the importance of prevention of such waste. This change responds to a request from the village of Nuiqsut.

C-3 Required Operating Procedure

Objective: Maintain natural spring runoff patterns, avoid flooding, prevent streambed sedimentation, protect water quality and protect stream banks.

Requirement/Standard: Crossing of waterway courses shall be made using a low-angle approach. Snow and ice bridges shall be removed, breached or slotted before spring breakup. Ramps and bridges shall be substantially free of soil and debris.

C-4 Required Operating Procedure

Objective: Avoid additional freeze down of deep-water pools harboring over-wintering fish and invertebrates used by fish.

Requirement/Standard: Travel up and down stream beds is prohibited unless it can be demonstrated that there will be no additional impacts from such travel to over-wintering fish or the invertebrates they rely on. Rivers and streams shall be crossed at shallow riffles from point bar to point bar whenever possible.

E-6 Required Operating Procedure

Objective: Reduce the potential for ice-jam flooding impacts to wetlands and floodplains, erosion, alteration of natural drainage patterns, and restriction of fish passage.

Requirement/Standard: Stream and marsh crossings shall be designed and constructed to ensure free passage of fish, maintain natural drainage, and minimal adverse effects to natural stream flow. Note: Bridges, rather than culverts, are the preferred method for crossing rivers. When necessary, culverts can be constructed on smaller streams — if they are large enough to avoid restricting fish passage or adversely affecting natural stream flow.

E-7 Required Operating Procedure

Objective: Minimize disruption of caribou movement and subsistence use.

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Requirement/Standard: Pipelines and roads shall be designed to allow the free movement of caribou and the safe, unimpeded passage of the public while participating in traditional subsistence activities. Listed below are the currently accepted design practices:

- a) Above ground pipelines shall be elevated a minimum of 7 feet as measured from the ground to the bottom of the pipeline at vertical support members.

E-13 Required Operating Procedure

Objective: Protect cultural and paleontological resources.

Requirement/Standard: Lessees shall conduct a cultural and paleontological resources survey prior to any ground-disturbing activity. Upon finding any potential cultural or paleontological resource, the lessee or their designated representative, shall notify the AO and suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the AO.

K-1r Required Operating Procedure

This ROP has been added at the request of the North Slope Borough to include a ½ mile setback for Niklavik Creek.

A-2 Required Operating Procedure

Objective: Minimize impacts on the environment from non-hazardous waste generation. Encourage continuous environmental improvement. Protect the health and safety of oil field workers and the general public. Avoid human-caused changes in predator populations.

Requirement/Standard: Lessees/permittees shall prepare and implement a comprehensive waste management plan for all phases of exploration and development, including seismic activities. Management decisions affecting waste generation shall be addressed in the following order of priority: 1) prevention and reduction, 2) recycling, 3) treatment, and 4) disposal. The plan shall be submitted to the AO for approval, in consultation with Federal, State and North Slope Borough regulatory and resource agencies, as appropriate (based on agency legal authority and jurisdictional responsibility), as part of a plan of operations or other similar permit application. The plan shall consider and take into account the following requirements:

- a) Methods to avoid attracting wildlife to food and garbage: All feasible precautions shall be taken to avoid attracting wildlife to food and garbage. (A current list of approved precautions, specific to type of permitted use, can be obtained from the AO.)
- b) Disposal of putrescible waste: Current requirements prohibit the burial of garbage. Lessees and permitted users shall have a written procedure to ensure that the handling and disposal of putrescible waste will be accomplished in a manner that prevents the attraction of wildlife. All putrescible waste shall be incinerated, backhauled, or composted in a manner approved by the AO. All solid waste, including incinerator ash, shall be disposed of in an approved waste-disposal facility in accordance with U.S. Environmental Protection Agency (EPA) and Alaska Department of Environmental Conservation (ADEC) regulations and procedures. The burial of human waste is prohibited except as authorized by the AO.
- c) Disposal of pumpable waste products: Except as specifically provided, BLM currently requires all pumpable solid, liquid, and sludge waste be disposed of by injection in all pumpable solid, liquid, and sludge waste be disposed of by injection in accordance with EPA, ADEC, and the Alaska Oil and Gas Conservation Commission regulations and procedures. On-pad temporary muds and cuttings storage, as approved by ADEC, will be allowed as necessary to facilitate annular injection and/or backhaul operations.

d) Disposal of wastewater and domestic wastewater: BLM currently prohibits wastewater discharges or disposal of domestic wastewater into bodies of fresh, estuarine, and marine water, including wetlands, unless authorized by the National Pollution Discharge Elimination System (NPDES) or State permit.

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APPENDIX B: Stipulations and Required Operating Procedures

The stipulations and required operating procedures (ROP's) were developed through the IAP/EIS process. They are based on knowledge of the resources in the planning area and current industry practices. They are consistent with existing policies and laws.

In developing these stipulations and ROP's, BLM has tried not to include requirements that already exist as regulation or law. Most requirements identified here as stipulations constitute significant restrictions on the conduct of operations under a lease. For example, a stipulation that does not allow permanent facilities within one mile of a river could result in a well being located far enough from the (lessee's) optimum site to prevent an oil reservoir from being fully developed. Such restrictions must be attached to the lease. As part of a lease contract, lease stipulations are specific to the lessee. All oil and gas activity permits subsequently issued to a lessee will comply with the lease stipulations appropriate to the activity under review.

The ROP's are pre-application requirements, procedures, management practices, or design features that BLM adopts here as operational requirements. These requirements will be addressed through the permitting process. An oil and gas lease does not in itself authorize any on-the-ground activity. Seismic operations, drilling, ice road construction, pipeline construction, etc. require additional land use authorizations. Any applicant requesting such authorization will have to address the required operating procedures either before submitting the application (e.g., subsistence consultation, brant surveys) or as part of the application proposal (e.g., proposal states garbage will not be buried, or pipelines and roads will be separated by 500 ft or more). Requirements that are met prior to submission of the application, as well as procedures, practices, and design features that are an integral part of a proposal, do not need to be stipulated in a permit or lease. Because ROP's are identified in this ROD as operational requirements, not as lease stipulations, their applicability goes beyond the oil and gas leasing to any permitted activity where the requirement is relevant.

The Authorized Officer (AO) may add additional more restrictive stipulations as determined necessary by further NEPA analysis and as developed through consultation with other Federal, State, and NSB regulatory and resource agencies. Laws or regulations may require other Federal, State, and NSB permits (e.g., Clean Water Act [CWA] Section 404) for an oil and gas project to proceed. Specific State permits are required when the State has authority, under Federal or State law or regulation, to enforce the provision in question. Specific permits issued by Federal agencies other than BLM could include permit conditions that are more stringent than those presented below. Standardized stipulations that BLM commonly applies to authorized activities are listed in Appendix 13 of the Final IAP/EIS.

Definitions. The following definitions apply to stipulations and required operating procedures described here.

Active Floodplain: The lowland and relatively flat areas adjoining inland and coastal waters, including the flood-prone areas of offshore islands, composing, at a minimum, that area subject to a one percent or greater chance of flooding in any given year (also referred to as the 100-year or base floodplain).

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Body of Water or Waterbody: A lake, river, stream, creek, or pond that holds water throughout the summer and supports a minimum of aquatic life.

Permanent Oil and Gas Facilities: Production facilities, pipelines, roads, airstrips, production pads, docks and other bottom-founded structures, seawater-treatment plants, and other structures associated with an oil and gas operation that occupy land for more than one winter season. Material sites and seasonal facilities such as ice roads and ice pads are excluded, even when the pads are designed for use in successive winters.

Exceptions to Lease Stipulations and Required Operating Procedures. As specified in Congressional legislation, exploration, development and production of the NPR-A shall be conducted in a manner that provides maximum protection for special areas, prevents unnecessary and undue surface damage, minimizes ecological disturbances, and avoids conflicts with subsistence activities. However, such protection efforts are generally not intended as a prohibition of petroleum and related activities. The BLM acknowledges that effective mitigation will come with some cost to oil and gas operations. However, a balance must be achieved to provide opportunities for successful oil and gas operations while providing maximum protection for the environment and local residents. While many prescriptive stipulations have been converted to performance-based lease stipulations and required operating procedures based on resource management objectives, there will remain a need to consider exceptions and modifications on a case-by-case basis. The following guidelines for considering and granting exceptions to stipulations or ROP's will be used.

In the event that an exception to a stipulation or ROP is requested and before an exception may be granted, the lessee/permittee shall demonstrate to the satisfaction of the AO that implementation of the stipulation or ROP is technically not feasible; or is economically prohibitive; or an environmentally preferable alternative is available and the alternative proposed by the lessee/permittee fully satisfies the objective(s) of the Lease Stipulation or ROP.

The lessee/permittee shall notify the AO in a timely manner that an exception is going to be requested. In demonstrating to the AO that the alternative proposal meets the above criteria, the lessee/permittee shall provide sufficient documentation (technical reports, new/revised procedures, scientific research results, etc.) to allow for a thorough review/evaluation of the proposal.

Before considering or granting an exception to a stipulation or ROP, consultation requirements must be met. Except in the case of an emergency, the AO shall consult with the appropriate Federal, State, and NSB regulatory and resource agencies before an exception may be granted. The AO's power to grant exceptions to a stipulation or ROP is limited to those subjects, uses, and permits over which the BLM has authority. Exceptions may be granted in emergencies involving human health and safety.

The BLM may also initiate an exception to a stipulation or ROP when information (technical reports, new/revised procedures, scientific research results, etc.) becomes available that demonstrates the alternative proposal satisfies the objective of the stipulation or ROP and meets the management objectives for the area in which the alternative is proposed. Before granting an exception (other than those granted for emergencies), whether proposed by the lessee/permittee or the BLM, the action shall undergo appropriate NEPA review.

A. Waste Prevention, Handling, Disposal; Spills, and Public Safety

A-1 Required Operating Procedure

Objective: Protect the health and safety of oil field workers and the general public by avoiding the disposal of solid waste and garbage near areas of human activity.

Requirement/Standard: Areas of operation shall be left clean of all debris.

A-2 Required Operating Procedure

Objective: Minimize impacts on the environment from non-hazardous waste generation. Encourage continuous environmental improvement. Protect the health and safety of oil field workers and the general public. Avoid human-caused changes in predator populations.

Requirement/Standard: Lessees/permittees shall prepare and implement a comprehensive waste management plan for all phases of exploration and development, including seismic activities. Management decisions affecting waste generation shall be addressed in the following order of priority: 1) prevention and reduction, 2) recycling, 3) treatment, and 4) disposal. The plan shall be submitted to the AO for approval, in consultation with Federal, State and North Slope Borough regulatory and resource agencies, as appropriate (based on agency legal authority and jurisdictional responsibility), as part of a plan of operations or other similar permit application. The plan shall consider and take into account the following requirements:

- a) Methods to avoid attracting wildlife to food and garbage: All feasible precautions shall be taken to avoid attracting wildlife to food and garbage. (A current list of approved precautions, specific to type of permitted use, can be obtained from the AO.)
- b) Disposal of putrescible waste: Current requirements prohibit the burial of garbage. Lessees and permitted users shall have a written procedure to ensure that the handling and disposal of putrescible waste will be accomplished in a manner that prevents the attraction of wildlife. All putrescible waste shall be incinerated, backhauled, or composted in a manner approved by the AO. All solid waste, including incinerator ash, shall be disposed of in an approved waste-disposal facility in accordance with U.S. Environmental Protection Agency (EPA) and Alaska Department of Environmental Conservation (ADEC) regulations and procedures. The burial of human waste is prohibited except as authorized by the AO.
- c) Disposal of pumpable waste products: Except as specifically provided, BLM requires all pumpable solid, liquid, and sludge waste be disposed of by injection in accordance with EPA, ADEC, and the Alaska Oil and Gas Conservation Commission regulations and procedures. On-pad temporary muds and cuttings storage, as approved by ADEC, will be allowed as necessary to facilitate annular injection and/or backhaul operations.
- d) Disposal of wastewater and domestic wastewater: BLM prohibits wastewater discharges or disposal of domestic wastewater into bodies of fresh, estuarine, and marine water, including wetlands, unless authorized by the National Pollution Discharge Elimination System (NPDES) or State permit.

A-3 Required Operating Procedure

Objective: Minimize pollution through effective hazardous-materials contingency planning.

Requirement/Standard: For oil- and gas-related activities, a Hazardous-Materials Emergency-Contingency Plan shall be prepared and implemented before transportation, storage, or use of fuel or hazardous substances. The plan shall include a set of procedures to ensure prompt response, notification, and cleanup in the event of a hazardous substance spill or threat of a release. Procedures applicable to fuel and hazardous substances handling (associated with transportation vehicles) may consist of Best Management Practices if approved by the AO. The plan shall include a list of resources available for response (e.g., heavy-equipment operators, spill-cleanup materials or companies), and names and phone numbers of Federal, State, and NSB contacts. Other Federal and

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State regulations may apply and require additional planning requirements. All staff shall be instructed regarding these procedures.

A-4 Required Operating Procedure

Objective: Minimize the impact of contaminants on fish, wildlife, and the environment, including wetlands, marshes and marine waters, as a result of fuel, crude oil and other liquid chemical spills. Protect subsistence resources and activities. Protect public health and safety.

Requirement/Standard: Before initiating any oil and gas or related activity or operation, including field research/surveys and/or seismic operations, lessees/permittees shall develop a comprehensive spill prevention and response contingency plan per 40 CFR 112 (OPA). The plan shall consider and take into account the following requirements:

- a) On-site clean-up materials. Sufficient oil-spill-cleanup materials (absorbents, containment devices, etc.) shall be stored at all fueling points and vehicle-maintenance areas and shall be carried by field crews on all overland moves, seismic work trains, and similar overland moves by heavy equipment.
- b) Storage Containers. Fuel and other petroleum products and other liquid chemicals shall be stored in proper containers at approved locations. Except during overland moves and seismic operations, fuel, other petroleum products, and other liquid chemicals designated by the AO in excess of 1,320 gallons in storage capacity, shall be stored within an impermeable lined and diked area or within approved alternate storage containers such as overpacks, capable of containing 110 percent of the stored volume.
- c) Liner Materials. Liner material shall be compatible with the stored product and capable of remaining impermeable during typical weather extremes expected throughout the storage period.
- d) Permanent Fueling Stations. Permanent fueling stations shall be lined or have impermeable protection to prevent fuel migration to the environment from overfills and spills.
- e) Proper Identification of Containers. All fuel containers, including barrels and propane tanks, shall be marked with the responsible party's name, product type, and year filled or purchased.
- f) Notice of Reportable Spills. Notice of any reportable spill (as required by 40 CFR 300.125 and 18 AAC 75.300) shall be given to the AO as soon as possible, but no later than 24 hours after occurrence.

A-5 Required Operating Procedure

Objective: Minimize the impact of contaminants from refueling operations on fish, wildlife, and the environment.

Requirement/Standard: Refueling of equipment within 500 ft of the active flood plain of any fish-bearing waterbody and 100 ft from non-fish-bearing water bodies is prohibited. Small caches (up to 210 gallons) for motorboats float planes, ski planes, and small equipment, e.g. portable generators and water pumps, will be permitted. The AO may allow storage and operations at areas closer than the stated distances if properly designed to account for local hydrologic conditions.

A-6 Required Operating Procedure

Objective: Minimize the impact on fish, wildlife, and the environment from contaminants associated with the exploratory drilling process.

Standard/Requirement: Surface discharge of reserve-pit fluids is prohibited unless authorized by applicable NPDES, ADEC, and NSB permits (as appropriate) and approved by the AO.

A-7 Required Operating Procedure

Objective: Minimize the impacts to the environment of disposal of produced fluids recovered during the development phase on fish, wildlife, and the environment.

Requirement/Standard: Procedures for the disposal of produced fluids shall meet the following:

- a) In upland areas, including wetlands, disposal will be by subsurface-disposal techniques. The AO may permit alternate disposal methods if the lessee demonstrates that subsurface disposal is not

feasible or prudent and the alternative method will not result in adverse environmental effects.

b) In marine waters, approval of discharges by the AO will be based on a case-by-case review of environmental factors and consistency with the conditions of an NPDES permit. Discharge of produced fluids will be prohibited at locations where currents and water depths, in combination with other conditions, are not adequate to prevent impacts to known biologically sensitive areas. Alternate disposal methods will require an NPDES permit certified by the State.

A-8 Required Operating Procedure

Objective: Minimize conflicts resulting from interaction between humans and bears during leasing and associated activities.

Requirement/Standard: Oil and gas lessees and their contractors and subcontractors will, as a part of preparation of lease operation planning, prepare and implement bear-interaction plans to minimize conflicts between bears and humans. These plans shall include measures to:

- a) Minimize attraction of bears to the drill sites.
- b) Organize layout of buildings and work areas to minimize human/bear interactions.
- c) Warn personnel of bears near or on drill sites and identify proper procedures to be followed.
- d) Establish procedures, if authorized, to deter bears from the drill site.
- e) Provide contingencies in the event bears do not leave the site or cannot be deterred by authorized personnel.
- f) Discuss proper storage and disposal of materials that may be toxic to bears.
- g) Provide a systematic record of bears on the site and in the immediate area.

B. Water Use for Permitted Activities

B-1 Required Operating Procedure

Objective: Maintain populations of, and adequate habitat for, fish and invertebrates.

Requirement/Standard: Water withdrawal from rivers and streams during winter is prohibited.

B-2 Required Operating Procedure

Objective: Maintain natural hydrologic regimes in soils surrounding lakes and ponds and maintain populations of, and adequate habitat for, fish and invertebrates.

Requirement/Standard: Water withdrawal from lakes may be authorized on a site-specific basis depending on size, water volume, depth and fish population and species diversification. Current water withdrawal requirements specify:

- a) Water withdrawals from any fish bearing lake 7 feet or deeper shall be limited to 15 percent of the estimated free water volume located beneath the ice.
- b) Water withdrawals from lakes with depths between 5 and 7 feet that contain only ninespine stickleback and/or Alaska blackfish are limited to up to 30 percent of the under-ice volume.
- c) Water withdrawal may be authorized from any lake if the proponent demonstrates that no fish exist in the lake.
- d) A water-monitoring plan may be required to assess draw down and water quality changes before, during, and after pumping any fish-bearing lake.
- e) The removal of naturally grounded ice may be authorized from lakes and shallow rivers on a site-specific basis depending upon its size, water volume, depth, and fish population and species diversification.
- f) Removed ice aggregate shall be included in the 15 percent or 30 percent (whichever is the appropriate case) withdrawal limits, unless otherwise approved.
- g) Any water intake structures in fish-bearing waters shall be designed, operated and maintained to prevent fish entrapment, entrainment, or injury.
- h) Compaction of snow cover or snow removal from fish-bearing water bodies shall be prohibited except at approved ice road crossings, water pumping stations on lakes or areas of grounded ice.

C. Winter Overland Moves and Seismic Work

The following stipulations and ROP's apply to overland moves, seismic work, and any similar cross-country vehicle use of heavy equipment on non-roaded surfaces during the winter season. These restrictions do not apply to the use of such equipment on ice roads after they are constructed.

C-1 Required Operating Procedure

Objective: Protect grizzly bear, polar bear, and marine mammal denning and/or birthing locations.

Requirement/Standard:

- a) Cross-country use of heavy equipment and seismic activities are prohibited within ½ mile of occupied grizzly bear dens identified by Alaska Department of Fish & Game (ADF&G) unless alternative mitigation measures are approved by the AO in consultation with ADF&G.
- b) Cross-country use of heavy equipment and seismic activities are prohibited within 1 mile of known or observed polar bear dens or seal birthing lairs. Operators shall consult with the U.S. Fish and Wildlife FWS (FWS) and/or NOAA Fisheries, as appropriate, before initiating activities in coastal habitat between October 30 and April 15.

C-2 Required Operating Procedure

Objective: Protect stream banks, minimize compaction of soils, and minimize the breakage, abrasion, compaction, or displacement of vegetation.

Requirement/Standard:

- a) Ground operations shall be allowed only when frost and snow covers are at sufficient depths to protect the tundra. Ground operations shall cease when the spring snowmelt begins, approximately May 5 in the foothills area where elevations reach or exceed 500 ft, and approximately May 15 in the northern coastal areas. The exact dates will be determined by the AO.
- b) Only low-ground-pressure vehicles shall be used for on-the-ground activities off ice roads or pads. A list of approved vehicles can be obtained from the AO. Limited use of tractors equipped with wide tracks or "shoes" will be allowed to pull trailers, sleighs, or other equipment with approved undercarriage. (**Note:** This provision does not include the use of heavy equipment such as front-end loaders and similar equipment required during ice road construction.)
- c) Bulldozing of tundra mat and vegetation, trails, or seismic lines is prohibited; however, on existing trails, seismic lines or camps, clearing of drifted snow is allowed to the extent that the tundra mat is not disturbed.
- d) To reduce the possibility of ruts, vehicles shall avoid using the same trails for multiple trips unless necessitated by serious safety or superseding environmental concern. This provision does not apply to hardened snow trails for use by low-ground-pressure vehicles such as Rolligons.
- e) The location of winter ice roads shall be designed and located to minimize compaction of soils and the breakage, abrasion, compaction, or displacement of vegetation. Offsets may be required to avoid using the same route or track in the subsequent year.

C-3 Required Operating Procedure

Objective: Maintain natural spring runoff patterns, avoid flooding, prevent streambed sedimentation, protect water quality and protect stream banks.

Requirement/Standard: Crossing of waterway courses shall be made using a low-angle approach. Snow and ice bridges shall be removed, breached or slotted before spring breakup. Ramps and bridges shall be substantially free of soil and debris.

C-4 Required Operating Procedure

Objective: Avoid additional freeze down of deep-water pools harboring over-wintering fish and invertebrates used by fish.

Requirement/Standard: Travel up and down stream beds is prohibited. Rivers and streams shall be crossed at shallow riffles from point bar to point bar whenever possible.

D. Oil and Gas Exploratory Drilling

D-1 Lease Stipulation

Objectives: Protect fish-bearing rivers, streams and lakes from blowouts, and minimize alteration of riparian habitat.

Requirement/Standard: Exploratory drilling is prohibited in rivers and streams, as determined by the active floodplain, and fish-bearing lakes, except where the lessee can demonstrate on a site-specific basis that impacts would be minimal or it is determined that there is no feasible or prudent alternative.

D-2 Lease Stipulation

Objective: Minimize surface impacts from exploratory drilling.

Requirement/Standard: Exploratory drilling shall be limited to temporary facilities such as ice pads, ice roads, ice airstrips, temporary platforms, etc., unless the lessee demonstrates that construction of permanent facilities such as gravel airstrips, storage pads, and connecting roads is environmentally preferable or necessary to carry out exploration more economically.

E. Facility Design and Construction

E-1 Required Operating Procedure

Objective: Protect subsistence use and access to traditional subsistence hunting and fishing areas, and minimize the impact of oil and gas activities on air, land, water, fish and wildlife resources.

Requirement/Standard: All roads must be designed, constructed, maintained and operated to minimize environmental impacts and to protect subsistence use and access to traditional subsistence hunting and fishing areas. Subject to approval by the AO, the construction, operation and maintenance of oil field roads is the responsibility of the lessee. Note: This provision does not apply to intercommunity or other permanent roads constructed with public funds for general transportation purposes. This preserves the opportunity to plan, design and construct public transportation systems to meet the economic, transportation, and public health and safety needs of the State of Alaska and/or communities within NPR-A.

E-2 Lease Stipulation

Objective: Protect fish-bearing water bodies, water quality and aquatic habitats.

Requirement/Standard: The design and location of permanent oil and gas facilities within 500 feet of fish-bearing or 100 feet of non-fish-bearing water bodies will only be approved on a case-by-case basis if the lessee can demonstrate that impacts to fish, water quality, and aquatic and riparian habitats are minimal. (Note: Also refer to Area-Specific Stipulations and ROP's for Rivers (Stipulation K-1) and Deep Water Lakes (Stipulation K-2).)

E-3 Lease Stipulation

Objective: Maintain free passage of marine and anadromous fish, and protect subsistence use and access to traditional subsistence hunting and fishing.

Requirement/Standard: Causeways and docks are prohibited in river mouths or deltas. Artificial gravel islands and bottom-founded structures are prohibited in river mouths or active stream channels on river deltas. Causeways, docks, artificial islands, and bottom-founded structures shall be designed to ensure free passage of marine and anadromous fish and to prevent significant changes to nearshore oceanographic circulation patterns and water quality characteristics. A monitoring program may be required to address the objectives of water quality and free passage of fish.

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E-4 Required Operating Procedure

Objective: Minimize the potential for pipeline leaks, the resulting environmental damage and industrial accidents.

Requirement/Standard: All pipelines shall be designed, constructed, and operated under an AO-approved Quality Assurance/Quality Control plan that is specific to the product transported.

E-5 Required Operating Procedure

Objective: Minimize impacts of the development footprint.

Requirement/Standard: Facilities shall be designed and located to minimize development footprint to the maximum extent practicable considering environmental, economic, and social impacts. **Note:** Where aircraft traffic is an issue, consideration shall be given to balancing gravel pad size and available supply storage capacity with potential reductions in the use of aircraft to support oil and gas operations.

E-6 Required Operating Procedure

Objective: Reduce the potential for ice-jam flooding, erosion, alteration of natural drainage patterns, and restriction of fish passage.

Requirement/Standard: Stream and marsh crossings shall be designed and constructed to ensure free passage of fish, maintain natural drainage, and minimal adverse effects to natural stream flow.

Note: Bridges, rather than culverts, are the preferred method for crossing rivers. When necessary, culverts can be constructed on smaller streams, if they are large enough to avoid restricting fish passage or adversely affecting natural stream flow.

E-7 Required Operating Procedure

Objective: Minimize disruption of caribou movement and subsistence use.

Requirement/Standard: Pipelines and roads shall be designed to allow the free movement of caribou and the safe, unimpeded passage of the public while participating in traditional subsistence activities. Listed below are the ly accepted design practices:

- a) Above ground pipelines shall be elevated a minimum of 7 feet as measured from the ground to the bottom of the pipeline at vertical support members.
- b) In areas where facilities or terrain may funnel caribou movement, ramps over pipelines, buried pipelines, or pipelines buried under roads may be required by the AO after consultation with Federal, State, and North Slope Borough regulatory and resource agencies (as appropriate, based on agency legal authority and jurisdictional responsibility).
- c) A minimum distance of 500 feet between pipelines and roads should be maintained when feasible. Separating roads from pipelines may not be feasible within narrow land corridors between lakes and where pipelines and roads converge on a drill pad.

E-8 Required Operating Procedure

Objective: Minimize the impact of mineral materials mining activities on air, land, water, fish, and wildlife resources.

Requirement/Standard: Gravel mine site design and reclamation will be in accordance with a plan approved by the AO. The plan shall consider:

- a) Locations outside the active flood plain.
- b) Design and construction of gravel mine sites within active flood plains to serve as water reservoirs for future use.
- c) Potential use of site for enhancing fish and wildlife habitat.

E-9 Required Operating Procedure

Objective: Avoidance of human-caused increases in populations of predators of ground nesting birds.

Requirement/Standard: Lessee shall utilize best available technology to prevent facilities from providing nesting, denning, or shelter sites for ravens, raptors, and foxes. The lessee shall provide the AO with an annual report on the use of oil and gas facilities by ravens, raptors and foxes as nesting, denning, and shelter sites.

E-10 Required Operating Procedure

Objective: Prevention of migrating waterfowl, including species listed under the Endangered Species Act, from striking oil and gas and related facilities during low light conditions.

Requirement/Standard: Except for safety lighting, illumination of higher structures shall be designed to direct artificial exterior lighting inward and downward, rather than upward and outward. All drilling structures, production facilities, and other structures that exceed 20 ft shall be illuminated as outlined above.

E-11 Required Operating Procedure

Objective: Minimize the take of species listed under the Endangered Species Act and minimize the disturbance of other species of interest from direct or indirect interaction with oil and gas facilities.

Requirement/Standard: In accordance with the guidance below, before the approval of facility construction, aerial surveys of breeding pairs of the following species shall be conducted within any area proposed for development.

Spectacled and/or Steller's Eiders: a) Surveys shall be conducted by the lessee for at least three (3) years before authorization of construction, if such construction is within the FWS North Slope Eider survey area (Map 62), and at least one (1) year outside that area. Results of aerial surveys and habitat mapping may require additional ground nest surveys. Spectacled and/or Steller's eider surveys shall be conducted following accepted BLM-protocol during the second week of June.

b) If spectacled and/or Steller's eiders are determined to be present within the proposed development area, the applicant shall consult with the FWS and BLM in the design and placement of roads and facilities in order to minimize impacts to nesting and brood-rearing eiders and their preferred habitats. Such consultation shall address timing restrictions and other temporary mitigating measures, construction of permanent facilities, placement of fill, alteration of eider habitat, aircraft operations, and introduction of high noise levels.

c) To reduce the possibility of spectacled and/or Steller's eiders from striking above-ground utility lines (power and communication), such lines shall either be buried in access roads, or suspended on vertical support members, to the extent practical. Support wires associated with communication towers, radio antennas, and other similar facilities, shall be clearly marked along their entire length to improve visibility for low flying birds. Such markings shall be jointly developed through consultation with FWS.

Yellow-billed Loon: a) Aerial surveys shall be conducted by the lessee for at least 3 years before authorization of construction of facilities proposed for development that are within 1 mile of a lake 25 acres or larger in size. These surveys along shorelines of large lakes shall be conducted following accepted BLM protocol during nesting in late June and during brood rearing in late August.

b) Should yellow-billed loons be present, the design and location of facilities must be such that disturbance is minimized. Current accepted mitigation is a one-mile buffer around all recorded nest sites and a minimum 500-meter buffer around the remainder of the lake shoreline. Development may be prohibited within buffers or activities curtailed while birds are present.

E-12 Required Operating Procedure

Objective: Use ecological mapping as a tool to assess wildlife habitat before development of permanent facilities, to conserve important habitat types, including wetlands, during development.

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Requirement/Standard: An ecological land classification map of the development area shall be developed before approval of facility construction. The map will integrate geomorphology, surface-form and vegetation at a scale, level of resolution, and level of positional accuracy adequate for detailed analyses of development alternatives. The map shall be prepared in time to plan one season of ground-based wildlife surveys, if deemed necessary by the AO, before approval of exact facility location and facility construction.

E-13 Required Operating Procedure

Objective: Protect cultural and paleontological resources.

Requirement/Standard: Lessees shall conduct a cultural and paleontological resources survey prior to any ground-disturbing activity. Upon finding any potential cultural or paleontological resource, the lessee or their designated representative shall notify the AO and suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the AO.

F. Use of Aircraft for Permitted Activities

F-1 Required Operating Procedure

Objective: Minimize the effects of low-flying aircraft on wildlife, traditional subsistence activities, and local communities.

Requirement/Standard: The lessee shall ensure that aircraft used for permitted activities maintain altitudes according to the following guidelines:

- a) Aircraft shall maintain an altitude of at least 1,500 ft above ground level (AGL) when within ½ mile of cliffs identified as raptor nesting sites from April 15 through August 15 and within ½ mile of known gyrfalcon nest sites from March 15 to August 15, unless doing so would endanger human life or violate safe flying practices. Permittees shall obtain information from BLM necessary to plan flight routes when routes may go near falcon nests.
- b) Aircraft shall maintain an altitude of at least 1,000 ft AGL (except for takeoffs and landings) over caribou winter ranges from December 1 through May 1, unless doing so would endanger human life or violate safe flying practices. Caribou wintering areas will be defined annually by the AO.
- c) The number of takeoffs and landings to support oil and gas operations with necessary materials and supplies should be limited to the maximum extent possible. During the design of proposed oil and gas facilities, larger landing strips and storage areas should be considered so as to allow larger aircraft to be employed, resulting in a fewer number of flights to the facility.
- d) Use of aircraft, especially rotary wing aircraft, near known subsistence camps and cabins or during sensitive subsistence hunting periods (spring goose hunting and fall caribou and moose hunting) should be kept to a minimum.
- e) Aircraft used for permitted activities shall maintain an altitude of at least 2,000 ft AGL (except for takeoffs and landings) over the Caribou Study Area (Map 91) from June 15 through July 31, unless doing so would endanger human life or violate safe flying practices.
- f) Aircraft shall maintain an altitude of at least 2,000 ft AGL (except for takeoffs and landings) over the Caribou Coastal Insect-Relief Areas (Map 91) from June 15 through July 31, unless doing so would endanger human life or violate safe flying practices.

G. Oil Field Abandonment

G-1 Lease Stipulation

Objective: Ensure the final disposition of the land meets the current and future needs of the public.

Requirement/Standard: Upon abandonment or expiration of the lease, all oil- and gas-related facilities shall be removed and sites rehabilitated to as near the original condition as practicable, subject to the review of the AO. The AO may determine that it is in the best interest of the public to retain some or all facilities.

H. Subsistence Consultation for Permitted Activities

"Consultation" may take place by in-person meetings, teleconference, videoconference, and exchange of written documents, e-mail, or other means appropriate to the circumstances. Consultation does not include public meetings that are primarily for the purpose of information distribution, unless it is explained at the beginning of the meeting that there is an open dialogue, and that comments, concerns, or other information are being actively solicited.

H-1 Required Operating Procedure

Objective: Provide opportunities for participation in planning and decision-making to prevent unreasonable conflicts between subsistence uses and oil and gas and related activities.

Requirement/Standard: Lessee/permittee shall consult directly with affected communities using the following guidelines.

- a) Before submitting an application to the BLM, the applicant shall consult with directly affected subsistence communities, the North Slope Borough, and the NPR-A Subsistence Advisory Panel to discuss the siting, timing and methods of proposed operations. Through this consultation, the applicant shall make every reasonable effort, including such mechanisms as conflict avoidance agreements and mitigating measures, to ensure that proposed activities will not result in unreasonable interference with subsistence activities.
- b) The applicant shall submit documentation of consultation efforts as part of its operations plan. Applicants should submit the proposed plan of operations to provide an adequate time for review and comment by the NPR-A Subsistence Advisory Panel and to allow time for formal government-to-government consultation with Native Tribal Governments. The applicant shall submit documentation of its consultation efforts and a written plan that shows how its activities, in combination with other activities in the area, will be scheduled and located to prevent unreasonable conflicts with subsistence activities. Operations plans must include a discussion of the potential effects of the proposed operation, and the proposed operation in combination with other existing or reasonably foreseeable operations.
- c) A subsistence plan addressing the following items must be submitted.
 1. A detailed description of the activity(ies) to take place (including the use of aircraft).
 2. A description of how the lessee/permittee will minimize and/or deal with any potential impacts identified by the AO during the consultation process
 3. A detailed description of the monitoring effort to take place, including process, procedures, personnel involved and points of contact both at the work site and in the local community.
 4. Communication elements to provide information on how the applicant will keep potentially affected individuals and communities up-to-date on the progress of the activities and locations of possible, short-term conflicts (if any) with subsistence activities. Communication methods could include holding community meetings, open house meetings, workshops, newsletters, radio and television announcements, etc.
 5. Procedures necessary to facilitate access by subsistence users to conduct their activities.
 6. In the event that no agreement is reached between the parties, the AO shall consult with the directly involved parties and determine which activities will occur, including the timeframes.
 7. During development, monitoring plans must be established for new permanent facilities, including pipelines, to assess an appropriate range of potential effects on resources and subsistence as determined on a case-by-case basis given the nature and location of the facilities. The scope, intensity, and duration of such plans will be established in consultation with the AO and Subsistence Advisory Panel.

H-2 Required Operating Procedure

Objective: Prevent unreasonable conflicts between subsistence activities and geophysical (seismic) exploration.

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Requirement/Standard: In addition to the consultation process described above for permitted activities, before applying for permits to conduct geophysical (seismic) exploration, the applicant shall consult with local communities and residents:

- a) Because of the large land area covered by typical geophysical operations and the potential to impact a large number of subsistence users during the exploration season, the permittee/operator will notify, in writing, all potentially affected long-term cabin and camp users.
- b) The official recognized list of cabin and campsite users is the North Slope Borough's 2001 (or most current) inventory of cabins and campsites.
- c) For the purpose of this standard, potentially affected cabins and campsites are defined as any camp or campsite within the boundary of the area subject to proposed geophysical exploration and/or within 1,200 feet of actual or planned travel routes used to supply the seismic operations while it is in operation.
- d) A copy of the notification letter and a list of potentially affected users shall also be provided to the office of the appropriate Native Tribal Government.
- e) Based on that consultation, the AO may prohibit seismic work up to 1,200 feet of any known, long-term, cabin or campsite. Generally, the AO will allow wintertime seismic work to be conducted within 300 feet of a long-term cabin or campsite that is not in use.

I. Orientation Programs Associated with Permitted Activities

I-1 Required Operating Procedure

Objective: Minimize cultural and resource conflicts.

Requirement/Standard: All personnel involved in oil and gas and related activities shall be provided information concerning applicable stipulations, required operating procedures, standards, and specific types of environmental, social, traditional, and cultural concerns that relate to the region. The lessee/permittee shall ensure that all personnel involved in permitted activities shall attend an orientation program at least once a year. The proposed orientation program shall be submitted to the AO for review and approval and should:

- a) Provide sufficient detail to notify personnel of applicable stipulations and required operating procedures as well as inform individuals working on the project of specific types of environmental, social, traditional and cultural concerns that relate to the region.
- b) Address the importance of not disturbing archaeological and biological resources and habitats, including endangered species, fisheries, bird colonies, and marine mammals, and provide guidance on how to avoid disturbance.
- c) Include guidance on the preparation, production, and distribution of information cards on endangered and/or threatened species.
- d) Be designed to increase sensitivity and understanding of personnel to community values, customs, and lifestyles in areas in which personnel will be operating.
- e) Include information concerning avoidance of conflicts with subsistence, commercial fishing activities, and pertinent mitigation.
- f) Include information for aircraft personnel concerning subsistence activities and areas/seasons that are particularly sensitive to disturbance by low flying aircraft. Of special concern is aircraft use near traditional subsistence cabins and campsites, flights during spring goose hunting and fall caribou and moose hunting seasons, and flights near North Slope communities.
- g) Provide that individual training is transferable from one facility to another, except for elements of the training specific to a particular site.
- h) Include on-site records of all personnel who attend the program for so long as the site is active, though not to exceed the 5 most recent years of operations. This record shall include the name and dates(s) of attendance of each attendee.
- i) Include a module discussing bear interaction plans to minimize conflicts between bears and humans

J. Endangered Species Act Section 7 Consultation Stipulation

J-1 Lease Stipulation

The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation.

K. Area-Specific Lease Stipulations and Required Operating Procedures

K-1 Lease Stipulation—Rivers

Objective: Minimize the disruption of natural flow patterns and changes to water quality; the disruption of natural functions resulting from the loss or change to vegetative and physical characteristics of floodplain and riparian areas; the loss of spawning, rearing or over-wintering habitat for fish; the loss of cultural and paleontological resources; the loss of raptor habitat; impacts to subsistence cabin-and-camp-sites; the disruption of subsistence activities; and impacts to scenic and other resource values. (See ROP D-1 for restrictions on exploration activities.)

Requirement/ Standard: Permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines, are prohibited in the stream bed and adjacent to the rivers listed below at the distances identified. These setbacks are measured from the centerline of the river as determined by the current hydrology at the time of application. The standard setback is ½ mile and increased to ¾ mile where subsistence cabins and campsites are numerous. Along the Colville River and a portion of the Ikpikpuk a 1-mile setback is required to protect important raptor habitat. (For locations along rivers where setback distances change, see Map 20 in the Final Northwest National Petroleum Reserve-Alaska Integrated Activity Plan/Environmental Impact Statement). On a case-by case basis, and in consultation with Federal, State, and North Slope Borough regulatory and resource agencies (as appropriate, based on agency legal authority and jurisdictional responsibility), essential pipeline and road crossings perpendicular to the main channel will be permitted (unless noted otherwise) through setback areas. The above setbacks may not be practical within river deltas. In these situations, permanent facilities shall be designed to withstand a 200-year flood event.

a) Colville River: a 1-mile setback from the northern bluff (or bank if there is no bluff) of the Colville River extending the length of that portion of the river within the Planning Area. Road crossings intended to solely support oil and gas activities are prohibited. Note: This provision does not apply to intercommunity or other permanent roads constructed with public funds for general transportation purposes. This preserves the opportunity to plan, design, and construct public transportation systems to meet the economic, transportation, and public health and safety needs of the State of Alaska and/or communities within NPR-A.

b) Ikpikpuk River: a ¾-mile setback from the centerline of the Ikpikpuk River extending from the mouth south to Sec. 19, T7N, R11W, UM. From Sec. 19, T7N, R11W, UM to Sec. 4 T3N, R12W, UM, a 1-mile setback is required. Beginning at Sec. 4 T3N, R12W, UM, a ½-mile setback will be required to the confluence of the Kigalik River and Maybe Creek.

c) Alaktak River: a ¾-mile setback from the centerline of the Alaktak River extending from the mouth to the Ikpikpuk River.

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- d) Chipp River: a $\frac{3}{4}$ -mile setback from the centerline of the Chipp River extending from the mouth to the Ikpikpuk River.
- e) Oumalik River: a $\frac{3}{4}$ -mile setback from the centerline of the Oumalik River from the mouth upstream to Sec. 5, T8N, R14W, UM, and a $\frac{1}{2}$ -mile setback from Sec. 5, T8N, R14W, UM, upstream to Sec. 2, T5N, R15W, UM.
- f) Titaluk River: a $\frac{1}{2}$ -mile setback from the centerline of the Titaluk River from the confluence with the Ikpikpuk River upstream to Sec. 1, T2N, R22W, UM.
- g) Kigalik River: a $\frac{1}{2}$ -mile setback from the centerline of the Kigalik River from the confluence with the Ikpikpuk River upstream to the Planning area boundary.
- h) Maybe Creek: a $\frac{1}{2}$ -mile setback from the centerline of the Maybe Creek from the confluence with the Ikpikpuk River upstream to Sec. 8, T2S R6W, UM.
- i) Topagoruk River: a $\frac{3}{4}$ -mile setback from the centerline of the Topagoruk River from the mouth upstream to the confluence with Ishuktak Creek. A $\frac{1}{2}$ -mile setback from each bank upstream from the confluence with the Ishuktak to Sec. 3, T7N, R17W, UM.
- j) Ishuktak Creek: a $\frac{1}{2}$ -mile setback from the centerline of Ishuktak Creek from the confluence with the Topagoruk River to Sec. 24, T8N, R16W, UM.
- k) Meade River: a $\frac{3}{4}$ -mile setback from the centerline of the Meade River upstream to Sec. 6, T6N, R21W, UM. A $\frac{1}{2}$ -mile setback from each bank upstream from Sec. 6, T6N, R21W, UM to the Planning area boundary.
- l) Usuktuk River: a $\frac{3}{4}$ -mile setback from the centerline of the Usuktuk River upstream from the confluence with the Meade River to Sec. 36, T10N, R19W, UM.
- m) Pikroka Creek a $\frac{3}{4}$ -mile setback from the centerline of the Pikroka Creek upstream from the confluence with the Meade River to Sec. 11, T8N, R23W, UM.
- n) Nigisakturik River: a $\frac{3}{4}$ -mile setback from the centerline of the Nigisakturik River upstream from the confluence with the Meade River to Sec. 1, T11N, R25W, UM.
- o) Inaru River: a $\frac{3}{4}$ -mile setback from the centerline of the Inaru River from the mouth upstream to Sec. 17, T15N, R25W, UM.
- p) Kucheak Creek: a $\frac{3}{4}$ -mile setback from the centerline of Kucheak Creek from the confluence with the Inaru River upstream to Sec. 20, T13N, R24W, UM.
- q) Avalik River: a $\frac{1}{2}$ -mile setback from the centerline of the Avalik River along that portion of the river within the Planning area.
- r) Niklavik Creek: a $\frac{1}{2}$ -mile setback from the centerline of the Niklavik Creek from the confluence with the Inaru River upstream to Sec. 5, T17N, R21W, UM.

K-2 Lease Stipulation–Deep Water Lakes

Objective: Minimize the disruption of natural flow patterns and changes to water quality; the disruption of natural functions resulting from the loss or change to vegetative and physical characteristics of deep water lakes; the loss of spawning, rearing or over wintering habitat for fish; the loss of cultural and paleontological resources; impacts to subsistence cabin- and camp-sites; and the disruption of subsistence activities.

Requirement/ Standard: Permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines, are prohibited on the lake or lakebed and within $\frac{1}{4}$ mile of the ordinary high water mark of any deep lake as determined to be in lake zone III, i.e., depth > 4 meters (Mellor, 1985). On a case-by case basis, and in consultation with Federal, State and North Slope Borough regulatory and resource agencies (as appropriate based on agency legal authority and jurisdictional responsibility), essential pipeline, road crossings and other permanent facilities may be permitted through or in these areas where the lessee can demonstrate on a site-specific basis that impacts would be minimal or it is determined that there is no feasible or prudent alternative.

K-3 Lease Stipulation—Dease Inlet, Admiralty Bay, Elson Lagoon, and Associated Barrier Islands

Lease stipulations for Dease Inlet, Admiralty Bay, Elson Lagoon, and the Barrier Islands, contain specific criteria that have been incorporated into stipulation language. Because of sensitive biological resources and/or subsistence concerns of Dease Inlet, Admiralty Bay, Elson Lagoon, and inland of the Barrier Islands, the standard(s) for exploration and development activities are set high with the burden of proof resting with the lessee to demonstrate to the AO that granting an approval is warranted.

Objective: Protect fish and wildlife habitat, preserve air and water quality, and minimize impacts to traditional subsistence activities and historic travel routes on Dease Inlet, Admiralty Bay, and Elson Lagoon.

Requirement/Standard (Exploration): Oil and gas exploration operations (e.g., drilling, seismic exploration, and testing) are not allowed on Dease Inlet, Admiralty Bay, and Elson Lagoon (including natural and barrier islands), between May 15 and October 15 of each season. Requests for approval of any activities must be submitted in advance and must be accompanied by evidence and documentation that demonstrates to the satisfaction of the Authorized Office that the actions or activities meet all of the following criteria:

- a) Exploration activities will not unreasonably conflict with traditional subsistence uses or significantly impact seasonally concentrated fish and wildlife resources.
- b) There is adequate spill response capability to effectively respond during periods of broken ice and/or open water, or the availability of alternative methods to prevent well blowouts during periods when adequate response capability cannot be demonstrated. Such alternative methods may include improvements in blowout prevention technology, equipment and/or changes in operational procedures and "top-setting" of hydrocarbon-bearing zones.
- c) Reasonable efforts will be made to avoid or minimize impacts related to oil spill response activities, including vessel, aircraft, and pedestrian traffic will be conducted to minimize additional impacts or further compounding of "direct spill" related impacts on area resources and subsistence uses.
- d) The location of exploration and related activities shall be sited so as to not pose a hazard to navigation by the public using high-use traditional subsistence-related travel routes into and through Dease Inlet, Admiralty Bay and Elson Lagoon, as identified by the North Slope Borough, recognizing that marine and nearshore travel routes change over time, subject to shifting environmental conditions.
- e) Before conducting open water activities, the lessee shall consult with the Alaska Eskimo Whaling Commission and the North Slope Borough to minimize impacts to the fall and spring subsistence whaling activities of the communities of the North Slope.

Requirement/Standard (Development): With the exception of linear features such as pipelines, no permanent oil and gas facilities are permitted on or under the water within $\frac{3}{4}$ mile seaward of the shoreline (as measured from mean high tide) of Dease Inlet, Admiralty Bay, and Elson Lagoon or the natural islands (excluding Barrier Islands). Elsewhere, permanent facilities within Dease Inlet, Admiralty Bay, and Elson Lagoon will only be permitted on or under the water if they can meet all the following criteria:

- f) Design and construction of facilities shall minimize impacts to traditional subsistence uses, travel corridors, seasonally concentrated fish and wildlife resources.
- g) Daily operational activities, including use of support vehicles, watercraft, and aircraft traffic, alone or in combination with other past, present, and reasonably foreseeable activities, shall be conducted to minimize impacts to traditional subsistence uses, travel corridors, and seasonally concentrated fish and wildlife resources.
- h) The location of oil and gas facilities, including artificial islands, platforms, associated pipelines, ice or other roads, bridges or causeways, shall be sited and constructed so as to not pose a hazard to navigation by the public using traditional high-use subsistence-related travel routes into and through Dease Inlet, Admiralty Bay and Elson Lagoon as identified by the North Slope Borough.

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- i) Demonstrated year-round oil spill response capability, including the capability of adequate response during periods of broken ice or open water, or the availability of alternative methods to prevent well blowouts during periods when adequate response capability cannot be demonstrated. Such alternative methods may include seasonal drilling restrictions, improvements in blowout prevention technology, equipment and/or changes in operational procedures, and "top-setting" of hydrocarbon-bearing zones.
- j) Reasonable efforts will be made to avoid or minimize impacts related to oil spill response activities, including vessel, aircraft, and pedestrian traffic that add to impacts or further compound "direct spill" related impacts on area resources and subsistence uses.
- k) Before conducting open water activities, the lessee shall consult with the Alaska Eskimo Whaling Commission and the North Slope Borough to minimize impacts to the fall and spring subsistence whaling activities of the communities of the North Slope

K-4 Required Operating Procedure—Brant Survey Area

Objective: Minimize the loss or alteration of habitat for, or disturbance of, nesting and brood rearing brant in the Brant Survey Area.

Requirement/Standard:

- a) Aerial surveys for brant nesting colonies and brood-rearing areas shall be conducted for a minimum of 2 years before authorization of construction of permanent facilities. At a minimum, the survey area shall include the proposed development site(s) (i.e., the footprint) and the surrounding ½-mile area. These surveys shall be conducted following accepted BLM protocol.
- b) Development may be prohibited or activities curtailed within ½ mile of all identified brant nesting colonies and brood-rearing areas identified during the 2-year survey.

K-5 Required Operating Procedure—Caribou Study Area

Requirement/Standard: Before authorization of construction of permanent facilities, the lessee shall design and implement a study of caribou movement, especially during the insect season. The study would include a minimum of 3 years of current data on caribou movements. The study design shall be approved by the AO and should provide information necessary to determine facility (including pipeline) design and location. Lessees may submit individual study proposals or they may combine with other lessees in the area to do a single, joint study for the entire Caribou Study Area. Study data may be gathered concurrently with other activities.

K-6 Lease Stipulation—Coastal Areas

Objective: Minimize hindrance or alteration of caribou movement within caribou coastal insect-relief areas; to prevent contamination of marine waters; loss of important bird habitat; alteration or disturbance of shoreline marshes; and impacts to subsistence resources activities.

Requirement/Standard: In the Coastal Area, permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines established to support exploration and development activities shall be located at least ¾ mile inland from the coastline to the extent practicable. Where, as a result of technological limitations, economics, logistics, or other factors, a facility must be located within ¾ mile inland of the coastline, the practicality of locating the facility at previously occupied sites, such as the former Cape Simpson, Peard Bay, or Wainwright DEW-line sites, shall be considered. Use of existing sites within ¾ mile of the coastline shall also be acceptable where it is demonstrated that use of such sites will reduce impacts to shorelines or otherwise be environmentally preferable. All lessees/permittees involved in activities in the immediate area must coordinate use of these new or existing sites with all other prospective users.

K-7 Required Operating Procedure—Colville River Special Area

Objective: Prevent or minimize loss of raptor foraging habitat.

Requirement/Standard: If necessary to construct permanent facilities within the Colville River Special Area, all reasonable and practicable efforts shall be made to locate permanent facilities as far

from raptor nests as feasible. Within 15 mile of raptor nest sites, significant alteration of high quality foraging habitat shall be prohibited unless the lessee can demonstrate on a site-specific basis that impacts would be minimal or it is determined that there is no feasible or prudent alternative. Of particular concern are ponds, lakes, wetlands, and riparian habitats. Note: On a case-by case basis, and in consultation with appropriate Federal and State regulatory and resource agencies, essential pipeline and road crossings will be permitted through these areas where no other options are available.

K-8 Lease Stipulation–Kasegaluk Lagoon Special Area

Objective: Protect the habitat of the fish, waterfowl, and terrestrial and marine wildlife resources of Kasegaluk Lagoon, and protect traditional subsistence uses and public access to and through Kasegaluk Lagoon for current and future generations of North Slope residents.

Requirement/Standard: Within the Kasegaluk Lagoon Special Area, oil and gas leasing is approved subject to the decision to defer the implementation of oil and gas leasing in the "Leasing Deferral Area." When leasing is implemented, no permanent oil and gas facilities are permitted within the boundary of the Special Area. Geophysical (seismic) exploration is authorized subject to the terms and conditions provided in other applicable ROP's. No restrictions are imposed on traditional subsistence activities and access for subsistence purposes.

APPENDIX C: Final Endangered and Threatened Species Documentation



United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Fairbanks Fish and Wildlife Field Office
101 12th Avenue, Box 19, Room 110
Fairbanks, Alaska 99701
January 6, 2004



Memorandum

To: Curt Wilson, Chief of Environmental Coordination - Bureau of Land Management, Alaska State Office

From: Steve Lewis, Field Supervisor - U.S. Fish and Wildlife Service, Fairbanks Fish and Wildlife Field Office

Subject: Endangered Species Act, Section 7 Biological Opinion for the Northwest National Petroleum Reserve-Alaska Integrated Activity Plan / Environmental Impact Statement

This document transmits the U.S. Fish and Wildlife Service's (Service's) biological opinion (BO) based on our review of the Bureau of Land Management's (BLM's) biological assessment (BA) addressing their proposed Integrated Activity Plan/Environmental Impact Statement (IAP/EIS) for the Northwest National Petroleum Reserve-Alaska (NW NPR-A), and its effects on Steller's eiders (*Polysticta stelleri*) and spectacled eiders (*Somateria fischeri*) in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 et seq.). BLM originally initiated formal consultation on December 9, 2002, and the BO was finalized on May 20, 2003. However, BLM subsequently requested that formal consultation again be conducted, focusing on the Preferred Alternative, with the resulting BO to replace the original (May, 2003) BO. This request (signed October 2, 2003) was received on October 10, 2003, with additional materials received on September 30, October 17 and October 30, 2003.

The NW Planning Area is within the breeding ranges of spectacled and Alaska-breeding Steller's eiders, both listed as threatened under the Act. We are particularly concerned with the proposed action because the NW Planning Area contains important breeding habitat for over 70% of spectacled eiders and over 90% of Steller's eiders on the Arctic Coastal Plain (ACP) and both species are known to occur/nest at comparatively medium to high densities within BLM's designated Area of High Geologic Potential (Figure 1). Across the NW Planning Area, we have found that these two species are unevenly distributed. Although somewhat different, both species show a general gradient in density from high in the Northern and Western portions of the NW Planning Area to low in the

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Southern and Southeastern portions. Spectacled eiders tend to be more abundant and widely distributed than Steller's eiders across the NW Planning Area. However, occasionally Steller's eiders are more numerous in the immediate vicinity of Barrow. Steller's eiders appear to nest with greater regularity and in greater abundance near Barrow than elsewhere on the ACP.

Based on the information provided on the proposed and potential activities, and the information currently available on listed and proposed species and designated and proposed critical habitat, the Service has determined that it is unlikely that the action will violate section 7(a)(2) of the Act. Section 7(a)(2) of the Act states that Federal agencies must ensure that their activities are not likely to: 1) jeopardize the continued existence of any listed species, or 2) result in the destruction or adverse modification of designated critical habitat. We arrived at this "non-jeopardy" determination based on the impacts outlined in the Effects of the Action and Conclusion sections and on BLM's commitment to consult with respect to all aspects of future oil development, production and abandonment.

The Incidental Take Statement for this non-jeopardy opinion includes reasonable and prudent measures and terms and conditions which, upon finalization of this draft, become mandatory for the BLM to implement. These reasonable and prudent measures and implementing terms and conditions address take from habitat loss and migrants colliding with oil field structures within the NW Planning Area.

With this non-jeopardy BO, the Service would like to stress that given the amount of uncertainty surrounding where development may occur subsequent to leasing, how that development would be managed (discretion in enforcement of stipulations and required operating procedures), and how Steller's and spectacled eiders may be affected by oil and gas activity, it is difficult to evaluate potential impacts to these two species. However, the potential for significant impacts is highest in/adjacent to the northernmost portion of the NW Planning Area, because we believe a very large proportion of Alaska-breeding Steller's eiders nest within the area referred to as the "Barrow Triangle" (approximately the area north of 70° 50' N, between Dease Inlet and the Chukchi Sea). High-density nesting and brood-rearing areas for spectacled eiders are found within the wetlands south of Peard Bay, including the Kugrua and Kungok river drainages, and within the wetlands adjacent to Dease Inlet, including the Meade, Chip, and Inaru river drainages. If substantial development, beyond the levels identified in the BA, occurs within/adjacent to areas of high concentration for either species, the potential for significant impacts is high. If development is ultimately authorized in/adjacent to these areas, diligent management will likely be required to protect these threatened species (Area of High Geologic Potential overlaps or is adjacent to areas of comparatively high-density nesting and brood-rearing areas for spectacled eiders listed above). Because the effects of development on spectacled and Steller's eiders are inadequately studied and understood, we believe that the most certain way to avoid population-level impacts is to exclude development from high-density nesting areas.

Over the last several weeks the Service and BLM have worked closely together in reviewing and revising the attached document. We look forward to working collaboratively with the BLM staff in implementing the terms and conditions of the BO. A complete administrative record of this consultation is on file at the Fairbanks Fish and Wildlife Field Office, 101 12th Ave., Box 19, Room 110, Fairbanks, Alaska 99701. A chronology of the consultation history is provided in Appendix 1. If you have any comments or concerns regarding this BO, please have your staff contact Jonathan Priday, Endangered Species Biologist, Fairbanks Fish and Wildlife Field Office at 907/456-0499.

Attachment

21 November 2003

Memorandum

To: Administrative record for consultation on the Northwest National Petroleum Reserve-Alaska Integrated Activity Plan / Environmental Impact Statement

From: Jonathan Priday, U.S. Fish and Wildlife Service, Region 7, Fairbanks Fish and Wildlife Field Office, Fairbanks, Alaska

Subject: Evidence and reasoning to support the scope and conclusions of the November 7, 2003, biological opinion on the Bureau of Land Management's proposed Northwest National Petroleum Reserve-Alaska Integrated Activity Plan / Environmental Impact Statement

I drafted a biological opinion on the BLM's proposed Northwest National Petroleum Reserve-Alaska Integrated Activity Plan / Environmental Impact Statement (IAP/EIS). The biological opinion concludes that the proposed actions are not likely to jeopardize the continued existence of threatened and endangered species in the action area. This memorandum summarizes the evidence I considered and evaluated before reaching that conclusion and reasoning I applied to reach the conclusion. The standards of review I used as the basis for my analyses are summarized in Appendix 2 (at the end of this document).

Literature Searches

The primary sources of information I used for this consultation were papers written up for studies conducted/sponsored by the U.S. Fish and Wildlife Service (Grey Literature: see Appendix 2). The study papers were predominately unpublished and dealt primarily with distribution and abundance of threatened eiders, life history, breeding biology, distribution and abundance of potential predators, and impacts of nesting disturbance. Copies of these reports are on file with the Fairbanks Fish and Wildlife Field Office. Because very few published studies have been done on threatened eiders within the NW Planning Area, these reports proved the best scientific and commercial data available. I also extracted several primary sources from the reference sections of the recovery plans for both spectacled and Steller's eiders (see Appendix 2).

To supplement this information, I conducted numerous literature searches for primary, integrative and secondary sources using the U.S. Fish and Wildlife Service's Threatened and Endangered Species System (TESS), National Conservation Training Center E-Library, and Reference Service (FWRS). The TESS provides advanced species search and report information. The FWRS receives, indexes, stores and distributes copies of reports produced by State fish and wildlife agencies from research studies supported by Federal Aid in Sport Fish Restoration Act and Federal Aid in Wildlife Restoration Act funding. FWRS also receives reports produced by the Anadromous Fish Conservation Program, the Endangered Species Grant Program, and the Cooperative Fish and Wildlife Research Units. Additional collections located at FWRS include the Lead Shot/Lead Poisoning Clearinghouse, Boating Access/Boating Facilities Clearinghouse, and the Clean Vessel Act Education/Information Clearinghouse.

I ended literature searches on October 14, 2003, to make it possible to complete the draft opinion one week before the November 30, 2003, deadline. I imported the results of all my literature searches into a single file, examined all of the relevant results through the National Conservation Training Center Electronic Library, the University of Alaska Fairbanks Library and a small library located at the Fairbanks Fish and Wildlife Field Office.

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During this consultation, I was fully aware of the controversy surrounding BLM's proposal. I had read testimony from public hearings held in Anchorage, Barrow and Fairbanks, Alaska on the proposed IAP/EIS for the NW Planning Area and thought about all of the arguments raised by supporters and opponents. To determine if these arguments could be supported by more rigorous analyses, I conducted additional literature searches. I also attended a BLM scoping meeting in Fairbanks, Alaska, on plans to revise their NE IAP/EIS according to the current model being developed for the NW Planning Area. In doing so, I hoped to gain additional insights into the implications to listed species of BLM's new approach to the IAP/EIS for the NW Planning Area. I also hoped to better understand the potential for increased cumulative impacts to listed species resulting from BLM's plans to strip out several of the NE IAP/EIS's wildlife stipulations.

Despite the information I gathered from literature searches and public meetings, I was confronted with substantial uncertainty regarding future actions. For long-term, multistaged activities for which agency actions occur in discrete steps, such as leasing large tracts of Federal land for mineral exploration, the Service must evaluate not only the proposed action, but also the potential resulting future actions in order to determine the likelihood of the entire action violating section 7(a)(2) of the Act. Consulting on actions such as those described by the Preferred Alternative was challenging in that the Preferred Alternative did not have defined actions, but only contained the design standards that would be used to develop future actions. The Preferred Alternative also contained substantial temporal and spatial uncertainty regarding future actions, resulting in corresponding uncertainty regarding potential impacts to listed eiders. Because of the large amount of uncertainty surrounding potential future production and development under the Preferred Alternative, I found that it was not possible to accurately project the potential effects that may result without working with BLM to jointly develop "assumptions" that would be used to constrain my effects analysis. BLM believes that the assumptions developed for and listed within the BA are reasonably foreseeable and will be met as the proposed IAP/EIS is implemented. Failure of just one of the assumptions would likely result in effects that I did not analyze in the BO and therefore would require that BLM reinitiate consultation.

Compounding the uncertainty I was faced in assessing a loosely defined action, was the lack of available information on the abundance/distribution of listed eiders on the North Slope beyond a small number of areas (Barrow and Prudhoe Bay). Over the last decade the Service has undertaken actions to identify and reduce data gaps concerning listed eider demographics in order to improve the quality and quantity of data for future decision-making (e.g. recovery plans and biological opinions). However, for several reasons it is unreasonable to expect that sufficient data will ever be available to meet our needs. Steller's and spectacled eiders are intrinsically difficult to study. Detecting even fairly large changes in their population densities and demographic characteristics is extremely difficult no matter how much money is allocated for research. Also, adequate experimental controls are nearly impossible to establish.

Species that I Considered in the Opinion

I concluded that the actions considered in the biological opinion "may affect"¹ the following species and critical habitat provided protection under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.; ESA), because they are present in the proposed action area. At the time BLM initiated formal consultation there were no proposed or candidate species that utilized or migrated through the action area. I used the "may affect" determination as the basis for including species because that is the standard for formal consultation when an action has not undergone informal consultation [see 50 CFR 402.14(a)-(b)]. Using this standard, I included the following species in the biological opinion:

Steller's eider	<i>Polysticta stelleri</i>	Threatened
Spectacled eider	<i>Somateria fischeri</i>	Threatened

Species and Critical Habitat That Were Not Included in the Opinion

I did not include the endangered short-tailed albatross (*Phoebastria albatrus*) in the biological opinion. Short-tailed albatrosses forage widely across the temperate and subarctic North Pacific, and can be seen from the Gulf of Alaska, west along the Aleutians and north throughout the Bering Sea (as far north as Little Diomedea). The limits of its range are far south of the NW Planning Area so short-tailed albatrosses are not likely to be affected by the proposed action.

Approach to the Effects Analysis

My initial challenge was developing an assessment approach that I could apply to this consultation and also use for subsequent biological opinions that would result from the IAP/EIS's Preferred Alternative. I initially looked at several avenues of effects; aircraft overflights, watercraft activity, habitat loss, construction activity, staging area expansion/activity, exploration/delineation activity, development/production activity, drill rig/tower collisions, increasing predator populations, oils spills, toxics and cumulative effects. As I examined the various modes of effect, I looked for assessment approaches and worked with BLM to develop various assumptions that would (a) provide for the strongest inference possible, given the gravity of the potential effect of oil exploration/development and the unknowns; (b) could be comprehended by an informed lay person; and (c) would not be defeated by large amounts of uncertainty.

Reviewers

Ted Swem (Fairbanks Fish and Wildlife Field Office, USFWS) and Phillip Martin (Fairbanks Fish and Wildlife Field Office, USFWS) reviewed the species description and effects analysis for correctness. Ted Swem (USFWS), Curt Wilson (BLM), John Payne (BLM), Dave Yokel (BLM) and Joel Hubbard (MMS) reviewed the project description for correctness. Richard Hannan (USFWS), Ted Swem (USFWS), Fred King (MMS) and Curt Wilson (BLM) reviewed the incidental take, reasonable and prudent measures and conservation recommendation sections.

FINAL BIOLOGICAL OPINION

INTRODUCTION

This document transmits the U.S. Fish and Wildlife Service's (Service's) final biological opinion (BO) based on our review of the Bureau of Land Management's (BLM's) biological assessment (BA) covering their proposed Integrated Activity Plan/Environmental Impact Statement (IAP/EIS) for the Northwest National Petroleum Reserve-Alaska (NW NPR-A), and its effects on Steller's eiders (*Polysticta stelleri*) and spectacled eiders (*Somateria fischeri*) in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 et seq.). The NW NPR-A IAP/EIS states that it supersedes the 1983 NPR-A EIS and is now the sole National Environmental Policy Act (NEPA) analysis for the NW NPR-A Planning Area (NW Planning Area). BLM originally initiated formal consultation on December 9, 2002, and the BO was finalized on May 20, 2003. However, BLM subsequently requested that formal consultation again be conducted, focusing on the Preferred Alternative, with the resulting BO to replace the original (May, 2003) BO. This request (signed October 2, 2003) was received on October 10, 2003, with additional materials received on September 30, October 17 and October 30, 2003. BLM expects oil and gas leases under its IAP/EIS's Preferred Alternative to have a life of ~15 years. Oil field production infrastructure resulting from leasing is expected to operate at least 30 years.

BLM drafted the IAP/EIS to determine the appropriate multiple-use management of 8.8 million acres of the NW Planning Area, consistent with existing statutory direction for its management. The NW Planning Area is within the breeding ranges of spectacled and Alaska-breeding Steller's eiders, both listed as threatened under the Act. We are particularly concerned with the proposed action because the NW Planning Area contains important breeding habitat for over 70% of spectacled eiders and over 90% of Steller's eiders on the Arctic Coastal Plain (ACP) and both species occur/nest at comparatively high densities within BLM's designated Area of High Geologic Potential (Figure 1). Across the NW Planning Area, we have found that these two species are unevenly distributed. Both species show a general gradient in density from high in the Northern and Western portions of the NW Planning Area to low in the Southern and Southeastern portions. Spectacled eiders tend to be more abundant and more widely distributed than Steller's eiders across the NW Planning Area (Figure 2). However, occasionally Steller's eiders are more numerous in the immediate vicinity of Barrow (Figure 3).

The IAP/EIS addresses the full range of BLM's management responsibilities in the NW Planning Area, with the potential use of the area for oil and gas development as a major focus. The management plan includes various current and future surface-impacting activities that may affect the threatened spectacled and Steller's eiders, such as aircraft use, hazardous- and solid-material removal and remediation, overland moves, seismic activities, and oil and gas leasing/exploration and development/production activities. Such activities, particularly oil and gas activities, temporary camps, and aircraft traffic may result in disturbance, altered habitat, and spills of oil or other contaminants. These could adversely affect the behavior, distribution, and abundance of listed eiders in or adjacent to the NW Planning Area.

For long-term, multistaged activities for which agency actions occur in discrete steps, such as leasing large tracts of Federal land for mineral exploration, the Service must evaluate not only the proposed action, but also the potential resulting actions in order to determine the likelihood of the entire action violating section 7(a)(2) of the Act. Consulting on actions such as those described by the IAP/EIS's Preferred Alternative is challenging in that the Preferred Alternative does not describe defined actions, but only contains the design standards that would be used to develop future actions. The Preferred Alternative also contains temporal and spatial uncertainty regarding future actions, resulting

in corresponding uncertainty regarding potential impacts to listed eiders. Therefore, while developing the effects analysis and associated Incidental Take Statement (ITS) for this BO, we have provided the benefit of the doubt to the species and developed reasonable projections of potential conflicts between activities that could occur under the BLM's Preferred Alternative and the protection of listed eiders.

This BO is based on information provided in BLM's October 17, 2003, BA, October 30, 2003, attachments to evaluate the effects of proposed oil/gas leasing, exploration, development, production and abandonment actions under the IAP/EIS's Preferred Alternative, and on other information available to the Service. The following document represents the Service's BO on the effects of that action on the threatened spectacled eider (*Somateria fischeri*) and Steller's eider (*Polysticta stelleri*), in accordance with section 7 of the Act. Based on the information provided on the proposed and potential activities, and the information currently available on listed and proposed species and designated and proposed critical habitat, the Service has determined that it is unlikely that the action will violate section 7(a)(2) of the Act. Section 7(a)(2) of the Act states that Federal agencies must ensure that their activities are not likely to: 1) jeopardize the continued existence of any listed species, or 2) result in the destruction or adverse modification of designated critical habitat. To arrive at this "non-jeopardy" determination, we used a five-step approach for applying the section 7(a)(2) standards. The steps are as follows:

1. Define the biological requirements and current status of each listed eider species,
2. Evaluate the relevance of the environmental baseline to the species' current status,
3. Determine the effects of the proposed or continuing action on listed species,
4. Determine whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the effects of the environmental baseline, and any cumulative effects, and considering measures for survival and recovery specific to other life stages, and
5. Identify reasonable and prudent alternatives (RPAs) to a proposed or continuing action when that action is likely to jeopardize the continued existence of a listed species. Thus, this step is relevant only when the conclusion of the previously described analysis for Step 4, above, is that the proposed action would jeopardize listed species. The RPA would have to reduce the impacts associated with the proposed action to a level that does not jeopardize the species.

The BA and other documents provided to the Service include two important categories of information intended to clarify potential actions under the IAP/EIS. Prior to leasing and exploration, it is difficult to predict exactly how much and where oil and gas development will occur. Therefore, to form a basis for predicting impacts to spectacled and Steller's eiders, BLM provided a "reasonable and foreseeable oil development scenario" that describes the location and extent of development expected by BLM in the NW Planning Area. Additionally, BLM further defined potential actions under the IAP/EIS through a set of explicit "assumptions" upon which impact evaluation could be based. One example is the assumption that all of the projected development would occur in the Area of High Geologic Potential (Figure 1). In combination, the development scenario and accompanying assumptions form the basis for the Service's impact evaluation, and provide a means of measuring the accuracy of this basis in the future. Thus, should the development scenario prove unrealistic or one or more assumptions be violated, the need to evaluate impacts not considered in this BO can be assessed.

This determination is also based on BLM's commitment to consult with respect to all aspects of future oil development, production and abandonment. Additionally, consultation requirements must be met before granting of an exception to a Required Operating Procedure (ROP). This does not mean that separate consultations must be done for each individual development project; several

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development projects may be covered under a single consultation as long as section 7(a)(2) of the Act is satisfied.

With this “no jeopardy” determination, the Service stresses that given the large amount of uncertainty described within the BA surrounding how where development may occur subsequent to leasing, how that development would be managed (Administrative Officer discretion over application of stipulations and ROPs), and how Steller’s and spectacled eiders may be affected by development/production, it is difficult to evaluate potential impacts from oil development to these two species. However, the potential for significant impacts is highest in/adjacent to the northernmost portion of the NW Planning Area, because we believe a large proportion of Alaska-breeding Steller’s eiders nest within the area referred to as the “Barrow Triangle” (which is approximately that area north of 70° 50' N, between Dease Inlet and the Chukchi Sea) (Figure 4). Comparatively high-density nesting and brood-rearing areas for spectacled eiders are found within the wetlands south of Peard Bay, including the Kugrua and Kungok river drainages, and within the wetlands adjacent to Dease Inlet, including the Meade, Chipp, and Inaru river drainages. If substantial development, beyond the levels identified in the BA, occurs within/adjacent to areas of high concentration for either species, the potential for significant impacts is high. If development is ultimately authorized in/adjacent to these areas, diligent management will likely be required to protect these threatened species (Area of High Geologic Potential overlaps or is adjacent to areas of comparatively high-density nesting and brood-rearing areas for spectacled eiders listed above). Because the effects of development on spectacled and Steller’s eiders are inadequately studied and understood, we believe that the most certain way to avoid significant impacts is to exclude development from high-density nesting areas.

A chronology of consultation actions regarding the BA is provided in Appendix 1. A complete administrative record of this consultation is on file at the Fairbanks Fish and Wildlife Field Office, 101 12th Ave., Box 19, Fairbanks, Alaska 99701. If you have any comments or concerns regarding this biological opinion, please contact Jonathan Friday, Endangered Species Biologist, Fairbanks Fish and Wildlife Field Office at 907/456-0499.

DESCRIPTION OF THE PROPOSED ACTION

Background

Section 7(a)(2) of the Endangered Species Act, (16 U.S.C. § 1531 et seq.), requires that each Federal agency shall insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat of such species. When the action of a Federal agency may adversely affect listed species, that agency (i.e., the “action” agency) is required to consult with either the National Marine Fisheries Service (NMFS) or the U.S. Fish and Wildlife Service (Service), depending upon the protected species that may be affected. For the actions described in this document, the action agency is the BLM. Due to the protected species involved, the consulting agency is the Service. Section 7(b) of the Act requires that the consultation be summarized in a BO detailing how the action may affect protected species. The purpose of this BO is to fulfill the section 7 requirements for consultation on oil and gas activity within the NW Planning Area. Section 7 regulations allow a formal consultation to encompass a number of similar actions within a given geographic area or a segment of a comprehensive plan (50 CFR 402.14). This opinion focuses on the potential effects of oil and gas activity on the threatened Steller’s eider (*Polysticta stelleri*) and spectacled eider (*Somateria fischeri*).

If a lease sale were to result from the IAP/EIS’s Preferred Alternative, it would be the seventh sale in the NPR-A since January 1982. The first two oil and gas lease sales were held in January and May

1982. Two subsequent sales followed in 1983 and 1984, and a fifth lease sale was canceled. In 1998 the BLM consulted with the Service pursuant to a new IAP/EIS for NE Planning Area. The NE Planning Area IAP/EIS was somewhat similar to the current NW Planning Area IAP/EIS in that it coarsely described potential ground-impacting management actions such as oil and gas exploration and potential development/production activities. In the BO for the NE Planning Area IAP/EIS, the Service issued incidental take for 25 spectacled eiders and 1 Steller's eider and stated that the action would not result in jeopardy for threatened eiders. Sales covered by the NE Planning Area IAP/EIS were held in 1999 and 2001. To date a total of approximately 129 wells have been drilled in the NPR-A. Eighty-nine exploration wells have been drilled in the NW Planning Area since 1944; 47 Navy sponsored wells, 9 deep Husky/USGS wells, 32 wells on North Slope Borough (NSB) land, and 1 industry well (ARCO) (IAP/EIS). Of 688 leases issued in various Federal offshore Beaufort Sea sales adjacent to the NW Planning Area, 52 are still active, and a total of 30 exploration wells have been drilled, plugged and abandoned. Currently, only one offshore production facility is in operation in the Beaufort Sea. Nine offshore wells are considered producible but uneconomic for development and production at current oil prices.

The oil and gas potential of the NW Planning Area is dominated by three "plays", the Alpine field, the Brookian Foldbelt and the Fortress Mountain Formation. A play refers to a group of petroleum deposits (pools) that share a common history of hydrocarbon generation, migration, reservoir development and trap configuration. The Alpine play contains greater than 52 percent of NPR-A's estimated economically recoverable oil and gas. The geologic conditions associated with the 500 million barrels targeted by the Alpine Oil Field in the Northeast Planning Area, are expected to persist west across the northern portion of the NW Planning Area. Therefore, areas west and northwest of the Alpine oil field to the banks of the Topogoruk River are expected to be the principle targets for future exploration in the NW Planning Area. The Brookian Foldbelt and Fortress Mountain Formation are located in the southwest portion of NW Planning Area. These plays offer modest oil reserve sizes and are far from existing infrastructure. However, if plans for a natural gas pipeline are ever realized on the North Slope, these two plays are estimated to contain 32 percent of the economic gas resources in the combined NW, NE and Southern Planning Areas.

Threatened spectacled eiders are rarely observed using habitat over the southern gas fields of the Brookian Foldbelt and Fortress Mountain Formation. However, spectacled eiders, especially females and broods, utilize the coastal plain habitat associated with the Alpine geologic formation that runs into the northeast portion of NW Planning Area (TERA 2003). Aerial surveys in the central Beaufort area done from 1993-1998 estimated that 16% of all spectacled eiders observed in early June on the North Slope have utilized the coastal plain habitat between the eastern boundary of the NW Planning Area and the Topogoruk River (Stehn and Platte 2000). Steller's eiders are infrequently found southeast of the Barrow area into the Alpine Field and even less common south into the surface areas associated with the Brookian Foldbelt and Fortress Mountain Formations.

The following sections detail proposed oil and gas leasing, exploration, development, production and abandonment within the NW Planning Area under the Preferred Alternative. Because BLM's BA provides reasonably certain estimates of leasing and exploration activity, this BO best assesses adverse impacts to listed eider from these phases. Due to uncertainty in how much and where development will occur, BLM provided a list of assumptions upon which the impact evaluation and determination were based. Violation of one or more assumptions may result in effects that were not analyzed in the BO and therefore would require BLM to reinitiate consultation. For example, assuming that a given amount of development will occur, the impacts to listed eiders will vary with where development occurs because the density of listed eiders varies across the NW Planning Area. Obviously, the greatest impacts could occur where listed eider density is highest, such as the Barrow Triangle for Steller's eiders. BLM used a model incorporating geologic information, economics of

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extraction, and proximity to existing infrastructure in the Colville River Delta to estimate reasonable numbers and locations of oil developments within the NW Planning Area. One assumption used in our analyses, therefore, is that the results of this model reasonably predict the maximum amount of development and maximum resulting impact to eiders. If, however development occurs that exceeds the original predictions of potential effects to listed eiders, reinitiation will be required.

Through the development of such assumptions, BLM is essentially agreeing to conditions that must be adhered for the BO and accompanying ITS to remain valid. For this reason, the assumptions are clearly documented in the BO and should be monitored by BLM as appropriate (Appendix 4). These assumptions are reiterated in the “Description of the Proposed Action” and “Effects of the Action” sections of this BO, and procedures for monitoring the enforceable elements of assumptions are presented in the Terms and Conditions.

Reasonably Foreseeable Oil and Gas Leasing, Exploration, Development, Production and Abandonment Activities Under the Preferred Alternative

The action primarily addressed within the IAP/EIS is the opening up the NW Planning Area for oil and gas leasing/exploration. Although this BO assesses all impacts that may result from the proposed action (leasing through oilfield abandonment), separate consultations for individual developments and associated infrastructure will still be conducted at a later date if oil is discovered and project specific development plans are proposed. BLM issued a final BA to the Service on October 17, 2003, addressing their Preferred Alternative that will be further described in the final IAP/EIS due out in January 2004. BLM fully describes its “Reasonable and Foreseeable Oil Development Scenario” starting on page 3 of the BA.

Under the Preferred Alternative, BLM assumes that at \$30-per-barrel oil, 1,260 million barrels of oil could be developed in the NW Planning Area. BLM’s Preferred Alternative would offer for lease all BLM administered surface lands within the NW Planning Area encompassing about 8.8 million acres. It also encompasses the bays, lagoons, inlets, and tidal waters between NW Planning Area’s outlying islands and the mainland west of the Ikpikuk River including Dease Inlet and Admiralty Bay. BLM’s analyses of the geologic plays indicate commercial fields are most likely to be discovered in the terrestrial portion of the NW Planning Area designated as the Area of High Geologic Potential. Although the Preferred Alternative provides an opportunity to lease in the immediate offshore area of the NW Planning Area, including Dease Inlet, Admiralty Bay and Elson Lagoon, BLM does not anticipate production facilities offshore. BLM plans to protect these shorelines and nearshore habitats with a ¾ mile no surface occupancy (NSO) requirement both offshore and onshore. While BLM does not reasonably foresee any production facilities offshore, these areas likely would be included in the exploration phase. Offshore areas would likely be reached using directional drilling techniques either anchored onshore or from bottom-founded offshore ice islands. The Preferred Alternative does not extend to subsurface estate owned by the North Slope Borough and regional or village corporations.

Within the Area of High Geologic Potential, BLM assumes that two Alpine-size fields, or anchor developments, would be discovered, with six additional satellite fields tied into the infrastructure of the anchor fields. BLM’s reasonable and foreseeable scenario suggests each satellite field would be connected to an anchor development (Alpine-size) field (Figure 5). Current pipeline engineering constraints dictate satellite fields be located within 20 miles of an anchor field. Currently, no infrastructure exists to transport natural gas from the North Slope to a market. While natural gas is a byproduct of oil development, BLM does not consider natural gas production as reasonably foreseeable. Therefore, in this BO we did not consider impacts to listed species from gas development, production or abandonment.

BLM's reasonable and foreseeable scenario assumes the first fields developed in the NW Planning Area would approximate the size of the Alpine field (Figure 5) in extent of gravel cover, petroleum resources, associated activity, and current technology. The following hypothetical discovery and related reasonably foreseeable development, and production schedule, is BLM's estimate of the types and timing of activities that may occur as a result of multiple lease sales under the Preferred Alternative. Typically after a lease sale is held the successful lessee enters into an exploration/delineation program. If a successful discovery is made, production/support facilities are constructed followed by operation and, in approximately 30 years, abandonment of the sites.

Leasing/Exploration/Delineation

Under the IAP/EIS's the Preferred Alternative, all BLM-administered lands within the NW Planning Area would be made available for oil and gas leasing, although leasing would be deferred for 10 years on approximately 1,570,000 acres (18 percent) of the western portion of the NW Planning Area in the vicinity of Wainwright. The Preferred Alternative provides an opportunity to lease in the immediate offshore area of the NW Planning Area, which includes Dease Inlet and Admiralty Bay. These shorelines will be protected by a $\frac{3}{4}$ mile no-surface occupancy (NSO) requirement (Stipulation K-1,2 and 3), both offshore and onshore, to protect the nearshore habitats. While reasonable and foreseeable projections do not anticipate production facilities offshore, these areas likely would be leased and included in the exploration phase. The Preferred Alternative indicates the first lease sale in early in 2004, with leases issued later that year. Exploration actions would begin the following winter season.

Seismic surveying would occur during winter and is expected to begin during the winter season of 2004-2005. A maximum of 3 seismic crews are expected to collect seismic data in the NW Planning Area in future years. Winter seismic operations will be conducted by all-terrain ground vehicles supported by light aircraft. Support by aircraft (fixed wing and helicopter) will be required to survey potential sites during summer months to prepare for intensive activities. In addition to aircraft support, the only summer activity associated with seismic exploration would be annual maintenance of exploratory drill rigs.

Following the end of each winter seismic season, each seismic crew will store its equipment at a staging area (Barrow and/or Cape Simpson), at locations that BLM assumes will be existing gravel pads built previously for some other purpose. During summer, a repair crew will spend 2-4 weeks performing annual maintenance and installing upgrades to seismic equipment. These activities will require aircraft support, with one to two fixed-wing and two to three helicopter flights per week. On completion of maintenance work, the crew would leave the equipment cold stacked and there would be no activity until the following winter. In the BA, BLM assumes the maintenance operations would be self contained and use accommodations that are part of the seismic camp. On completion of the work, all wastes would be removed and disposed of at approved disposal sites on the North Slope. None of these activities would require the establishment of new landfill locations. The approved landfill currently in operation at Deadhorse most likely would be used for materials not requiring additional treatment. Organic wastes would be disposed of in accordance with the Clean Water and Clean Air Acts, and the disposal of any liquid or solid waste would not be permitted on site (ROP A-2).

There would be a maximum of three exploration drill rigs available for use in the NW Planning Area at any one time, over a 10-year maximum exploration phase. Drilling would be conducted entirely during the winter months (early December to mid-April). On completion of drilling operations, all equipment and materials would be removed (during winter operations) over ice roads to staging areas and then to other locations on the North Slope, or to recycling centers out of the country. Drilling

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material (mud and cuttings) would be reinjected into the dry drill hole if the exploration well were unsuccessful. If drilling is successful, the well would be temporarily capped, and the operator would remove drilling materials (mud and cuttings) to an approved disposal area at Prudhoe Bay in accordance with the Clean Water and Clean Air Acts. No liquid or solid waste would be disposed of on site.

Ice roads would provide seasonal routes supporting winter activities. These temporary roads are constructed by spreading water from local sources (rivers and lakes) to build up a rigid base (Stipulation B-1). Low-pressure vehicles will be used to establish ice roads, which can then be used by conventional vehicles. Ice roads would likely connect exploration and delineation drill sites to staging areas.

Ice pads are used commonly as platforms for winter exploration activities (e.g., NE Planning Area exploration, 1999-2003). Methodology used in ice pad construction is similar to ice roads. A typical ice pad is typically 1 foot thick, covers 6 acres, and requires approximately 500,000 gallons of water to construct. Depending on location, ice pads can range in size from 3-10 acres. Current ice-pad design technology could provide for some pads to remain intact over the summer season. During the summer season, these ice pads would house one exploration drill rig and/or seismic camp. Each of these rigs would be stored with towers or derricks folded and would present a silhouette of approximately 20 feet in height.

Materials and equipment necessary to support winter exploration activities will be moved to staging areas within the NW Planning Area by marine transport in the summer months (late July/August), and then overland on ice roads or hardened snow trails during winter exploration/delineation activities. The sealifts for exploration would use two to seven barges per year. The majority of large equipment movement would be by sealift to existing staging areas at Cape Simpson, Deadhorse, or Barrow or during summer months, then to the exploration pads over ice roads during winter months. These activities would occur annually during the exploration phase, which may last up to 10 years after the sale.

Development/Production/Abandonment

The following hypothetical reasonably foreseeable development, production and abandonment schedule, is BLM's estimate of the types and timing of activities that may occur as a result of multiple lease sales under the Preferred Alternative. Typically after a lease sale is held the successful lessee enters into an exploration/delineation program. If a successful discovery is made production/support facilities are constructed followed by operation and, in approximately 30 years, abandonment.

1. Development/Production:

Construction of gravel pads, roads, airstrips, and staging areas would be the first development activities to take place. Current technology uses gravel pads to support both anchor and satellite production facilities. Gravel requirements for current "all-gravel" pads raised 5 feet or more above a wet tundra surface are approximately 8,000-12,000 cubic yards per acre of surface footprint. Gravel roads (35 feet wide with 2:1 slopes) cover approximately 5-6 acres per mile, and require 30,000-50,000 cubic yards of gravel per mile. Airstrips (150-200 feet wide, and 5,000-6,000 feet long) cover 20-30 acres and require 140,000-300,000 cubic yards of gravel. Total gravel estimates for an Alpine-like field, with a footprint of 100 acres, is approximately 1,000,000 cubic yards. Any staging area or pump station sites would have similar gravel requirements. A staging area (150 acres) and pump station (40 acres) would require an additional 1,400,000 cubic yards of gravel (BA Table 1).

Gravel mining and transportation would occur during winter months when gravel can be moved by heavy equipment over ice roads. Where gravel extraction has occurred on the North Slope, sites are typically 20-50 acres in size. The IAP/EIS's Preferred Alternative assumes development of up to eight extraction sites. The location of those potential mine sites is unknown at this time. If larger deposits are found, extraction footprint per site could exceed 50 acres in size but the number of sites would be reduced, and the total disturbance footprint also would be less (280 acres). In the BA, BLM assumes that all 8 gravel extraction sites would be located within the Area of High Geological Potential because of the high cost of material transport over long distances over ice roads.

Within the High Geologic Potential Area, BLM assumes that 2 Alpine-size fields, or anchor developments, would be discovered, with 6 additional satellite fields tied into the infrastructure of the anchor fields. Each anchor development would consist of gravel pads covering a total of 100 acres (including an airstrip of 5,000 feet, secondary drill pad, and connecting road). Runways would be oriented in a west-southwest/east-northeast direction similar to the Barrow Airport. Power, telephone, and other communication lines would be buried in the roads or installed on the pipeline vertical support members (VSMs). Each anchor facility would have one tall (up to 60 feet) communication tower. BLM assumes 1 communication tower would be co-located on each facility pad and all guy wires would be marked to increase visibility to birds. Towers will also be constructed in a manner to discourage nesting/perching of avian predators. Each anchor development would have a secondary drill pad located within a 3-mile radius of the main pad. The secondary pad would be connected to the anchor facility by a 3-mile long gravel road. No overnight accommodations would be available at the secondary pad.

Each anchor pad would contain a central production facility (CPFs) that serves as an operational center for long-term production activities in an oil field. In addition to oil-production equipment, the CPF typically includes living quarters, offices, maintenance shops, storage tanks for fuel and water, power generators, waste-treatment units, and a communications center. For most North Slope oil projects, components of the CPF are constructed as transportable modules at offsite locations, and then moved to staging areas in the summer by sealift. The following winter they are moved overland on ice roads to the field and assembled. All buildings are supported on pilings to accommodate ground settling or frost heaving. An airstrip usually is located near the CPF to allow transport of supplies and personnel to the field site. BLM assumes that none of these facilities would require a new landfill location. No liquid or solid waste would be disposed of on site. Organic wastes will be shipped to incineration units at Deadhorse or Barrow and disposed of at permitted NSB landfills.

A typical satellite field would be developed from a single gravel pad with a footprint of approximately 10 acres. Each pad would hold approximately 20-30 wells and would be accessed from the anchor development on a permanent gravel road 30-35 feet wide, with a 2:1 aspect, and up to 20 miles in length. BLM assumes that 3 satellite fields would be developed for each anchor facility. However, satellite field development would not be expected for several years after an anchor facility is developed (similar to Alpine development), and would have a production life of approximately 10 years.

The locations of new pipelines constructed in the NW Planning Area depend on both the location and sequence of discoveries of commercial-sized oil fields. BLM assumes that one connecting pipeline would be constructed within the NW Planning Area that will run west to the existing Alpine facility, which has infrastructure available to connect to the Trans-Alaska Pipeline System. The Preferred Alternative assumes that 240 miles of pipeline would be installed during the winter, coinciding with the construction of the development and production facilities. It

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would consist of approximately 115 miles of elevated field gathering lines for oil and 125 miles of elevated oil trunk lines. Outside the NW Planning Area it is likely that 225 miles of common carrier trunk line would be constructed in the NE Planning Area, with an additional 120 miles constructed on State lands to the east to transport product to market. BLM assumes that no pipelines would be established as subsea infrastructure. These pipelines would consist of connecting multiphase pipelines (24-inch oil pipeline and a 14-inch water pipeline) installed aboveground on VSMs, and would be an average of 7 feet above the tundra. The VSMs would be spaced 50-70 feet apart. Routine pipeline maintenance would occur during winter months when the pipeline could be readily accessed by ice road or hardened snow trail, with summer activities on an emergency basis only. Throughout the year pipelines would be pigged and electronically monitored to determine pipeline integrity.

The time required to drill, and complete, a production well depends largely on the measured depth of the well. Currently on the North Slope, it takes approximately 20-30 days to drill and complete a 10,000-foot well. This equates to approximately 12-18 wells per rig over a 12-month period. BLM assumes that there would be a maximum of 8 development rigs operating at any given time over a period of 6 years. Safety considerations normally restrict operations to one rig drilling on each pad at a time. Using the above example where up to 30 wells from each pad are needed for initial reservoir development, drilling operations would take 3-4 years to complete. The overall development phase from construction of a staging area and remote base camp to production startup could take up to 5 years, depending on the size and location of the new field.

Development of staging areas would occur in winter prior to the start of development activities. The number of barges required in each sealift to support development activities would be up to 20 barges/year. However, the modules and equipment still would be offloaded from barges in 3-5 days and stored on the staging area pad until winter, when they would be transported by ice road to the anchor development site. The individual modules could be 20-30 feet in height. After transportation to the anchor development sites, these modules would become the site's operation and housing facilities complex. There likely would be two large sealifts (1 year apart) for each anchor development.

BLM estimates that the first production pad (anchor pad) would be installed in 2012 (8 years after first lease sale). Production would likely begin in 2013 (9 years after the lease sale), and peak rates would be 38 million barrels per year (104,000 barrels per day). Up to 150 production and injection wells would be drilled year-round from three drilling pads over a period of 6 years. A maximum of 8 drill rigs would be used to drill wells. Oil field infrastructure would likely include processing facilities and a permanent airstrip and would operate year-round for at least 30 years.

2. Associated Activity:

BLM assumes all development within the NW Planning Area will be roadless and aircraft and sealifts will be the principle mode of transportation and supply during the summer. Aircraft activity will likely be the principle method of supply early in the development phase prior to construction of staging areas. Therefore, the highest level of aircraft activity would likely occur during the period when both construction and development drilling are occurring. From June 1, 2001, to July 15, 2002, there were a total of 1,474 aircraft landings or take offs (a daily average of 32.8 operations) at the Alpine site (Johnson, et al. 2003; ABR 2001). BLM expects similar levels of aircraft activity during the summer development phases for each of the anchor developments. The number of aircraft flights to support each facility during production is estimated at 14 flights per week. There would be some truck traffic from the main facilities to satellite and secondary

pads on a daily basis. In addition there would be monthly helicopter flights along the length of the pipeline to monitor its integrity.

Once a staging area is completed, BLM assumes that the facility would be supplied by annual sealift. Most of these supplies would arrive at a staging area in containers by barge in late July or August. The containers would be offloaded with cranes and stacked on gravel pads at the staging area. The typical container is less than 10 feet in height. This vessel traffic generally would be limited to routes in shallow, nearshore waters between staging areas connected to existing infrastructure (e.g., West Dock, Deadhorse or Oliktok Point) and staging areas within the NW Planning Area at Cape Simpson or Barrow.

Under the Preferred Alternative, watercraft are allowed for summer transportation and supply. Nonrecreational airboat use will be allowed on all streams, lakes, and estuaries seasonally accessible by motorboats. Airboats would be prohibited in seasonally flooded tundra and shallow waters with wetland vegetation adjacent to streams, lakes, and estuaries (BA page 13). However, BLM assumes no facilities would be constructed adjacent to waterways that could support nonrecreational use of watercraft because of setbacks required by stipulations K-1, 2 and 3. Boats and other watercraft would likely be used by researchers during study efforts if facilities, or areas of concern, were located near large waterbodies such as the Beaufort Sea, rivers, or large, deepwater lakes. These activities would occur during the summer months, but their numbers, locations, and type of activities remain speculative because data quantifying this activity has not been collected for the NE Planning Area.

There likely will be annual summer oil-spill-response training, which typically involves 20-40 individuals for 1-2 days each summer at each anchor facility. This activity would result in an increase in aircraft landings and take offs. Because BLM assumes that no facilities would be located along navigable waters due to stipulations K-1, 2 and 3, watercraft activity similar to that used for Alpine is not expected to occur and all oil-spill-response activity will be confined to gravel pads.

All developments described by the Preferred Alternative would be made unavailable/inaccessible to the general public for recreational or tourism activities. However, the facilities would be available for use to rural subsistence users. Subsistence use of the NW Planning Area is variable due to the availability and location of species available for subsistence harvest. The BA states that it is possible that subsistence activities could be enhanced by the road infrastructure described in this reasonably foreseeable scenario, but it is not quantifiable.

Abandonment and reclamation of satellite fields likely would coincide with abandonment and reclamation of corresponding anchor development sites. Abandonment operations typically include removal of all equipment, cutting well casings a minimum of 3 feet below the surface, and plugging wells. Gravel, or gravel/sand pads would not be removed but allowed to bed naturally. Overall, abandonment operations would take many years, as revegetation and environmental monitoring studies continue to document the long-term effects of operations at a particular site. A series of permitting and inspection requirements are associated with abandonment procedures (ROP G-1). Abandonment activities would occur during winter months when ice roads could be constructed to allow the removal of equipment. Monitoring abandonment would require periodic revisits throughout subsequent summers to gather information on environmental parameters related to natural bedding and to document success of abandonment actions. On the North Slope, monitoring of abandonment sites typically involve one helicopter with a crew of three visiting the site annually for the first 5 subsequent years followed by increasing time gaps over the next 10 years.

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Interrelated and Interdependent Actions

For this BO, the Service considered activities that would be interrelated and interdependent to the proposed action as well as accidental events that may occur as a result of the proposed action. Interrelated actions are those actions that are part of a larger action and depend on the larger action for their jurisdiction. Interdependent actions are those actions that have no independent utility apart from the action being considered in the BO. Interrelated and interdependent activities that may occur in conjunction with the proposed action include oil/gas development on Native surface/subsurface lands, additional telecommunications infrastructure, increased research activity, increased subsistence hunting, offshore oil exploration/development, onshore support facilities, additional staging areas, access roads, onshore and offshore pipelines, and accidental oil spills originating from pads, pipelines, and supply vessels.

STATUS OF THE SPECIES

Steller's eider

The Alaska-breeding population of Steller's eider was listed as threatened on June 11, 1997 (Federal Register 62(112): 31748- 31757). This action was based on a substantial decrease in the species' nesting range in Alaska, a reduction in the number of Steller's eiders nesting in Alaska, and the resulting increased vulnerability of the remaining breeding population to extirpation. Historically, Steller's eiders nested in Alaska in two general regions: western Alaska, where the species has been nearly extirpated, and the North Slope, where the species still occurs. In western Alaska, Steller's eiders occurred primarily in the coastal fringe of the Yukon-Kuskokwim Delta, where the species was common at some sites in the 1920s, was still present in the 1960s, but was not recorded as breeding from 1976-1994 (Kertell 1991, Flint and Herzog 1999). In 1994, 1996-1998, and 2002, 1-2 nests were found at either or both the Tutakoke River and Hock Slough study sites on the Yukon-Kuskokwim Delta (Flint and Herzog 1999).

On the North Slope, Steller's eiders historically occurred from Wainwright east, nearly to the United States-Canada border (Brooks 1915). The species may have abandoned the eastern North Slope in recent decades, but it still occurs at low densities from Wainwright to at least as far east as Prudhoe Bay. The majority of sightings in the last decade have occurred east of Point Lay, west of Nuiqsut on the Colville River, and within 90 km (56 miles) of the coast. Near Barrow, Steller's eiders still occur regularly, though they do not nest annually. In some years, up to several dozen pairs may breed in a few square kilometers.

Aerial breeding pair surveys conducted in late June indicate a population of about 1200 birds (Mallek 2001). A separate aerial survey, timed in mid-June, indicates a smaller population, averaging about 150 birds from 1992-2003 (Larned et al. 2003). Both surveys likely underestimate actual population size, however, because an unknown proportion of birds are missed when counting from aircraft, and no species-specific correction factor has been developed and applied. Nonetheless, these observations indicate that hundreds or low thousands of Steller's eiders occur on the North Slope. These surveys do not demonstrate a significant population trend over the last decade. However, based on the observed interannual variability, it is estimated that it would take 14 years to detect a trend equivalent to a 50% change over 10 years (Larned et al. 2001a). Thus, current sampling intensity is too low to provide useful trend detection over short time intervals for this very rare species. There is some support for the belief that Steller's eiders have abandoned formerly occupied areas and have reduced their breeding frequency in eastern portions of the North Slope; if true, this suggests that the Alaska-breeding population has declined on the North Slope in recent decades (Quakenbush et al. 2002).

Steller's eiders spend most of the year in marine habitats. During winter, most Steller's eiders concentrate along the Alaska Peninsula from the eastern Aleutian Islands to southern Cook Inlet in shallow, near-shore marine waters (Jones 1965, Petersen 1980). They also occur in the western Aleutian Islands and along the Pacific coast, occasionally to British Columbia, along the Asian coast (from the Commander Islands to the Kuril Islands), and some are found along the north Siberian coast west to the Baltic States and Scandinavia (Cramp et al. 1977). In spring, large numbers concentrate in Bristol Bay before migration. In 1992, an estimated 138,000 Steller's eiders congregated there before sea ice conditions allowed movement northward (Larned et al. 1994). Spring migration of Alaska-breeding birds typically involves small flocks following offshore ice leads north through the Bering Strait as early as mid-May and reaching Pt. Barrow by early June. In contrast, southerly migration begins in mid-July with brood-rearing females and broods leaving nesting areas from late August to mid-September. Anecdotal information suggests that Steller's eiders migrate south in small flocks along the coast.

Steller's eiders arrive in pairs on the North Slope in early June. Nesting effort varies widely from year to year. In the 13 years from 1991-2003, there were 6 "nesting years" (1991, 1993, 1995, 1996, 1999, 2000) when typical breeding activities occurred, and 6 "non-nesting years" (1992, 1994, 1998, 2001, 2002, 2003) when birds appeared in early summer, but no nests were found and Steller's eiders are believed not to have nested (Quakenbush et al. 1995, Obritschkewitsch et al. 2001, Service, unpublished data). Four nests were found in 1997, but these were initiated late (early July) and none survived past mid-incubation (Service and NSB, unpublished data). The reasons for the observed variation in nesting effort are unknown, but an association has been noted between nesting years and years of lemming abundance. Nest success could be enhanced in years of lemming abundance because predators are less likely to prey on eider nests when small mammals are abundant. It has also been hypothesized that avian predators such as pomarine jaegers (*Stercorarius pomarinus*) and snowy owls (*Nyctea scandiaca*), which nest at high densities only when lemmings are abundant, may provide protection for nearby eider nests incidental to defense of their nesting territories (Quakenbush and Suydam 1999). If this hypothesis is correct, the presence of avian predators is an essential element of breeding habitat.

In nesting years, initiation dates are typically in the first half of June (Quakenbush et al. 1995), and hatching dates range from 7 July to 3 August (Quakenbush et al. 1998). Nests in Barrow are located in wet tundra, in areas of low-center polygons or low (indistinct flat-centered) polygons, frequently within drained lake basins (Quakenbush et al. 1998). Average clutch sizes at Barrow ranged from 5.3-6.3 in five different years, with clutches up to 8 reported (Quakenbush et al. 1995). Nest success (proportion of nests at which at least 1 egg hatched) at Barrow averaged approximately 17% from 1991-2002 (Service, unpublished data). Egg loss was attributed mostly to predation by predators, including jaegers, common ravens (*Corvus corax*), and possibly glaucous gulls (*Larus hyperboreus*) and arctic foxes (*Alopex lagopus*) (Quakenbush et al. 1995, Obritschkewitsch et al. 2001). The fledging period is not known, but is estimated to be 37 days (Obritschkewitsch et al. 2001). Broods most often used ponds with emergent grass (*Arctophila fulva*) (Quakenbush et al. 1998). Broods were reared close to their nest site; 8 broods tracked near Barrow in 1995 remained within 650 meters of their nest sites during the first 32 days after hatching (Quakenbush et al. 1998).

Males typically depart the breeding grounds after females begin incubating. Based on observations in the Barrow area, and on a small sample of birds equipped with satellite transmitters, males depart Barrow around the end of June or early July (Quakenbush et al. 1995, Obritschkewitsch et al. 2001, Service, unpublished data). Both males and females tracked with satellite transmitters in a non-breeding year dispersed across the area between Wainwright and Admiralty Inlet in late June and early July, with most birds entering marine waters by the first week of July. The satellite-tracked birds used coastal locations from Barrow to Cape Lisburne, and made extensive use of lagoons and

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bays on the north coast of Chukotka (Service, unpublished data). Visual observations in other years confirm the use of nearshore areas of the Chukchi Sea; small groups of males (less than 10) have been observed in July near Barrow (Service, unpublished data). Females that fail in breeding attempts may remain near Barrow later in the summer; a single failed-breeding female equipped with a transmitter in 2000 remained near the breeding site until the end of July, and stayed in the Beaufort Sea off Barrow until late August. Females and fledged young depart the breeding grounds in early to mid-September.

In mid-August, Alaska-breeding Steller's eiders migrate to molting areas, where they congregate in large flocks in protected waters. Concentrations of molting Steller's eiders have been noted in Russia on the Chukchi and Bering seacoasts, near Saint Lawrence Island in the Bering Sea, and along the northern shore of the Alaska Peninsula (Kistchinski 1973, Fay 1961, Jones 1965, Petersen 1981). Satellite-tracked birds from Barrow molted at Nunivak Island, Cape Avinof (Kuskokwim Shoals), Nelson Lagoon/Port Moller, and Izembek Lagoon (Service, unpublished data).

On January 10, 2001, the Service designated 2,830 mi² of critical habitat for Steller's eiders at breeding areas on the Yukon-Kuskokwim Delta, staging area in the Kuskokwim Shoals, and molting areas in waters associated with the Seal Islands, Nelson Lagoon, and Izembek Lagoon. Although the Service believes some portion of the North Slope is essential for the conservation of the species and therefore meets the definition of critical habitat, critical habitat has not been designated on the North Slope. The Act provides that an area essential to the conservation of listed species can be excluded from critical habitat designation if the benefits of excluding the area outweigh the benefits of designating the area as critical habitat, provided that exclusion does not result in the extinction of the species. The Service believes that there are few, if any, benefits of designating critical habitat on the North Slope at this time. Federal agencies already consult with us on activities they are associated with on the North Slope. Our experience with these consultations is that it is unlikely that critical habitat designation will change their outcome. Moreover, those wishing to carry out activities on the North Slope are already aware of the importance of the North Slope to breeding Steller's eiders, so there is no informational benefit of designating critical habitat. There are disadvantages of designating critical habitat on the North Slope. We believe that some portion, though not all, of the North Slope is essential to the conservation of Steller's eiders, yet the available information does not allow us to discern which specific areas should be designated as critical habitat. While a subset of the North Slope could be designated as critical habitat, we believe that to designate such an area without a more reliable biological basis would convey an inaccurate message about the size and location needed for recovery and may undermine ongoing cooperative efforts to carry out conservation efforts.

Causes of suspected population declines are not known. Possible causes of decline in the Barrow area include artificial increases in predator populations, subsistence harvest and ingestion of lead shot. In 2003, a Recovery Plan was finalized by the Service that provided strategies to recover the Alaska-breeding population of Steller's Eiders to the point that protection under the Act is no longer required (i.e., "delisting" is appropriate). Interim objectives identified were: 1) to prevent further declines of the Alaska-breeding population (including both the northern and western Alaska subpopulations); 2) to protect Alaska-breeding Steller's Eiders and their habitats; 3) to identify and alleviate causes of decline and/or obstacles to recovery; and 4) to determine size, trends, and distribution of the northern and western Alaska-breeding subpopulations. The Recovery Plan also outlined tasks as being high priority actions needed to achieve the ultimate and interim objectives listed above. The tasks include: 1) reduce exposure to lead; 2) reduce nest predation; 3) reduce hunting and shooting mortality; 4) elucidate distribution and abundance; 5) acquire information on marine ecology; 6) acquire information on breeding ecology; 7) acquire demographic information needed for population modeling efforts; 8) maintain or re-establish subpopulation on Yukon-Kuskokwim Delta; and 9) develop partnerships for recovery efforts.

Spectacled eider

The spectacled eider was listed as a threatened species under the Act in May 1993. Currently, primary nesting grounds are the Yukon-Kuskokwim Delta, the North Slope (Cape Simpson to the Sagavanirktok River) of Alaska, and in the Chaun Gulf and the Kolyma, Indigirka, and Yana river deltas of arctic Russia. Post-breeding flocks of staging and molting spectacled eiders have been observed in Mechigmenan Bay (on the eastern coast of Russia's Chukotsk Peninsula), Alaska's Ledyard Bay (southwest of Point Lay), Peard Bay, Norton Sound, and 80 km south of Saint Lawrence Island. An estimated 7,149 spectacled eiders occupied the Arctic Coastal Plain of Alaska in June 2003 (Larned et al. 2003), about 2% of the estimated 375,000 world population (Larned and Tiplady 1999).

From late December to early April, the only known wintering area of spectacled eiders is within leads in the pack ice southwest of St. Lawrence Island in the Bering Sea (Larned et al. 1997, Petersen et al. 1999). Leads in ocean ice are important pathways for marine bird and mammal species migrating along the Beaufort Sea coast in Alaska and Canada. All species of eiders use this lead system, typically flying at altitudes less than 30 meters (Johnson and Richardson 1982). During spring migration spectacled eiders migrate offshore along the Bering (median 15.3 km), Beaufort (median 6.6 km for males, 16.6 km for females), and Chukchi (median 34.9 km) Sea coasts (P. Flint pers. comm.). Very little is known about migratory routes east of Barrow because the definitive lead system transforms into numerous branches varying in location and extent from year-to-year. Because few spectacled eiders are observed in marine areas along the Beaufort coast in spring, a majority may migrate to nesting areas overland from the Chukchi Sea (TERA 2003). Migration of eiders (the majority of which are king and common eiders) along Alaska's northern coast has been described in several studies (Thompson and Person 1963, Johnson 1971, Woodby and Divoky 1982). Spectacled eiders are observed in mixed flocks of king, common, and sometimes Steller's eiders, but the proportion of both spectacled and is quite small. Although information specific to listed eider flight behavior is lacking, a spectacled eider was seen striking a utility wire near an electric light in white-out conditions on St. Lawrence Island in 1998 (Service, unpublished data). In summer 2003, 4 dead/injured spectacled eiders were retrieved by the Service that likely collided with overhead power lines/guy wires (3 at Barrow and 1 at Prudhoe Bay) (Service, unpublished data).

Spectacled eiders arrive on North Slope breeding grounds paired, often in small flocks, in late May to early June. Spectacled eiders nest mainly from the Sagavanirktok River to the Chukchi Sea, and only sparsely to the east (Larned et al. 2001a). Based on Service aerial surveys (1998-2002, Arctic Coastal Plain east to the Arctic National Wildlife Refuge), the highest densities were found south of Barrow, with smaller areas of concentration east of Teshekpuk Lake, on the Colville River Delta, and near western Simpson Lagoon. Overall density was estimated to be 0.22 birds per square kilometer in 2002 (Larned et al. 2002).

Male spectacled eiders begin to depart breeding areas during incubation, which is during late June on the North Slope. On the North Slope, pair numbers peak in mid-June and the number of males declines 4-5 days later (Smith et al. 1994, Anderson and Cooper 1994, Anderson et al. 1995). Following their late June departure from the nesting areas, males apparently make little use of the Beaufort before migrating to the Chukchi Sea. During late June the Beaufort Sea has little open water, hence males present at breeding grounds east of Barrow normally do not use marine habitats and fly directly overland (most heading to a molting/staging area in Ledyard Bay) (TERA 2003). Later in the season (late June through September), when females depart the North Slope, much more of the nearshore zone is ice-free. Open water in marine habitat allows for extensive use of the western Beaufort Sea. Radio telemetry studies have shown that most female spectacled eiders that migrate west toward Barrow use the nearshore zone of the Beaufort Sea as they transit to their molting/staging areas. In 2000, 13 female spectacled eiders tracked via radio telemetry primarily

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used the western Beaufort (71% of all bird-days) while areas near Stockton Island were also extensively used (17% of all bird-days) (TERA 2003). The females remained in the Beaufort Sea nearshore zone for an average of about two weeks (range 6-30 days).

Predators of spectacled eider eggs include gulls, jaegers, and foxes. In arctic Russia, apparent nest success has been calculated to be as low as <2% in 1994 and 27% in 1995; foxes, gulls, and jaegers are suspected to have depredated most of the nests (Pearce et al. 1998). On Kigigak Island in the Yukon-Kuskokwim Delta, nest success ranged from 20-95% in 1991-1995 (Harwood and Moran 1993, Moran and Harwood 1994, Moran 1995, Moran 1996). Nest success may have been higher in 1992 than in other years of observation, because foxes were eliminated from the island prior to the nesting season that year. Apparent nest success in 1991 and 1993-1995 in the Kuparuk and Prudhoe Bay oil fields on the North Slope ranged from 25-40% (Warnock and Troy 1992, Anderson et al. 1998).

Spectacled eider incubation lasts 20-25 days (Dau 1974, Kondratev and Zadorina 1992, Harwood and Moran 1993, Moran and Harwood 1994, Moran 1995). Average clutch sizes on the North Slope average 3.2-3.8, with clutches up to 8 reported (Quakenbush et al. 1995, Troy pers. comm.). Hatching on the North Slope occurs from mid- to late July (Warnock and Troy 1992). Fledging occurs approximately 50 days after hatching. At this time, females with broods move directly from freshwater to marine habitats (Dau 1974, Kistchinski and Flint 1974).

On the nesting grounds, spectacled eiders feed by dabbling in shallow freshwater or brackish ponds, or on flooded tundra (Dau 1974, Kistchinski and Flint 1974). Food items include mollusks, insect larvae such as Tipulidae (craneflies), trichopterans (caddisflies), and chironomids (midges); small, freshwater crustaceans, and plants or seeds (Cottam 1939, Dau 1974, Kistchinski and Flint 1974, Kondratev and Zadorina 1992). Spectacled eiders in the marine environment feed predominately on clams and small amounts of snails, amphipods, and other bivalves. In March-April 1999 and 2001, studies within the spectacled eider wintering areas showed that the esophagi of collected eiders contained only clams, almost entirely *Nuculana radiata* with no trace of the once dominant and preferred *Macoma calcaria* (Lovvorn 2002). Changes in the density of *Macoma calcaria* in the Bering Sea are coincident with an oceanic regime shift to warmer conditions in 1976-77 (Lovvorn et al. 2002 review). Exceptional climate change in the arctic and subarctic, and associated changes in marine communities and ice dynamics in spring, may have had important impacts on spectacled eiders.

The range-wide population of spectacled eiders is estimated at 375,000 (Larned and Tiplady 1999). From the early 1970s to the early 1990s, numbers of pairs on the Y-K Delta declined by 96% from 48,000 to 2,000, apparently stabilizing at that low level (Stehn et al. 1993, Petersen et al. 1999). This dramatic decline on the Y-K Delta was the primary reason the species was listed as threatened in 1993. On the North Slope, however, trends in population size are much less clear. Abundance indices from North Slope eider surveys in 1993-2003 do not show a statistically significant trend (Larned et al. 2001b, Larned et al. 2003), and data from prior to 1993 are not suitable for trend analysis.

Factors known or suspected to affect survival of spectacled eiders have been identified but the relative importance of these factors to the species' decline and recovery are not known. The extent and causes of population decline are difficult to assess because historical data are lacking for many locations. Several of the following factors are known to affect survival during the nesting season, but it is not clear whether they contributed to the decline of the spectacled eider population.

Lead poisoning is a confirmed cause of mortality of eiders that ingested lead shot on the breeding grounds in the Yukon-Kuskokwim Delta. Spent shot pellets are eaten, either as grit or by eiders foraging in sediments for food. The grinding action of the eider's gizzard, in combination with the acidic environment of its digestive tract, causes toxic lead salts to be released into the body. The proportion of spectacled eiders on the Y-K Delta's lower Kashunuk River drainage that contained lead shot in their gizzards is high (11.6%, n=112) compared to other waterfowl in the lower 48 states from 1938-1954 (8.7%, n=5088) and from 1977-1979 (8.0%, n=12,880). The lead exposure rate in spectacled eiders (based on X-rays) is likely biased low (Flint et al. 1997), because lead is retained in the gizzard for only about three weeks (Elder 1954, Dieter and Finley 1978, Anderson and Havera 1986, Franson 1986, Anderson et al. 1987). Blood analyses of spectacled eiders indicate elevated levels of lead in 13% of pre-nesting females, 25.3% of females during hatch, and 35.8% during brood rearing. Nine of 43 spectacled eider broods (20.9%) contained one or more ducklings exposed to lead by 30 days after hatch (Flint et al. 1997). Spent lead shot in the lower Kashunuk River area and on Kigigak Island is causing additive mortality in spectacled eiders, that is, mortality over and above that caused by natural circumstances (Grand et al. 2003). It is possible that exposure to lead occurs in small, localized hunting areas on the North Slope as well, however, there are no site-specific data on lead contamination in this region.

Predation pressure on spectacled eider eggs, young, and adults may have increased in recent decades. Predators include arctic foxes (*Alopex lagopus*), red foxes (*Vulpes fulva*), large gulls (*Larus* spp.), jaegers (*Stercorarius* spp.), and snowy owls (*Nyctea scandiaca*). Native elders on the North Slope believe that fox numbers have increased in recent decades as a result of reduced trapping. Wastes made available from the commercial fishing industry in the Bering Sea and North Pacific, along with an increase in the garbage generated by coastal communities, have increased the year-round food supply for gulls. Glaucous gull populations could have increased in response to an increased food supply. However, a recent analysis of three aerial survey data sets revealed no clear evidence of an increase in North Slope gull numbers since the 1970's, although an increase of less than 100 percent would not have been detectable using this analysis (L. Noel, Entrix, pers. comm.).

Subsistence harvest of spectacled eider eggs and adults is another potential factor in the decline of the spectacled eider population. Alaska Natives have traditionally harvested eiders and their eggs in coastal villages during spring and fall. Subsistence harvest surveys for the North Slope indicate that an average of 155 spectacled eiders were taken at Wainwright during 1988-1989 and only 2 spectacled eiders were reported taken at Barrow during 1987-1990 (Braund et al. 1993). Yup'ik Eskimos on the Y-K Delta have traditionally harvested spectacled eiders for subsistence purposes (Klein 1966). Although the human population on the Y-K Delta has grown substantially, changes in the numbers of active hunters are unknown. Similarly, available harvest technologies have become increasingly efficient, but the actual effects of new technologies on harvest levels are unknown. The estimated harvest of spectacled eiders on the Y-K Delta from 1992-95 averaged 272 birds/year (Service, unpublished data); the 1992-2001 average is 123 birds/year (Service, unpublished data).

There are other sources of take such as avicultural egg collecting (until 1991), disturbance from research activity, and loss of habitat in growing communities and oilfields. Their overall impacts to the spectacled eider population is unknown.

Other potential factors that may affect spectacled eider survival have been suggested but not investigated. These include changes in the invertebrate community structure in their winter habitats, bioaccumulation of contaminants in the marine environment, human harvest for sport and subsistence outside their breeding grounds, disease, parasites, and accidental strikes and/or disturbance of benthic feeding areas by commercial fishing activity.

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In 1996, a Recovery Plan was finalized by the Service that provided strategies to recover the Alaska-breeding spectacled eiders to the point that protection under the Act is no longer required (i.e., “delisting” is appropriate). Objectives identified were: 1) prevent further declines of the Alaska-breeding population (including both the northern and western Alaska subpopulations); 2) determine size, trends, and distribution of the northern and western Alaska-breeding subpopulations; 3) investigate population dynamics by conducting population viability analysis (PVA); 4) determine if population declines and/or reproductive failures result from accumulation of environmental contaminants; 5) investigate the habitats used and prey items selected by foraging spectacled eiders away from breeding grounds; 6) assess the contribution of subsistence harvest to population trends; 7) investigate whether predator-prey relationships can account for population declines; 8) determine genetic profile of 3 major populations; and 9) collect data on the impacts of diseases and parasites.

On January 10, 2001, the Service designated 38,991 mi² of critical habitat for spectacled eiders at molting areas in Norton Sound and Ledyard Bay, breeding areas in central and southern Yukon-Kuskokwim Delta, and wintering area in waters south of St. Lawrence Island. Although the Service believes some portion of the North Slope is essential for the conservation of the species and therefore meets the definition of critical habitat, we did not designate critical habitat on the North Slope. The Act provides that an area essential to the conservation of listed species can be excluded from critical habitat designation if the benefits of excluding the area outweigh the benefits of designating the area as critical habitat, provided that exclusion does not result in the extinction of the species. The Service believes that there are few, if any, benefits of designating critical habitat on the North Slope at this time. Federal agencies already consult with us on activities they are associated with on the North Slope. Our experience with these consultations is that it is unlikely that critical habitat designation will change their outcome. Moreover, those wishing to carry out activities on the North Slope are already aware of the importance of the North Slope to breeding spectacled eiders, so there is no informational benefit of designating critical habitat. There are disadvantages of designating critical habitat on the North Slope. We believe that some portion, though not all, of the North Slope is essential to the conservation of spectacled eiders, yet the available information does not allow us to discern which specific areas should be designated as critical habitat. While a subset of the North Slope could be designated as critical habitat, we believe that to designate such an area without a more reliable biological basis would convey an inaccurate message about the size and location needed for recovery and may undermine ongoing cooperative efforts to carry out conservation efforts

ENVIRONMENTAL BASELINE

Regulations implementing the ESA (50 CFR §402.2) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation, and the impacts of State and private actions which are contemporaneous with the consultation in progress.

Status of Spectacled eiders and Steller's eiders within the action area

The NW Planning Area is nesting habitat to over 70% of spectacled eiders and over 90% of Steller's eiders on the North Slope (Stehn and Platte 2000). In summer, spectacled eiders are widely distributed near lakes or coastal margins throughout much of the NW Planning Area with a trend toward higher abundance inland. Steller's eiders are sparsely distributed across the NW Planning Area while breeding pair density is greatest near Barrow (Obritschkewitch et al. 2001). Both species are essentially absent from the Area from October to May (Larned et al. 2001). Although the breeding frequency has decreased for Steller's eiders on the North Slope, except near Barrow, no trend is discernible in spectacled and Steller's eider population sizes Slope-wide (Quakenbush et al.

2002). Furthermore, the factors that limit abundance on the North Slope have not been identified. Therefore, it is difficult to determine whether human activity and habitat alteration have affected the status of the species in the project area. However, factors that may have affected the status of the species in the project area include loss of breeding habitat, disturbance from oilfield operations, research efforts, ingestion of lead shot, increases in predator populations, and subsistence harvest.

Factors affecting the species within the action area

Breeding habitat on the North Slope has remained largely unaltered and uninhabited by humans. A small portion of the species' potential breeding range has been altered by oil and gas exploration/development. The NSB currently operates the only oil/gas production well within the NW Planning Area (located on Native land outside Barrow). To date, no oil and gas developments have been constructed on Federal lands within the NW Planning Area. However, oil and gas exploration has been ongoing within NPR-A since 1923. The U.S. Navy did seismic work and exploratory drilling within the NW Planning Area for oil and gas from 1923 to 1973. BLM held the first oil and gas lease sales within the NW Planning Area in 1982, 1983 and 1984. Those leases have since expired and Federal land in the NW Planning Area and split-estate lands will not be available for leasing until the Record of Decision (ROD) for the NW Planning Area IAP/EIS identifies areas once again available for leasing (December 2003). In 1998, BLM issued an ROD for the NE Planning Area IAP/EIS that made 4 million acres available for oil and gas leasing. Within the last decade oil and gas exploration/development has spread out from the ACP near Prudhoe Bay north to offshore platforms in the Beaufort Sea, east to the borders of the Arctic National Wildlife Refuge and west to Teshekpuk Lake. In October 2003, BLM announced plans to reopen the NE Planning Area IAP/EIS and reissue it in a format similar to the IAP/EIS for the NW Planning Area. With the recent economic discoveries of oil in the NE Planning Area and the impending development there, lands to the west in the NW Planning Area have become of greater interest for oil and gas exploration. The discoveries suggest there is oil and gas potential for certain geological structures in parts of the NW Planning Area, particularly near the Beaufort Sea Coast as it stretches west-northwest across the ACP toward Barrow. Impacts of oil and gas activity in the NW Planning Area include disturbance, accidental spills of toxic materials, potential new roads, off-road vehicle use, wetland filling, increases in predator populations and indirect effects of human presence in areas previously uninhabited.

Human population growth in the vicinity of Barrow and other NSB communities has also resulted in localized habitat loss due to construction activities and off-road vehicle use. On-road and off-road vehicle traffic are potential sources of disturbance. Steller's eider research conducted in the Barrow area jointly by the Service and NSB is also a source of disturbance, because those activities are oriented toward locating nests and broods. One nest depredated in 2000 likely resulted from nest-search disturbance, when the nest was left exposed to a jaeger because of the proximity of the researcher (Obritschkewitsch et al. 2001). Investigator disturbance studies on spectacled eider nests on the Yukon-Kuskokwim Delta found that routine visitation to nests resulted in an 0.08% additional loss of egg production from 1994-2002 (Bowman and Stehn 2003). Nest abandonment, in the absence of predation, has been documented after research-related trapping and handling of an incubating hen; it is possible that other forms of human disturbance near a nest could cause abandonment.

Lead or other sources of contamination of habitat or prey species are possible in localized areas within the range of Steller's and spectacled eiders. Listed eiders may swallow lead shot pellets when they probe the bottom for food, mistaking them for food items or grit. While on breeding grounds, listed eiders typically dig in the bottom of lakes and ponds for their food and are therefore at great risk for lead contamination. Although ingestion of lead is thought to take place primarily on the

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breeding grounds, exposure in marine molting and wintering areas has not been definitively excluded. Exposure of waterfowl to lead has been documented in the range of both spectacled eiders and the Alaska-breeding population of Steller's eiders. Elevated blood and tissue lead levels, morbidity, and mortality from lead poisoning were found in spectacled and common eiders (*Somateria fischeri* and *S. mollissima*, respectively) on the Yukon-Kuskokwim Delta (Franson et al. 1995, Flint et al. 1997, Flint and Herzog 1999). On breeding grounds near Barrow, one Steller's eider found dead in June had liver and kidney lead concentrations suggestive of lead poisoning, although several other Steller's eiders examined at the same time of year had lower lead tissue concentrations (Trust et al. 1997, Service, unpublished). Blood samples from nesting hens trapped near Barrow in 1999 and 2000 showed that all (8 of 8) had concentrations exceeding the clinical threshold for lead exposure and 7 of 8 exceeded thresholds for lead poisoning in waterfowl.

Often, with increases in human presence, there is a concomitant increase in nest predator populations such as gulls, ravens, and foxes. Residents of Barrow and other North Slope communities have observed an increase in populations of gulls and arctic foxes. Increased densities of arctic foxes and glaucous gulls associated with human development, particularly landfills, have also been noted at Barrow and Prudhoe Bay and common ravens have expanded their breeding range into these areas as well. There is very little information on predation of Steller's and spectacled eider nests throughout most of the species' range in Alaska. Near Barrow, however, Steller's eider nest success in recent years has been very poor. Of 186 nests found from 1991-2000, only 15-18% survived until hatching, with predation thought to be the primary factor causing nest failures (Quakenbush et al. 1995, Obritschkewitsch et al. 2001). In addition to causing nest failures, predators at Barrow further reduced productivity through partial predation (where some but not all eggs in a nest were eaten) and by killing ducklings that survived the incubation period (Quakenbush et al. in prep.). Studies of nest predation in other areas have reported mixed results. For example, apparent nest success on the Indigirka River Delta, Russia in 1971 was 10-15%, and eiders nesting near gull nests had higher nesting success (Kistchinski and Flint 1974, Mayfield 1975). However, in 1994 nest success was <2% and nest predators such as arctic foxes, glaucous and herring gulls, and parasitic and pomarine jaegers are suspected to have depredated most of the nests (Pearce et al. 1998). Also, nearly complete predation of spectacled eider nests by jaegers and foxes was recorded on the Chaun River Delta, Russia after a June snow storm (Kondratev and Zadorina 1992). Predation by gulls, jaegers, and arctic foxes probably affects the survival of Steller's and spectacled eider eggs and ducklings throughout the species' range.

Sport hunting for Steller's and spectacled eiders was closed in 1991 by Alaska State regulations and Service policy. Outreach efforts have been conducted by the NSB and the Service to inform hunters of these closures. In 2003, a spring subsistence hunting season for migratory birds in Alaska was proposed. Although, killing listed eiders is not permitted by the spring hunting regulations, many hunters cannot identify birds on the wing and will likely mistake their quarry killing prohibited species. An ESA consultation for this spring subsistence hunt was completed in May 2003 and adverse impacts identified in the BO are considered here and will be considered in future consultations concerning listed eiders in Alaska. Accurate information on current harvest rates is not available, but hunter surveys and other observations indicate that both intentional and unintentional shooting of Steller's and spectacled eiders likely continues in Northwest Alaska (Paige et al. 1996, Georgette 2000, Wentworth 2001).

Research efforts unrelated to listed eiders also result in impacts within the action area. Field research typically occurs during the summer months, but numbers, locations, and type of activities remain speculative because data quantifying this activity has not been collected by BLM for the NE Planning Area. Through section 7 processes, the Service provides project applicants with recommendations and restrictions intended to minimize impacts of oilfield research on listed eiders. These include

timing restrictions and buffers around known nest sites and likely benefit listed eiders at the individual level. Estimating impacts from field research is difficult because despite section 7 requirements that field researchers consult with the Service, many researchers are unaware of the requirement and hence never consult. Our experience tells us that individual research projects typically don't have impacts that result in take. However, without a big picture understanding of the extent of research activities in NPR-A, it is difficult to determine whether the cumulative effects of field research may result in take.

All of the factors discussed here may have influenced populations of threatened spectacled and Steller's eiders in northern Alaska, although it is unknown if these factors played a major role in either species' decline.

EFFECTS OF THE ACTION ON LISTED SPECIES

This section includes an analysis of the direct and indirect effects of the proposed action on listed eiders and/or critical habitat and its interrelated and interdependent activities. The following analysis is based upon BLM's stated assumption that all projected development will occur in their Area of High Geologic Potential. Furthermore, in order to err on the side of caution, we assume densities of listed eiders throughout the NW Planning Area to be equal to the highest densities of listed eiders observed within the Area of High Geologic Potential. The spectacled eider density figure used for the following analysis was derived from a multi-year aerial survey data set (1992-2002) collected by the Service designed specifically to detect spectacled eiders across the ACP. The entire survey area was divided into 10-km² blocks, and average density (among years) calculated for each block. The Area of High Geologic Potential includes areas of comparatively high spectacled eider density; thus we chose the high end of the range of spectacled eider densities (1.1 observed birds/km²) as the basis for analysis. The density value for Steller's eiders was derived from a multi-year aerial survey data set (1999-2002) designed to detect Steller's eiders in the "Barrow Triangle", a 2757-km² survey area south of Barrow and west of Admiralty Bay, which overlaps with the Area of High Geologic Potential. Density values are available only for the survey area as a whole, and vary considerably among years. We chose to use the density recorded in 1999 (0.06 observed birds/km²), which was the highest of the 4 years. This is considered to be a comparative mid-level density, lower than that which was recorded in the immediate vicinity of Barrow, but higher than the overall average density across the ACP. No high-density Steller's eider clusters have been found the Area of High Geologic Potential.

The assumed densities for both species are intended to represent the high end of a reasonable range, in recognition of the uncertainties regarding the future location of facilities, as well as imprecise information on eider distribution, effects should generally be equal to or less than those noted in this assessment. The assumed densities, however, do not compensate for the bias inherent in estimating bird densities from the air. An established/accepted correction factor is not currently available to convert the numbers observed from the air to the actual number of birds present, compensating for those birds that are not detected from the aircraft. Without such a correction factor, we acknowledge that the aerial survey data used throughout this BO tend to underestimate eider density, biasing our estimate of effects downward.

Oilfield Disturbance

It is likely that disturbance in oilfields can adversely affect listed eiders during nesting, but these effects are usually assumed to be minimal in magnitude. Few quantitative estimates of the extent of adverse impacts of oilfield activity to nesting waterfowl exist for tundra environments. The few studies that have been done deal specifically with investigator disturbance. Several studies demonstrate negative effects of investigator disturbance on waterfowl nesting success. Infrequently,

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waterfowl will permanently abandon nests after they are disturbed. On the YKD, investigators estimated that nest trapping resulted in a loss of 5% of cackler geese eggs due to desertion (Mickelson 1975). A single search of study plots for an investigator disturbance study done for spectacled eiders on the YKD caused the loss of 0.08% of egg production (Bowman and Stehn 2003). Gulls were attracted to, and more nests were destroyed at, eider nesting islands after disturbance (Ahlund and Gotmark 1989). However, in 1997 investigators marked and visited spectacled eider nests at varying schedules and found no difference in survival rates due to observer impact (Grand and Flint 1997).

Steller's and spectacled eider behavior appears to change with changing environmental conditions. At times, they have been observed foraging near human-made structures such as the Deadhorse and Barrow Airports (Service, unpublished). They have also been observed foraging and resting adjacent to docks along the Alaska Peninsula (Service, unpublished). However, we have observed that they move and maintain a distance of at least 100 meters from humans and operating vessels. As such, we do not anticipate total abandonment of areas due to investigator activity, but anticipate some level of disturbance due to the presence of the investigators.

Potential avenues of disturbance associated with the proposed action include exploration/delineation activity, oilfield construction, oil spill response training, production activity, pipeline maintenance, staging area activity, infield roads, increased aircraft traffic, watercraft support, and gravel mining/transport. Disturbance resulting from production activity, infield roads, oil spill response training and staging area activity is expected to be constant/chronic and result in driving listed eiders out of habitats within a zone of influence around infrastructure. Therefore, these avenues of disturbance are addressed in the Habitat Loss subsection of this Effects of the Action section. Also, because BLM assumes that oilfield construction, pipeline maintenance and gravel mining/transport will only occur during the winter months when listed eiders are not present in the NW Planning Area, we do not believe these activities will disturb listed eiders. Therefore, this subsection only addresses adverse impacts to listed eiders resulting from aircraft traffic, watercraft support, and exploration/delineation activity.

Disturbance from aircraft traffic, watercraft support, and exploration/delineation activity could adversely impact Steller's eiders by: 1) displacing adults and/or broods from preferred habitats during pre-nesting, nesting, brood rearing and migration; 2) displacing females from nests, exposing eggs or small young to inclement weather or predators; and 3) reducing foraging efficiency and feeding time. The behavioral response of listed eiders to nesting disturbance is unknown. Some Steller's eiders nest and rear broods near the Barrow Airport and spectacled eiders have been seen nesting near the Deadhorse Airport. This indicates that some individuals may tolerate frequent aircraft noise. However, individual tolerances are likely to vary and the intensity of disturbance associated with the proposed action would, in most cases, be more variable and potentially more disturbing than that experienced by birds near the Barrow and Deadhorse airports. Some birds may be displaced with unknown physiological and reproductive consequences. However, the number of listed eiders that would be exposed to oilfield activity is variable depending on the location of oilfield infrastructure within the NW Planning Area.

1. *Aircraft Overflights*

Aircraft would primarily be used to support winter oil exploration, development, production and abandonment activities in the NW Planning Area. Wintertime aircraft flights associated with oil activities should have no effects on listed eiders. Nesting Steller's and spectacled eiders could be disturbed by summer aircraft overflights in support of exploration, development, production and abandonment activities. However, instances of disturbance to nesting spectacled and Steller's eiders is expected to be rare due to their extremely low

densities across the North Slope. Across the ACP of the North Slope, breeding season density averages approximately one pair per 8 km² for spectacled eiders (Larned et al. 2002a). Steller's eiders are so rare in some years that they are not detected at all by aerial survey methods. In the core Steller's eider breeding area near Barrow, the highest density recorded in four years of aerial surveys was estimated as approximately one pair per 12.5 km² (Ritchie and King 2002). Densities elsewhere on the ACP are lower, possibly approaching zero in some areas in some years.

The number of aircraft trips flown in support of exploration/delineation drilling on the North Slope averages 90 each year per well drilled (MMS 2002). Assuming similar exploration/delineation activity levels for all lease sales presented in the BA, it is estimated that 6,480 aircraft flights will result from exploration/delineation (90 flights x 72 exploration/delineation wells). Most flights would transport employees between Alpine, staging areas and as yet unspecified exploration sites. Aircraft activity will also likely be the principle method of supply early in the development phase prior to construction of staging areas. From June 1, 2001, to July 15, 2002, there were a total of 1,474 aircraft landings or take offs (a daily average of 32.8 operations) at the Alpine site (Johnson, et al, 2003, ABR 2001). BLM expects Alpine-like levels of aircraft activity during the summer development phases for each of the anchor developments. The number of flights needed to support the facility during production is estimated at 9-14 per week (14 flights/week x 52 weeks/year x 30 years x 2 facilities = 43,680). There would also be helicopter flights along the length of the pipeline to monitor its integrity on a monthly basis (12 flights per year x 30 years = 360).

In addition to aircraft flights to support oil activities, the BA assumes that recreational and research related flights would increase under the Preferred Alternative. Additional recreation-field flights would result from 30 one-week float-trip parties per year (each round trip equals two flights), which is equal to 1800 flights over the oil activity life of the NW Planning Area (60 flights/year x 30 years). Research related flights are estimated to number 4,800 (160 per year x 30 years) (Service, unpublished). In total, additional aircraft flights over the NW Planning Area resulting from adoption of the Preferred Alternative would number 57,120. It is important to note that this is a crude estimate and that the majority of these aircraft flights are expected to occur in winter when listed eiders are absent from the NW Planning Area.

Summer aircraft traffic could adversely impact threatened eiders by: 1) displacing adults and/or broods from preferred habitats during pre-nesting, nesting, brood rearing and migration; 2) displacing females from nests, fragmenting broods and exposing eggs or small young to inclement weather or predators; and 3) reducing foraging efficiency and feeding time. The behavioral response of eiders to aircraft overflights is largely unknown. Some spectacled eiders nest and rear broods near the Deadhorse Airport, indicating that some individuals may tolerate frequent aircraft noise. Also, some Steller's eiders nest and rear broods near the Barrow Airport, indicating that some individuals may tolerate frequent aircraft noise. However, individual tolerances are likely to vary and the intensity of disturbance associated with the proposed action would, in some cases, be greater than that experienced by birds near the two airports. Some birds may be displaced with unknown physiological and reproductive consequences. Also, the number of eiders that would be exposed to aircraft overflights is variable. This is, in part, because the potential flight paths to drilling sites within the NW Planning Area could range from short (e.g., a direct route from a staging area in Cape Simpson to areas just south of Admiralty Bay) to lengthy (e.g., a flight path from Alpine to a remote exploration site south of Atqasuk). Because the greatest potential for commercially developable oil lies just west of the NE Planning Area along the

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Beaufort Sea coast as it stretches northwest across the ACP, listed eiders between Alpine and the Barrow area are much more likely to be overflowed than those in more distant portions of the NW Planning Area.

In conclusion, BLM assumes that the most likely locations for exploration in the NW Planning Area are just west of the NE Planning Area along the coast as it stretches northwest across the ACP to Admiralty Bay (Area of High Geologic Potential). Steller's eiders are rare east of Admiralty Bay, and the probability of affecting large numbers is diminished because of the relatively short flight path between these areas and the proposed staging area at Cape Simpson (BLM assumes 0.06 birds/km² within the Area of High Geologic Potential). Although Spectacled eiders nest in much higher densities than Steller's eiders within the Area of High Geologic Potential, they still are so sparsely distributed across the area, that population level effects due to aircraft disturbance are unlikely (BLM assumes 1.11 birds/km²). In addition, ROP F-1 seeks to ensure that aircraft used for permitted activities maintain protective altitudes over various portions of the NW Planning Area. Although these flight specific measures are primarily directed toward human subsistence activities, they may also benefit listed eiders where listed eider and protected caribou habitats overlap. Therefore, while aircraft overflights potentially could cause adverse effects to individuals of either species, their low nesting densities combined with the number of summer flights anticipated and protections afforded via ROPs suggest that few individuals would likely be impacted. For these reasons, we do not believe that aircraft disturbance will cause population-level effects.

2. Watercraft Support

Disturbance to Steller's and spectacled eiders from watercraft support emanating to/from staging areas is possible. Under the Preferred Alternative, nonrecreational airboats would be allowed on streams, lakes, and estuaries seasonally accessible by motorboats. Airboats would be prohibited in seasonally flooded tundra and shallow waters with wetland vegetation adjacent to streams, lakes, and estuaries (BA Table II-01). However, for this analysis it is assumed no facilities would be constructed adjacent to waterways that could support nonrecreational use of watercraft within inland waterways because of setbacks required by stipulations K-1, 2 and 3.

During the summer open-water season (mid-July to early October), the BA assumes some marine transportation of equipment and supplies needed for exploration and development. Thirteen vessel round trips per summer, from an equipment source area to a staging area, are forecast for each oilfield during the construction period (2 staging areas x 13 trips/year x 30 years = 520 trips total). Barges might also be used for transport because of logistic and economic issues associated with moving heavy equipment and materials, either by ice road or rolligon, over the long distances from current infrastructure.

During the production phase it is likely that facilities would be supplied by annual sealift. Most of these supplies would arrive in containers by barge in late July or August. The container would be offloaded with cranes and stacked on the gravel pad at the staging area. The typical container is less than 10 feet in height. Barge traffic generally would be limited to routes in shallow, nearshore, waters between staging areas connected to existing infrastructure (e.g., West Dock, Oliktok Point or Deadhorse) and proposed staging areas along the NW Planning Area coastline at Cape Simpson or Barrow.

The amount of disturbance resulting from vessel traffic would likely last throughout the open-water season and would depend on trip frequency, which is determined by the number of concurrent projects and the stage of development. Supply vessels are likely to follow established routes, so the actual area with disturbance would be limited. Spectacled and Steller's eiders that are accompanying young, staging or migrating in coastal or offshore waters during the staging/migration periods (late June/early July; late August/September), could encounter vessels associated with oil and gas activities in the NW Planning Area. Listed eiders and broods would typically avoid such encounters by flying away. The level of disturbance anticipated will be variable depending on the extent, type and routes of supply/transport taken. However, because of the vast amount of available staging habitat in the Chukchi and Beaufort Seas, listed eiders would likely move to areas of low watercraft activity. Hence, impacts to listed eiders from watercraft activity are expected to be minimal.

Extensive nearshore and offshore aerial surveys in the Beaufort Sea in 1999 and 2000 detected two flocks of spectacled eiders (numbering 40 and 100) offshore in the Harrison Bay area (no Steller's eiders were observed) (Fischer et al. 2002). Satellite telemetry work done on spectacled eiders in the Prudhoe Bay oilfields during 2000 and 2001 showed that Smith Bay was an important marine area for females and Gwydyr Bay for males (TERA 2003). Vessels traveling from Deadhorse to the proposed staging areas will repeatedly traverse both these bodies of water.

If watercraft activity occurs between October and May, the probability of encounters with spectacled or Steller's eiders would be low. This probability increases, however, if the action occurs between May and October because of the presence of spectacled and Steller's eiders migrating across the Chukchi and Beaufort seas to reach breeding grounds in the spring and when migrating to molting/staging areas in the summer and fall. Nonetheless, given the low density of these species in the marine environment, we assume that few listed eiders would encounter vessel traffic. Although numbers of birds displaced could be substantial depending upon the season of occurrence (tens or hundreds of individuals, particularly during fall migration), alternate foraging and staging habitat would be available away from probable routes. We believe that eiders would avoid such encounters by flying away, that the frequency of those disturbances will not reach the threshold that would impair survival, and that alternative suitable habitat is available. Under these conditions, take is unlikely, and impacts would not result in population-level effects.

3. Exploration/Delineation and Support Activity

Exploratory/delineation drilling, seismic work and support activities within the NW Planning Area would occur mostly during winter when listed eiders are absent. However, indirect impacts on eiders could occur in summer as a result of winter exploration activities. For instance, exploration drill rigs would be moved at the end of the winter season either to an existing gravel pad and cold stacked, or cold stacked on a special ice pad designed to last throughout the summer into the next winter. Some disturbance to eiders could occur from aircraft travel to these sites in summer. However, the frequency of these flights would be low compared to other areas where impacts of air traffic have been studied (Johnson et al., 2003, Martin 1997).

The presence of maintenance personnel at the seismic camps in summer may cause some disturbance to eiders in the immediate vicinity of gravel/ice pads and could result in nest failure. Following the end of each winter seismic season, each seismic crew would store its equipment at a staging area or special ice pad. Sometime during the summer, a repair crew

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would spend 2-4 weeks performing annual maintenance and installing upgrades to the seismic equipment. These activities would require aircraft support, with one to two fixed-wing and two to three helicopter flights per week. Upon completion of the maintenance work, the crew would leave the equipment cold stacked and there would be no activity until the following winter. BLM assumes that maintenance would be self-contained and use accommodations that are part of the cold-stacked seismic camp. Also, on completion of the work, all wastes would be removed and disposed of at approved disposal sites on the North Slope. None of these activities would require the establishment of new landfill locations. The approved landfill currently in operation at Deadhorse most likely would be used for materials not requiring additional treatment.

We believe that the frequency and nature of disturbance from seismic camps and exploration/delineation support will not reach the threshold that would impair survival, and that alternative suitable habitat would be available. Therefore, based on the frequency and nature of disturbance from seismic camps and exploration support assumed within the BA, population-level impacts to listed eiders via disturbance from exploration/delineation activity are unlikely.

In conclusion, the proposed oilfield activities may adversely affect individual listed eiders. However, their low nesting densities combined with the limited amount of proposed oilfield infrastructure/activity suggests that few individuals would likely be adversely impacted.

Habitat Loss

Exploration, development and production activities may result in disturbance and altered habitat effects on behavior, distribution, and abundance of listed eiders in or adjacent to the NW Planning Area. Depending on location and season, oil/gas exploration, development, and production in areas where listed eiders occur could render habitats unavailable due to disturbance or filling/coverage from construction activities, gravel mining, pads, and roads, facilities, and drilling activities.

Winter exploration activities and summer storage of a drill rig on an ice pad (5-6 acres) may alter habitats temporarily (e.g., compression of standing-dead vegetation, or delayed phenology of vegetation due to late ice melt). This activity could affect the distribution of eiders occurring in or adjacent to the NW Planning Area in subsequent summer seasons. The magnitude of these impacts depend on a variety of factors including habitat type, volume of ground ice, and local hydrology (Walker et al., 1987). Only a small portion of the tundra within the NW Planning Area would be affected during any particular year, particularly of the wetter habitats that listed eiders frequent.

BLM assumes that 8 oilfields, 2 staging areas, 1 pump station, 8 material sites and 386 km of oil pipeline are likely to be developed in the High Geologic Potential Area of the NW Planning Area. Substantial numbers of listed eiders could be affected by disturbance, though most incidents are expected to result in minor effects. However, the impacts of repeated disturbance could extend for longer periods and may potentially affect physiological condition, molt, nest success, and survival of individuals.

Placement of gravel fill for roads and pads will likely result in the destruction of breeding habitat and/or actual take of listed eiders or nests. The Preferred Alternative assumes that 1.1 km² of known habitat would be eliminated by gravel mining operations within the NW Planning Area. The actual gravel footprint assumed for development of anchor and satellite facilities (including associated roads), a roadless pump station, and staging areas would total 5.7 km² (BA Table 1). The Service

considers areas covered by gravel as permanently eliminated as productive breeding and foraging habitats for wildlife.

Because some maintenance of exploration, development and production facilities would be done during the summer breeding season, we expect displacement of local breeding individuals from affected sites and probably also from the immediate area. Also, alteration of nesting habitat adjacent to oilfield infrastructure could be caused by delayed snowmelt and compaction of vegetation in areas underlying ice roads, dust fallout from vehicle traffic, thermokarsting from tundra disturbance, and changes in the hydrologic regime due to industrial surface disturbance and water withdraw from local sources. In succeeding breeding seasons, displaced individuals may relocate to nearby habitat. Such displacements are not expected to cause long-term effects on population productivity given the relatively small areas likely to be involved at a given site, but could result in long term or permanent displacement and shift in distribution. The Service assumes that disturbance from exploration, production, and development is likely to be limited to within 200 meters of the activity; a few eiders may experience temporary, non-lethal effects that may continue through the summer. Therefore, we agree with BLM's estimate that 87.4 km² of potential listed eider habitat is likely to be impacted by oilfield infrastructure under the Preferred Alternative (assuming a 200 meter buffer which in the Service's best professional judgement, is recommended as a protection measure for listed eiders). Because BLM assumes no active mining or pipeline maintenance would occur during the time when listed eiders are present in the NW Planning Area, we did not consider analyzing impacts within a zone of influence for material sites and pipelines.

While 87.4 km² may not be a significant proportion of the total amount of habitat available, adverse effects to individuals are anticipated. Ultimately, habitat loss on the North Slope could eventually result in population-level effects. The presence of facilities and construction of gravel structures with the NW Planning Area could result in displacement of listed eiders from favored habitats and the associated energy costs could result in short-term negative effects during breeding, brood-rearing, or migration. Affected eiders may respond to oil production by relocating before or during the nesting phase, abandoning a nest, or relocating the brood to a more distant area once hatching is completed. Observations from Prudhoe Bay suggest that spectacled eiders exhibit some tolerance of facilities (including production pads) and service roads (TERA 1996). Telemetry studies in 1993 and 1994 showed broods spending time within 200 m (656 ft) of facilities, and crossing roads (five known broods in 1995 and two in 1994) (TERA 1997).

We believe that potential impacts to eider habitat from seismic activity, ice roads and summer storage of equipment on ice pads would be short-term over a small proportion of the available habitat within the NW Planning Area. Construction and operation of exploration facilities, production infrastructure and access roads may displace and/or disturb individual eiders. However, the total area affected is small enough that it is not expected to result in population-level impacts. Also, ROP E-11 states, "Surveys shall be conducted by the lessee for at least 3 years before authorization of construction. If listed eiders are determined to be present within a proposed development area, the applicant shall consult with the FWS and BLM in the design and placement of roads and facilities in order to minimize impacts to nesting and brood-rearing eiders and their preferred habitats." Therefore, overall impacts to threatened eiders from habitat loss due to oilfield activity is likely to be low and will not result in population-level effects.

Collisions with Oilfield Infrastructure

Migrating birds are at risk of collision with objects in their path, particularly when visibility is impaired during darkness or inclement weather, such as rain, drizzle, or fog (Weir 1976). The incidence of bird strikes appears to rise when objects are illuminated with constant diffuse light, and

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the tendency for birds to be drawn to diffuse light appears to increase during rainy or foggy weather. Accidental strikes of “hundreds” of unidentified eiders were reported to have occurred in association with the Bering Sea crab fishery, presumably influenced by the bright lights used on fishing vessels (Service, unpublished). Comparisons have shown that blinking lights cause less mortality than constant lighting, and the color of the lights and the object may influence collision frequency (Weir 1976). Cross-sectional area also affects the number of birds that strike an obstruction.

It has been reported that 88% of eiders migrating over the Beaufort Sea flew below an estimated altitude of 10 m (32 ft) and well over half flew below 5 m (16 ft) (Johnson and Richardson 1982). Although information specific to listed eider flight behavior is lacking, a spectacled eider was seen striking a utility wire near an electric light in white-out conditions on St. Lawrence Island in 1998 (Service, unpublished data). In September-October 2001, several sea ducks fatally collided with Northstar Island. In 2001, 36 birds were retrieved at Northstar Island and Endicott, all sea ducks, including 5 king eiders, 23 common eiders, and 8 long-tailed ducks (Service, unpublished data). In 2002, 3 long-tailed duck fatalities resulted from platform strikes at Northstar. To date for 2003, 1 common eider and 1 long-tailed duck fatal collision have occurred at Northstar, 5 common eiders have fatally collided with Endicott, and 4 dead/injured spectacled eiders have been retrieved by the Service that likely collided with overhead power lines/ guy wires (3 at Barrow and 1 at Prudhoe Bay) (Service, unpublished data). The densities of Steller’s and spectacled eiders on the North Slope are much lower than king eiders, common eiders and long-tailed ducks. Therefore, the potential for Steller’s and spectacled eiders striking nearshore oil platforms is much lower.

Because most threatened eiders on the North Slope migrate to/through the NW Planning Area either on route to breeding grounds or when returning to molting/staging areas, drilling, tower and wire structures associated with oil exploration, delineation, development and production may pose collision risks to listed eiders. Although the total profile of exploratory, delineation and production wells and associated structures is anticipated to be small relative to the NW Planning Area, the Service believes that potential structures pose a risk to migrating threatened eiders because: 1) the NW Planning Area encompasses the “main routes” used by threatened eiders (Alaska breeding populations) migrating east and west to and from their breeding grounds (Johnson and Richardson 1982); 2) the artificial lighting associated with drill rigs and towers may serve as a magnet to migrants, particularly during fog and rain (Weir 1976); and 3) the flight altitude of migrating eiders is low and within the height range of oilfield structures.

Most listed eiders on the North Slope migrate through the NW Planning Area either on route to breeding grounds or when returning to molting/staging areas. Therefore, based on our understanding of the biology of the species, their migration routes, distribution, behavior, and collision data from Northstar/Endicott, we believe that there is some risk of injury or death of some individuals from collisions with oil field structures. However, the Preferred Alternative includes 2 ROPs that seek to mitigate this risk. ROP E-10 requires all facilities greater than 20 feet in height to have special lighting protocols, and all communication towers, antennas, and similar facilities needing support wires would be required to have markings to make support wires more visible to low-flying birds, and should mitigate collision risk. ROP E-11 requires that power and communication lines be buried in roads or installed on pipelines to reduce collisions. Therefore, impacts to listed eiders due to collisions is likely to be low and will not result in population-level effects.

Increase in Predator Populations

Several North Slope predators that prey on waterfowl eggs and young concentrate in areas where anthropogenic food sources are available. Examples include large gulls, ravens, and arctic foxes that are abundant near camps, roads, oilfields, and villages. For ravens and foxes, there is evidence showing population increases and/or changes in distribution in response to anthropogenic food

sources, and the breeding distribution of ravens has expanded on the North Slope because buildings and other structures in oil developments provide nesting sites (Day 1998). The predation pressure that foxes, gulls and ravens exert on ground-nesting birds is also well documented, and in some areas predation is the single most important factor affecting nest success.

Spectacled and Steller's eiders may be adversely affected by increased numbers or altered distribution of predators. Ravens apparently never successfully nested in Barrow until 1991 when a single pair began raising a brood each year on a man-made structure. In 1991, one of these ravens was seen depredating five eggs from two Steller's eider nests (Quakenbush et al. 1995). Although information showing a direct link between oilfield activities and waterfowl nest predation rates is lacking, the Service believes that actions that artificially enhance predator populations are a potentially large adverse impact to listed eiders.

Solid waste collection from oil development and production activities on the North Slope is closely regulated and monitored by Federal, State, and local governments. The Alaska Department of Fish & Game has long-standing regulations prohibiting the feeding of game animals. The Alaska Department of Environmental Conservation (ADEC), in a recent upgrade of its solid waste regulations, has begun requiring animal-proof dumpsters across the North Slope. As a result, the North Slope Borough (the local agency responsible for solid waste disposal in the oilfields) outfitted the oilfield with scavenger proof dumpsters manufactured by the Haul-All Corporation, for disposal of putrescible waste.

As stated in the BA, BLM assumes that no new landfills will be constructed to handle wastes from future oilfield activity within the NW Planning Area. In addition, the Preferred Alternative's ROP E-9 and A-2 state that, "The lessee shall utilize best available technology to prevent facilities from providing nesting, denning, or shelter sites for ravens, raptors, and foxes. The lessee shall provide the AO with an annual report on the use of oil and gas facilities by ravens, raptors and foxes as nesting, denning, and shelter sites." and "Attracting wildlife to food and garbage is prohibited. All feasible precautions shall be taken to avoid attracting wildlife to food and garbage. Lessees and permitted users shall have a written procedure to ensure that the handling and disposal of putrescible waste will be accomplished in a manner to prevent the attraction of wildlife." Therefore, as a result of oil activity throughout the NW Planning Area, it is unlikely that there will be sufficient amounts of edible refuse available to result in artificially high predator population levels. Based on the limited number of oilfield facilities assumed by BLM and protections granted via ROPs, we do not believe that the proposed action will affect predator populations sufficiently to cause impacts to threatened eiders.

Increased Subsistence Activity

Alaska Natives have traditionally harvested listed eiders and their eggs in coastal villages during spring and fall. Subsistence harvest surveys for the North Slope indicate that an average of 155 spectacled eiders were taken at Wainwright during 1988-1989 and only 2 spectacled eiders were reported taken at Barrow during 1987-1990 (Braund et al. 1993). Although the human population within/adjacent to the NW Planning Area has grown substantially, changes in the numbers of active hunters are unknown. Similarly, available harvest technologies have become increasingly efficient, but the actual effects of new technologies on harvest levels are unknown.

BLM's reasonable and foreseeable development scenario describes oil field development within the NW Planning Area as being strictly infield and unconnected to other oilfields and/or road systems. Nonetheless, there remains a possibility that the roads within a development may allow local hunters increased access to previously inaccessible areas. For example, if a development were constructed so that its infield roads were within reach of existing ATV trails extending south out of Barrow, hunters

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from Barrow might reach the road system and use it for easy, motorized access to areas farther from Barrow. This increased access could result in added hunting pressure and greater distribution of lead shot.

Those hunters interested in harvesting waterfowl would likely access oilfield infrastructure during the period immediately following spring breakup, when most local hunters concentrate on geese and other returning birds. Although the Service has made an effort to educate the local hunting public about the plight of spectacled and Steller's eiders, and has stated that the prohibition against harvest of these species would be enforced, we suspect some level of harvest continues. However, it is unknown what that level is, or whether the increased access scenario depicted here would result in an increased harvest of spectacled or Steller's eiders in the NW Planning Area.

It currently is illegal to use lead shot for waterfowl hunting within the NW Planning Area. Its lethal and sublethal effects from ingestion by eiders and other waterfowl are well established (Flint and Grand 1997). The Service and other agencies have made efforts to educate North Slope residents on this issue, and clinics have been held to train local hunters how to adjust to the different ballistics of steel shot. Nonetheless, lead shot remains available and is still legal for use in hunting upland game birds such as ptarmigan. Whether through illegal use for waterfowl hunting, or legal use for ptarmigan hunting, use of lead shot could result in distribution of pellets in shallow tundra ponds where eiders could ingest them. Oil field development in the NW Planning Area may result in increased access by bird hunters, which could result in increased lead-shot deposition and distribution in tundra wetlands.

Although roads within oilfield developments may increase the access of local waterfowl hunters to previously inaccessible areas, the small additional area BLM assumes will be roaded, combined with the low densities of listed eiders around those areas is not expected to result in sufficient take to trigger population-level impacts. Additionally, local hunters that previously used areas where oil development occurs may actually avoid that area once a development is constructed. Some villagers of Nuiqsut have told BLM staff they have reduced their use of the Colville River Delta in the vicinity of the Alpine development since its construction (BA page 29). Therefore, overall impact to listed eiders from increased subsistence activity is currently expected to be low.

Oil Spills

Spilled oil can have significant impacts on birds. Exposure to oil can affect birds in several ways. Most birds that come into contact with oil die within a short period of time, often through loss of the insulative properties of their plumage so that hypothermia ensues (Hunt 1987, Piatt et al. 1990). Embryos or young can be killed by contact with adults that have oiled plumage (King and Lefever 1979, Peakall et al. 1982). Birds that ingest contaminated food can suffer fatal toxicological effects (Peakall et al. 1983). Species that feed on invertebrates or other organisms that bioaccumulate and/or biomagnify toxins are particularly vulnerable.

Oil spills and associated clean-up could result from the proposed project. Potential sources of a spill include a drilling blowout, failure of diesel fuel storage tanks, and spills from barges or trucks used to transport fuel oil. Historical data from North Slope oil production show that between 0 and 102 spills per year occurred from 1970-1997; most were small spills, as mean spill size in all years was < 100 bbl (MMS 2002). BLM estimates that over the useful life of the NW Planning Area small crude or refined oil spills (average size = 1-2 bbl) could number 553 if the price of oil averages \$30/bbl. Small spills, although the most likely, have the least impact to wildlife populations because a smaller area is affected and fewer individuals are likely to be exposed. Similarly, spills in the terrestrial environment, though possible, will likely have minimal impact because the density of

Steller's and spectacled eiders is relatively low in the NW Planning Area and spills on land spread slowly and will be more easily detected and contained. Therefore, the Service considers that impacts from small marine spills and spills in the terrestrial environment are not likely to result in the take of individual Steller's and spectacled eiders. Because the Preferred Alternative states that all potential oil development or production will likely occur within terrestrial environments of the Area of High Geologic Potential and that those developments will be set back from rivers, coastal zones and deep water lakes, this BO does not address oil spills resulting from development/production within marine, riverine and/or tidal environments. Also, BLM's EIS assumes the probability of oil spills resulting from exploration/delineation activities in the NW Planning Area to be zero.

The expected impacts of oil spills depends on how accurately spill characteristics, as well as the distribution and behavior of the birds are predicted. Estimating the probability of spills is fundamental: if no oil is spilled, there will be no impacts. If one or more spills occur, characteristics such as volume, trajectory, location and timing will greatly influence the impact on eiders. Patterns of use of the NW Planning Area by Steller's and spectacled eiders are equally relevant. Evaluating the likelihood of spills from exploration and delineation in the NW Planning Area's marine/tidal environments is constrained by the small number of comparable offshore projects in North Alaska. The IAP/EIS estimates that the risk of one or more spills of at least 500 bbl over the life of the NW Planning Area is 38%. Assuming factors similar to Northstar, the likelihood of a very large spill (blowout) >150,000 bbl in size occurring during the lifetime of the IAP/EIS is 9.4×10^{-7} (MMS 2002). However, the impacts of a spill to biological resources (e.g., eiders) vary with location spill, spill volume, spill trajectory, whether the resource is present during the time of year that spilled oil is present, and the length of time that oil persists in the environment. This is exemplified by Stehn and Platte's (2000) model that estimated mortality from a 30-day Beaufort Sea oil spill in July at 2-52 spectacled eiders. While, if a 30-day Beaufort Sea oil spill were to occur throughout August during the period of active westward migration, mortality resulting from a large spill is estimated to be 100 individuals. Oil-Spill-Risk Analysis modeling results within the IAP/EIS estimate that if such a spill does occur over the tundra and then into local lakes or other interconnected wetlands, small numbers of listed eiders could die, especially during the brood-rearing period in late summer. If a large spill were to occur in the NW Planning Area's marine environments, the IAP/EIS estimates that less than 20 individuals would be killed. No estimates of spill risk from barges or trucks used to transport fuel oil to exploratory and delineation sites were given in the IAP/EIS.

Historically, cleanup of spills in the terrestrial environments of the North Slope happens quickly and spills typically remain on limited areas of tundra unless they reach a river, stream, or tidal water body. Off-pad spills on the North Slope generally cover small areas (<500ft²). In marine environments cleanup is anticipated to be limited or prevented by ice and weather conditions in the area. In many cases, final cleanup of an oil spill may only be possible from early July through August after the NW Planning Area is ice free (National Research Council 1994). Because of unstable and broken ice conditions in the area, once a leak is detected, response for containment and cleanup of a spill will be delayed or hindered during 6 months of the year, and then only as weather permits. In addition, historical recovery rates of spilled oil are traditionally very low even when cleanup is not hampered by Arctic weather and frozen or partially frozen seas. Based on national and international data, recovery rates of 20-25% are considered high and are usually not above 10% (Alaska Department of Environmental Conservation 1998, National Research Council 1994).

Oil spill response activities such as hazing and other human activities (boat and air traffic) could also impact threatened eiders. Hazing may have limited success during spring when migrants occupy open water in ice leads. The hazing effect of cleanup activity or actively hazing birds out of

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ice leads that oil is expected to enter may be counterproductive, because there are few alternative habitats that flushed birds can occupy. Cleanup activities in leads during May and open water in July through September are likely to adversely affect listed eiders.

In summary, accidental oil spills can have significant impacts on birds as a result of direct and indirect exposure. Potential sources of a spill include a drilling blowout, failure of diesel fuel storage tanks, or spills from barges or trucks used to transport fuel oil. Small spills are the most likely to occur but that also have the least potential impact to listed species because a smaller area is affected and fewer individuals are likely to be exposed. Similarly, spills in the terrestrial environment will likely have minimal impact because the density of Steller's and spectacled eiders is relatively low in the project area and spills on land spread slowly and will be more easily detected and contained. Large spills (≥ 500 bbl) spills in the NW Planning Area (especially in river or marine environments) would have greater impacts. However, the Preferred Alternative's stipulations K-1 through 8 state that all oil development/production will occur within terrestrial environments of the Area of High Geologic Potential and that those developments will be set back from rivers, coastal zones and deep-water lakes. Hence, we don't consider impacts of oil spills resulting from oil field activities within marine, riverine, near shore and/or tidal environments. In addition, BLM assumes that the probability of an oil spill occurring as a result of exploration/delineation to be zero. Also, the probability of a large oil spill contacting a significant number of spectacled or Steller's eiders is further diminished by considerations of timing, ice and weather conditions, effectiveness of spill response, and the dispersed nature of the birds' distribution. The coincidence of all those factors, which would have to occur simultaneously in order to appreciably reduce the likelihood of survival and recovery, is improbable. Thus, we conclude that such an impact is not reasonably certain to occur.

Toxics Contamination

Oil activity may also result in increasing contamination of marine habitats, due to the disposal of drilling muds and cuttings, or accidental eruption of oil from test wells during a blowout. Such contamination may impact individuals either through direct contact or indirectly as a result of effects on prey populations or important habitats. Information provided by the BLM indicates that industry's record in NPR-A allows the assumption of a probability of crude-oil release during exploration to be zero, however the potential for such an occurrence exists. To mitigate potential contaminate releases, the Preferred Alternative's ROP A-4 mandates several design/activity standards aimed at minimizing the impact of contaminants on fish, wildlife and the environment, including wetlands, marshes and marine waters, as a result of fuel, crude oil and other liquid chemical spills.

BLM's Preferred Alternative assumes that 36 exploration, 36 delineation and 464 production wells are to be drilled over the life of the NW Planning Area. A maximum of 8 drilling rigs would be operable in any one year, assuming one rig per platform. Discharges as a result of these wells are regulated by the Environmental Protection Agency through a National Pollutant Discharge Elimination System (NPDES). The EPA reinitiated consultation with the Service in July 2002 to determine the likelihood that the proposed discharges associated with exploratory drilling would adversely affect listed species. The Service concurred with the EPA that the proposed NPDES permit issuance would not be likely to adversely affect listed species. Therefore, the EPA and BLM have already satisfied the requirements of the Endangered Species Act regarding effluent discharges associated with oil and gas exploration in the NW Planning Area.

CUMULATIVE EFFECTS

Cumulative effects include future State, local or private actions that are reasonably certain to occur in/adjacent to the action area considered in this BO. Future Federal actions that are unrelated to the

proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. Due to the large amount of wetlands, surface/subsurface lands under Federal management, and Native governments on the North Slope, most land use activities have a federal nexus through required federal permits or federal funding and are therefore not analyzed here.

When analyzing cumulative effects of a proposed action it is important to define spatial boundaries (geographical), temporal boundaries and types of actions that are reasonably foreseeable within those spatial and temporal boundaries. For this analysis of cumulative effects, the spatial boundary is the Arctic Slope of Alaska (North Slope). The North Slope is a 230,000 km² region north of the crest of the Brooks Range and is slightly larger than the State of Minnesota. It encompasses drainage basins that empty into the Beaufort and Chukchi Seas. The North Slope is divided into 3 major regions: the ACP, the Foothills and the Brooks Range. Most of the North Slope's surface/subsurface lands are managed by the Federal Government, State of Alaska and Native Corporations (very little private ownership). To date, all oil production has occurred on the ACP, but there is increasing exploration in the foothills. The only directly influenced area in the Brooks Range is the corridor for the Trans-Alaska Pipeline (TAPS), which crosses those mountains at Atigun Pass.

For this analysis, the temporal boundaries are January 1, 2004, to January 1, 2059 (55 years). Under the Preferred Alternative, 2059 is latest date oil infrastructure abandonment activity could still be taking place. A 55-year time frame was arrived at by adding BLM's assumed time frames for the exploration/delineation phase (10 years), development/production phase (30 years) and abandonment phase (15 years).

Generally, future State, and local government actions are likely to be in the form of legislation, administrative rules, or policy initiatives. Government and private actions may include changes in land use patterns, including ownership, zoning and intensity, any of which could affect listed eiders or their habitat. Even actions that are already authorized are subject to political, legislative, and fiscal uncertainties. These realities, added to the geographic scope of the action area, which encompasses numerous government entities exercising various authorities and split-estate lands, make any analysis of cumulative effects difficult. Therefore, these issues are addressed in a summary way below.

State Actions

State of Alaska actions reasonably certain to occur within/adjacent to the North Slope over the next 55 years include: oil and gas lease sales, exploration, development, and production; gravel mining, support facility construction, road construction, telecommunication infrastructure construction, pipeline/transport facility construction, and TAPS operation and maintenance. The State of Alaska has conducted annual areawide sales in the Beaufort Sea and on the North Slope since 1995. Each State Beaufort Sea offering extends from Barrow to the Canadian border, while onshore sales offer all unleased State lands between the Arctic National Wildlife Refuge and NPR-A. However, future State of Alaska oil and road building activities will be subject to Federal permitting requirements because these actions would likely occur in wetlands and/or nearshore areas requiring authorizations under the Clean Water Act and Rivers and Harbors Act. Therefore, because Federal approval requires section 7 consultation, the Service does not incorporate these State actions into the cumulative effects.

Local Government Actions

Local and regional government actions reasonably certain to occur within/adjacent to the North Slope over the next 55 years include: oil and gas lease sales, exploration, development, and production; gravel mining, support facility construction, road construction, pipeline/transport facility construction, telecommunication infrastructure construction, land reconveyances from Native corporations to private individuals, subsistence harvest activities, marine shipping, field research, tourism, Village growth and conservation work. Of these actions only marine shipping, field research, tourism,

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Village growth and conservation work lack a Federal nexus. However, except for Village growth, the Service is not aware of any specific future non-Federal activities on the North Slope that would cause greater impacts to listed eiders than presently occurs.

The Service assumes that local governments will be faced with continuing pressures from economic expansion and population growth and movement. There will be demands for intensified development in rural areas, as well as increased demands for water, municipal infrastructure, and subsistence resources. The reaction of local governments to growth and population pressure is difficult to predict without certainty in policy and funding. In the past, local governments on the North Slope generally accommodated growth that may have adversely affected listed eider habitat. For instance, as Barrow has grown over the last decade, several acres of comparatively high-density Steller's eider nesting habitat have been lost. However, today the Service and several local governments have positive working relationships and often work together to strike a delicate balance between conserving listed eiders and ongoing Village growth. For instance, local governments are working collaboratively with the Service to develop a conservation plan aimed at providing a greater opportunity for recovery of listed eiders, while accommodating an increasing human population (Barrow Conservation Plan).

Private Actions

Data quantifying current private activity on the North Slope does not exist, therefore projecting future private actions and corresponding impacts to listed eiders is extremely difficult. Private actions reasonably certain to occur within/adjacent to the North Slope that may impact listed eiders over the next 55 years include: subsistence activities, land use changes, continued accumulation and persistence of lead shot in the environment, and loss of breeding habitat due to off-road vehicle use. The proposed IAP/EIS potentially may impact all these actions of which only land use changes are not described in the Effects of the Action Section. Private landowners may convert their lands from current uses, or they may intensify or diminish those uses. Individual landowners may voluntarily initiate actions to improve habitat, or they may abandon or resist any improvement efforts. Their actions may be compelled by new laws, or they may result from growth and economic pressures. Changes in ownership patterns will have unknown impacts. Whether any of these private actions will occur is highly unpredictable, and the effects even more so. However, due to the miniscule amount of privately held land on the North Slope, any corresponding impacts to listed eiders from changes in surface activities on those lands are assumed to be minimal.

In summary, non-Federal actions are likely to continue affecting listed eiders on the North Slope. Cumulative effects on the North Slope are difficult to analyze, considering the Area's broad geographic landscape, geographic and political variation, the uncertainties associated with government and private actions, and ongoing changes in the region's economy. Whether those effects will increase or decrease in the future is a matter of speculation; however, based on the population and growth trends identified in the Local Government subsection, cumulative effects are likely to increase. Although local governments are developing plans and initiatives, such as the Barrow Conservation Plan, which may mitigate impacts from increased local activity, these must be finalized and implemented in a comprehensive manner before the Service can consider them "reasonably foreseeable" in an analysis of cumulative effects.

CONCLUSION

After reviewing the proposed action (including the Reasonable and Foreseeable Development Scenario and associated list of assumptions), the current status of spectacled and Steller's eiders, environmental baseline for the action area, effects of the proposed action, and cumulative effects, it is the Service's biological opinion that actions outlined within BLM's BA and IAP/EIS, as proposed,

are not likely to jeopardize the continued existence of the spectacled and Steller's eider. There is no designated or proposed critical habitat on the North Slope for spectacled or Steller's eiders.

Regulations (51 FR 19958) that implement section 7(a)(2) of the Act define "jeopardize the continued existence of" as "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." In evaluating the impacts of the proposed IAP/EIS to Steller's and spectacled eiders, the Service identified a series of direct and indirect impacts that could result, such as disturbance from oil development/production activities, collisions with drill rig facilities by migrants, habitat loss and changes in the number or distribution of predators. However, the Service believes that the combined impacts to spectacled and Steller's eiders through these avenues will not rise to the level that the likelihood of survival and recovery of either species is appreciably reduced for the reasons given in the *Effects of the Action* section of this BO.

Using methods and logic explained in the Incidental Take Statement (which follows this BO), the Service estimates that 20 adult and 97 eggs or young spectacled eiders will be taken during the life of the proposed project. Across the 30-year life of the project, this equates to an average of 0.67 adults and 3.2 eggs or young spectacled eiders taken per year. Thus, on average, about 0.0001 of the adult breeding population and less than 0.0004 of the annual reproductive effort will be taken as a result of this project (assuming a breeding population size of 6919 adults, which result in 3000 pairs producing an average of 3 eggs per pair, both of which are conservative estimates to compensate for possible non-breeding pairs). The Service believes that this level of loss will not significantly affect the likelihood of survival and recovery of the spectacled eider.

It should be noted that for the purposes of determining jeopardy/non-jeopardy for this consultation, the impacts to spectacled eiders were evaluated at the scale of the North Slope breeding population. However, the impacts of the proposed project would also not jeopardize the survival and recovery of the larger global population.

Using methods and logic explained in the Incidental Take Statement, the Service estimates that 4 adult and 5 eggs or young Steller's eiders will be taken during the life of the proposed project. Across the 30-year life of the project, this equates to an average of 0.13 adult and 0.17 eggs or young Steller's eiders taken per year. Thus, on average, about 0.0001 of the adult breeding population and 0.0001 of the average annual reproductive effort will be taken as a result of this project (assuming a breeding population size of 1250 adults, which result in 500 pairs producing 5 eggs per pair every other year, which are conservative estimates to compensate for non-breeding pairs and for the fact that the species does not appear to nest every year in northern Alaska). The Service believes that this level of loss will not significantly affect the likelihood of survival and recovery of the Alaska-breeding population of the Steller's eider.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. "Harm" is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding,

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feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement (ITS).

The measures described below are non-discretionary, and must be undertaken by BLM so that they become binding conditions of any grant or permit issued to an applicant, as appropriate, for the exemption in section 7(o)(2) to apply. BLM has a continuing duty to regulate the activity covered by this Incidental Take Statement. If BLM (1) fails to assume and implement the terms and conditions or (2) fails to require any applicant to adhere to the terms and conditions of the Incidental Take Statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, BLM must report the progress of the action and its impact on the species to the Service as specified in the *Terms and Conditions* section of this BO [50 CFR 402.14(i)(3)].

Oilfield Disturbance

We believe that Alpine-like oilfield disturbance can have adverse impacts to listed eiders during nesting, but these effects are usually assumed to be minimal in magnitude. Oilfield activity could adversely impact Steller's eiders by: 1) displacing adults and/or broods from preferred habitats during pre-nesting, nesting, brood rearing and migration; 2) displacing females from nests, exposing eggs or small young to inclement weather or predators; and 3) reducing foraging efficiency and feeding time. The behavioral response of eiders to nesting disturbance is unknown and few quantitative estimates of the extent of adverse impacts of oilfield activity to nesting waterfowl exist for tundra environments. The few studies that have been done deal specifically with investigator disturbance. Several studies demonstrate negative effects of investigator disturbance on waterfowl nesting success. Infrequently, waterfowl will permanently abandon nests after they are disturbed. On the YKD, investigators estimated that nest trapping resulted in a loss of 5% of cackler geese eggs due to desertion (Mickelson 1975). A single search of study plots for an investigator disturbance study done for spectacled eiders on the YKD caused the loss of 0.08% of egg production (Bowman and Sten 2003). Gulls were attracted to, and more nests were destroyed at, eider nesting islands after disturbance (Ahlund and Gotmark 1989). However, in 1997 investigators marked and visited spectacled eider nests at varying schedules and found no difference in survival or productivity due to observer impact (Grand and Flint 1997).

Potential avenues of disturbance addressed in the BA include exploration/delineation activity, oilfield construction, oil spill response training, production activity, pipeline maintenance, staging area activity, infield roads, increased aircraft traffic, watercraft support, and gravel mining/transport. Disturbance resulting from production activity, infield roads, oil spill response training and staging area activity are covered in the Habitat Loss subsection of this ITS and are not addressed here. Also, because BLM assumes that oilfield construction, pipeline maintenance and gravel mining/transport will only occur during the winter months when listed eiders are not present in the NW Planning Area, this ITS assumes that these activities will not disturb nesting eiders. Therefore, this section only addresses adverse impacts to listed eiders resulting from aircraft traffic, watercraft support, and exploration/delineation activity.

1. Aircraft Overflights

Under the Preferred Alternative, we distinguish 3 different types of aircraft operations. Category 1 is point-to-point operations (landings at airstrips). These flights are considered

relatively predictable in time and space, and of a steady state rate of occurrence. We do not believe take resulting from this type of flight is likely because listed eiders would have the opportunity to habituate to or remove themselves from the vicinity of aircraft if they felt threatened.

Category 2 would be fixed-wing flights unpredictable in time and space (i.e. wildlife surveys, VIP flight-seeing, etc.). Impacts from these flights are difficult to assess because we don't know how many or where they occur. However, we do know that they are so infrequent that given the low densities of listed eiders in the NW Planning Area, they are unlikely to encounter nests.

Category 3 is irregular helicopter trips to remote locations within the NW Planning Area. We believe take resulting from this type of flight is possible because listed eiders would not have the opportunity to habituate to or remove themselves from the vicinity of aircraft if they felt threatened. We do know that the number of helicopter trips at Alpine have varied greatly year to year. In 2001, there were 776 helicopter landings or takeoffs from Alpine from 1 June to 15 July. Irregular helicopter flights from Alpine are known to flush waterfowl from their nests (R. Johnson pers. comm.). Flushing listed eiders from nests can result fragmentation of broods and in exposing eggs or small young to inclement weather or predators. However, based on BLM's assumed densities for listed eiders in the Area of High Geologic Potential, our projected number of listed eiders that may be flushed, and a reasonably assumed probability of predation, we believe that take of eggs or young resulting from helicopter flights is unlikely.

As described in the *Effects of the Proposed Action* above, spectacled and Steller's eider adults and/or broods may occur below or adjacent to aircraft routes. At times, listed eiders have been observed foraging near the Deadhorse and Barrow Airports (Service unpublished). Disturbance from aircraft overflights to Steller's and spectacled eiders is unlikely because over most of the NW Planning Area there is a low probability that the few areas occupied during breeding and nesting periods would be overflown routinely by support aircraft. Also, most listed eiders that encounter Category 1 type flights would have the opportunity to habituate to or remove themselves from the vicinity of aircraft. In addition, ROP F-1 will minimize the effects of low-flying aircraft on listed eiders and ensure that aircraft maintain protective altitudes over various portions of the NW Planning Area. Therefore, due to the low densities of listed eiders in the NW Planning Area and observed tolerances of nesting eiders to overhead flights near North Slope airports/airstrips we do not anticipate that aircraft flights, associated with the Preferred Alternative, will result in take of listed eiders, eggs and/or young.

2. Watercraft Support

Disturbance to Steller's and spectacled eiders from watercraft support emanating to/from staging areas is possible. Nonrecreational airboats would be allowed on streams, lakes, and estuaries seasonally accessible by motorboats. Airboats would be prohibited in seasonally flooded tundra and shallow waters with wetland vegetation adjacent to streams, lakes, and estuaries (BA Table II-01). For this analysis, it is assumed no facilities would be constructed adjacent to waterways that could support nonrecreational use of watercraft because of setbacks required by stipulations K-1, 2 and 3.

Extensive nearshore and offshore aerial surveys in the Beaufort Sea in 1999 and 2000 detected two flocks of spectacled eiders (numbering 40 and 100) and no Steller's eiders

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offshore in the Harrison Bay area (Fischer et al. 2002). Satellite telemetry work done on spectacled eiders in the Prudhoe Bay oilfields during 2000 and 2001 showed that Smith Bay was an important marine area for females and Gwydyr Bay for males (TERA 2003). Vessels traveling from Deadhorse to the proposed staging areas will repeatedly traverse both these bodies of water. However, given the rarity of listed eiders, it is likely that few would encounter vessel traffic. Although numbers of birds displaced could be substantial depending upon the season of occurrence (tens or hundreds of individuals, particularly during fall migration), alternate foraging and staging habitat would be available away from probable routes. We believe that eiders would avoid such encounters by flying away, that the frequency of those disturbances will not reach the threshold that would impair survival, and that alternative suitable habitat is available. Under these conditions, take is unlikely.

3. Exploration/Delineation Activity

BLM assumes all exploratory/delineation drilling activities will occur during winter when listed eiders are absent from the NW Planning Area. If a seismic operation were to extend into May (a very unlikely scenario according to the IAP/EIS), disturbance of early-arriving eiders could occur, causing increase in energetic demands.

The presence of maintenance personnel at the seismic camps in summer may cause some disturbance to eiders in the immediate vicinity of the gravel/ice pad and could result in nest failure. However, the only activities associated with seismic exploration that would occur during the summer would be annual maintenance. The BA assumes that the maintenance operations would be self-contained and use accommodations that are part of cold-stacked seismic camps. Also, upon completion of the work, all wastes would be removed and disposed of at approved disposal sites on the North Slope, negating the need for new landfills. The approved landfill currently in operation at Deadhorse most likely would be used for materials not requiring additional treatment.

Since all exploration/delineation would occur between October and May, the probability of terrestrial exploratory activities in the NW Planning Area resulting in encounters with spectacled or Steller's eiders would be low. Despite potential encounters with seismic and support activities, eiders typically avoid such encounters by diving or flying away. Substantial adverse effects on spectacled or Steller's eiders resulting from oil and gas exploration/delineation activities within the NW Planning Area are unlikely. Therefore, the Service does not anticipate that disturbance from exploration and delineation activity will result in threatened spectacled or Steller's eiders abandoning nests.

In conclusion, oilfield activities described in the BA could adversely affect individual listed eiders. However their low nesting densities combined with the limited amount of oilfield infrastructure/activity assumed throughout the BA, suggest that few individuals would be impacted. Likewise, the wide range of tolerances found in individual birds to this type of potential disturbance make it difficult to predict whether adverse impacts would actually occur. Therefore, the Service anticipates that no take of threatened eiders will result from the proposed oilfield activity.

Habitat Loss

Estimating take of listed eiders from oilfield activities such as filling of wetlands, extracting gravel and disturbance from operation oilfield infrastructure is extremely difficult due to a lack of available information on tolerance of sea ducks to oilfield activities and their ability/willingness to relocate successfully to other areas once disturbed. Depending on location and season, oil/gas exploration,

development, and production in areas where listed eiders occur could render habitats unavailable due to disturbance or filling/coverage from construction activities, gravel mining, pads, and roads, facilities, and drilling activities. The Service anticipates that incidental take of listed eiders will be difficult to detect because injury or death to eggs, young, or adults may not be directly observed.

Incidental take resulting from oilfield activities is expected to be in the form of harm to adults and killing of eggs and young. Using a conservative approach, the Service and BLM assume that listed eiders will be excluded from breeding habitat within a 200 meter zone of influence around placement of fill for roads and oilfield infrastructure. By multiplying the proposed action's footprint/BLM's assumed zone of influence (200 m) by an assumed density for spectacled eiders within the Area of High Geologic Potential, we calculate that 97 adult spectacled eiders, eggs and/or young would be taken as a result of the proposed action ($1.11 \text{ birds/km}^2 \times 87.4 \text{ km}^2$). For Steller's eiders, we calculate that 5 adults, eggs and/or young would be taken as a result of this proposed action ($0.06 \text{ birds/km}^2 \times 87.4 \text{ km}^2$).

It is important to note that the above estimates for take due to habitat loss from oilfield development/production activities are crude. The estimates do not take into consideration that development/production may take place in locations within the Area of High Geologic Potential that do not contain high density nesting areas for spectacled eiders and medium density nesting areas for Steller's eiders. As oilfield development projects are proposed, the Service will be able to generate better assessments of incidental take based on eider densities in specific areas. Therefore, as permanent infrastructure is proposed in the future, the impacts of those individual actions and future development on threatened eiders would be reconsidered during consultation.

Collisions with Drilling Structures and Associated Infrastructure

The Service anticipates that some threatened spectacled and/or Steller's eiders may collide with drill rigs, production infrastructure and/or associated structures within the NW Planning Area. Such losses probably will not result in population-level impacts to listed eiders. However, BLM's uncertainty over locations of exploratory drilling within the NW Planning Area and oilfield infrastructure within the Area of High Geologic Potential makes quantifying potential bird strikes difficult. Also, limited information is available on spectacled and Steller's eider migration routes, behavior, and vulnerability to obstructions when migrating further complicates estimating anticipated collisions. However, the anticipated footprint of all summer rig storage pads and production infrastructure is likely to be relatively small within the NW Planning Area (8.8 million acres) and we believe the majority of eiders encountering platforms during migration are likely to miss or avoid obstructions.

Estimating the number of Steller's and spectacled eider fatal collisions is extremely difficult due to a lack of information on sea duck strikes and the effectiveness or structure marking/lighting regimes coupled with uncertainty over locations, seasonality and duration of potential NW Planning Area activities. Limited data is available for common eider (*Somateria mollissima*) strikes to Northstar Island, which is located adjacent to the NW Planning Area. From this data it is possible to extrapolate a generic strike rate for sea ducks per rig/tower-year by dividing the number of common eider strikes (6) to Northstar Island in 2002 by the most recent population estimate of common eiders migrating west over the Beaufort Sea (111,635) (Suydam et al. 1996, Service, unpublished). That number is then multiplied by the mean population index for spectacled eiders (6,919) and population estimate for Steller's eiders (1,250) on the North Slope to give a "strikes per rig/tower-year" estimate for both species (Mallek 2001, Larned et al. 2003). The results of this methodology estimate that 0.37 spectacled and 0.07 Steller's eiders will fatally collide with each rig/tower per year.

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For this BO we assume that the majority of exploration activity, cold stacking, and development will occur in coastal portions of the NW Planning Area where listed eiders occur in moderate to high densities. Since ROP E-11 states that no overhead wires will be allowed off gravel pads, except in extremely limited circumstances, we assume that the only oilfield structures that will pose a collision hazard are drill rigs and communication towers. The BA states that no more than 3 exploratory drill rigs per year would be operating/cold stacked within the NW Planning Area over the 10-year exploration period (30 rig-years). Also, the BA assumes that no more than 8 production drill rigs would be operating/cold stacked within the Area of High Geologic Potential over a 6-year period (48 rig-years). For the production phase, 2 communication towers will operate per year for 30 years (60 tower-years). When these numbers are added and then multiplied by the strike rates mentioned above, we initially estimate 51 spectacled and 10 Steller's eider will die from collisions with drill rigs. However, the Preferred Alternative's ROP E-10 requires structures that are potential collision hazards to implement marking/lighting regimes in order to reduce collision risk. It has been documented that marked spans of overhead wires resulted in 60% fewer collisions when compared to the same spans prior to marking (Alonso et al. 1994). Therefore, we assume that ROP E-10 will result in 60% less collisions than if infrastructure was unmarked. Hence, we estimate that only 20 spectacled and 4 Steller's eider will actually die from collisions with drill rigs and towers over the life of the proposed action.

It is important to note that the above estimates for fatal collisions to drill rigs and towers are based on meager data. The estimates do not take into consideration that eider strikes are episodic in nature, that some spectacled and Steller's eiders never migrate through the NW Planning Area, that marking and lighting of rigs/structures may not be effective and that the strike rates are generated from only one year of data at a single location on the North Slope. Therefore, as more data on eider strikes to drilling platforms in the NW Planning Area becomes available, it may be necessary to reinitiate consultation if observed strike rates are higher than estimated for this analysis.

Increase in Predator Populations

State of Alaska, Department of Environmental Conservation regulations that govern refuse management in oilfields include provisions to make it illegal for any person to intentionally feed wildlife or leave human food or garbage in a manner that attracts wildlife [5 AAC 92.230]. The Service assumes that applicants will comply with all applicable regulations, leasing stipulations and ROPs governing waste management. The Preferred Alternative's ROP A-2 would likely prevent the attraction of predators to food and garbage, and ROP E-9 should prevent human-made structures from being used as nesting, denning, or shelter sites for predators. These two ROPs should greatly reduce the attraction of eider predators to new areas of human activity and minimize additional predation of listed eiders. Because there will be no increase in predator abundance caused by improper waste management or creation of artificial denning/nesting habitat, the Service anticipates that no predation of threatened eiders will result.

Increased Subsistence Activity

Alaska Natives have traditionally harvested eiders and their eggs in coastal villages during spring and fall. Subsistence harvest surveys for the North Slope indicate that an average of 155 spectacled eiders were taken at Wainwright during 1988-1989 and only 2 spectacled eiders were reported taken at Barrow during 1987-1990 (Braund et al. 1993). The Preferred Alternative's ROP E-1 guarantees continued subsistence use and access to traditional subsistence hunting and fishing areas within the NW Planning Area. Although the human population within/adjacent to the NW Planning Area has grown substantially, changes in the numbers of active hunters are unknown. Similarly, available

harvest technologies have become increasingly efficient, but the actual effects of new technologies on harvest levels are unknown.

BLM's BA assumes oil development within the NW Planning Area will only have infield roads (unconnected to other road systems). Nonetheless, there remains a possibility that infield roads may increase the access of local hunters to previously inaccessible areas. This is especially true if a development were constructed on the western fringe of the Area of High Geologic Potential that is within reach of existing ATV trails extending south out of Barrow. Waterfowl hunters would likely access oilfield infrastructure during the period immediately following spring breakup, to hunt geese and eiders. Although the Service has made an effort to educate the local hunting public about the plight of spectacled and Steller's eiders, and has stated that the prohibition against harvest of these species would be enforced, some level of harvest may continue. It is unknown what that level is, or whether the increased access scenario depicted here would result in an increased harvest of spectacled or Steller's eiders in the NW Planning Area.

Although infield roads may allow for increased access for local waterfowl hunters to previously inaccessible areas, the small additional areas that may be opened up, combined with the low densities of listed eiders found within the Area of High Geologic Potential is not expected to result in additional take. Additionally, Barrow hunters that previously used areas where oil development occurs may actually avoid those areas in the future once a development is constructed. Some residents of Nuiqsut have told BLM staff they have reduced their use of the Colville River Delta in the vicinity of the Alpine development since its construction (BA page 29). Therefore, we expect that additional take is unlikely and the overall impact to listed eiders from increased subsistence activity is likely to be minimal.

Oil Spills

Oil spills in the terrestrial environments of the NW Planning Area, though possible, will likely have minimal impact because the density of Steller's and spectacled eiders is relatively low in the NW Planning Area and spills on land spread slowly and will be more easily detected and contained. Oil-Spill-Risk Analysis modeling results within the IAP/EIS estimate that if such a spill does occur over the tundra and then move into local lakes or other interconnected wetlands, small numbers of eiders could die, especially during the brood-rearing period in late summer. If a large spill were to occur in the NW Planning Area's marine/tidal environments, the IAP/EIS estimates that tens of individuals would be killed. However, the Preferred Alternative's stipulations K-1 through 8 state that all oil development/production will occur within terrestrial environments of the Area of High Geologic Potential and that those developments will be set back from rivers, coastal zones and deep-water lakes. Hence, we don't consider impacts of oil spills resulting from oil field activities within marine, riverine, near shore and/or tidal environments. The IAP/EIS Oil-Spill-Risk-Analysis modeling runs predict the probability of a marine spill to be extremely low. In addition, BLM assumes that the probability of an oil spill occurring as a result of exploration/delineation to be zero.

Extent of mortality that will result from oil spills from the proposed action is extremely difficult to estimate. First, it is uncertain that oil will be spilled. As stated in the biological evaluation, the likelihood of at least one spill of at least 500 bbl during the life of the IAP/EIS (~15 years) is currently estimated to be 38%. In the unlikely event of such an oil spill, the number of oiled eiders will be greatly influenced by the number, location, volume, trajectory, and timing of spills as well as the period that oil remains in the environment. In addition, the low probability of such an event, combined with the uncertainty of the location of the spill, and the seasonal nature of the resources inhabiting the area, make it highly unlikely that a large oil spill would contact a listed eider. Spectacled and Steller's eiders are present on the North Slope for only 3-5 months out of the year.

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Even if an eider were present in the vicinity of an oil spill, it might not be contacted by the oil due to avoidance behavior, ice conditions or weather patterns. Furthermore, BLM requires companies to have and implement oil-spill-response plans to help prevent oil from reaching critical areas and to remove oil from the environment. Therefore, the probability of a large oil spill contacting a Steller's or spectacled eider is much less than 38% over the 30-year life of the IAP/EIS. All of these factors serve to reduce the likelihood that a large oil spill will contact a Steller's or spectacled eider.

Considering the low probability that an oil spill will contact a listed eider, coupled with a variety of other factors that would need to occur before listed eiders would be oiled, the Service anticipates that it is highly unlikely that listed eiders will become oiled from oil spills within the NW Planning Area. However, should any oil spill within the IAP/EIS area result in the oiling or death of any Steller's or spectacled eider, BLM should order immediate cessation of all operations responsible for the oiling pending reinitiation of consultation.

Toxics Contamination

Oil activity may also result in increasing contamination of marine habitats, due to the disposal of drilling muds and cuttings, or accidental eruption of oil from test wells during a blowout. Such contamination may impact individuals either through direct contact or indirectly as a result of effects on prey populations or important habitats. Information provided by the BLM indicates that industry's record in NPR-A allows for the assumption of probability of crude-oil release during exploration to be zero, however the potential for such an occurrence exists. To mitigate impacts from potential contaminate releases, the Preferred Alternative's ROP A-4 mandates several design/activity standards aimed at minimizing the impact of contaminants on fish, wildlife and the environment, including wetlands, marshes and marine waters, as a result of fuel, crude oil and other liquid chemical spills.

The EPA reinitiated consultation with the Service in July 2002 to determine the likelihood that the proposed discharges associated with oil and gas drilling would adversely affect listed species. The Service concurred with the EPA that the proposed NPDES permit issuance for North Slope oil and gas activity would not be likely to adversely affect listed species. Therefore, the EPA and BLM have already satisfied the requirements of the Endangered Species Act regarding effluent discharges associated with oil and gas exploration in the Beaufort and Chukchi seas (state and Federal waters). Therefore, the Service anticipates that no listed eiders will be taken as a result of discharges associated with oil and gas activity.

Conclusion

In conclusion, the Service anticipates the proposed action will likely result in the take of 117 spectacled eiders and 9 Steller's eiders as a result of habitat loss/disturbance and fatal collisions with oilfield structures. The take is expected to be in the form of harm, harassment and/or killing. The Service has determined that this level of anticipated killing is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

While the incidental take statement provided in this consultation satisfies the requirements of the Act, as amended, it does not constitute an exemption from the prohibitions of take of listed migratory birds under the more restrictive provisions of the Migratory Bird Treaty Act. However, the Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

REASONABLE AND PRUDENT MEASURES

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of Steller's and spectacled eiders:

1. To minimize the likelihood that migrating spectacled or Steller's eiders will strike drill rig or tower structures within the NW Planning Area, BLM and the Service will cooperatively develop a lighting/marketing protocol intended to reduce radiation of light outward from structures and to increase the visibility of structures to migrating eiders.
2. To reduce temporary impacts to productivity resulting from disturbance within 200 meters of occupied spectacled or Steller's eider nests, from May 20 through August 1, ground level activity (by vehicle or on foot) will be restricted to existing thoroughfares and construction of permanent facilities, placement of fill, alteration of habitat, and introduction of high noise levels is prohibited.
3. One or more BLM compliance specialists will monitor industry compliance with stipulations, ROPs, and enforceable elements of assumptions listed in Appendix 4 of this BO at sites of oil and gas industry activity.

Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of the Act, BLM must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. To minimize the likelihood that migrating spectacled or Steller's eiders will strike structures associated with drilling and support activities, BLM and Service will cooperatively develop a lighting/operating protocol to be used on all drilling and tower structures. The Service and BLM will work together to identify when and where the protocol should be applied. Any protocol developed will be in compliance with Federal Aviation Administration (FAA) regulations. The lighting protocol shall contain the following 2 components:
 - A. The radiation of light outward from drilling structures will be minimized. This will be achieved by shading and/or light fixture placement to direct light inward and downward to living and work surfaces while minimizing light radiating upward and outward.
 - B. Structures will be lighted and/or marked to improve visibility to migrants according to a strategy to be jointly developed by BLM and the Service.
 - 1) This strategy will be developed using available information on bird avoidance measures including, but not limited to, results of the ongoing study of lighting regimes for Northstar Island being conducted by BP Alaska, ABR, Inc., and the Service.
 - 2) A draft strategy will be provided by the Service to BLM by 31 May 2004; the final strategy must be mutually agreed upon by the BLM and Service by 1 August 2004, or a later date that is mutually agreed upon.

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- 3) This strategy applies to all drilling and tower structures used throughout the NW Planning Area after September 1, 2004.
- 4) Any lighting requirements resulting from this strategy need not apply between October 31 and May 1, because listed eiders are not thought to be present in the NW Planning Area during this period.
- 5) This strategy will be modified, as appropriate, if significant new information on bird avoidance measures becomes available during activities covered by this consultation. Modifications to the strategy will be developed jointly by BLM and the Service.

C. Crane booms and/or drill rigs will be lowered any time there are no construction or drilling activities slated to occur for 30 days. This restriction applies only when spectacled and Steller's eiders may be present (15 May to 30 September).

2. Temporary impacts to spectacled and Steller's eider productivity due to disturbance and direct habitat impacts must be minimized by ensuring protection of females with nests. In portions of the NW Planning Area where summer support activity occurs, Service-approved nest surveys must be conducted during mid-June of each year in which activities take place between May 30 and August 31. Ground-level activity (by vehicle or on foot) within 200 meters of occupied spectacled or Steller's eider nests, from May 20 through August 1, will be restricted to existing thoroughfares and construction of permanent facilities, placement of fill, alteration of habitat, and introduction of high noise levels will be prohibited. Activity in marine and inter-tidal areas that occurs within 200 meters of shore also will require surveys. The protocol and timing of nesting surveys for spectacled and Steller's eiders will be determined in cooperation with the Service, and must be approved by the Service. Surveys should be supervised by biologists who have previous experience with spectacled and/or Steller's eider nest surveys.

3. One or more BLM compliance specialists will monitor industry compliance with stipulations, ROPs and enforceable elements of assumptions listed in Appendix 4 of this BO at sites of oil and gas related activity. BLM will provide the Service with a copy of the monitoring plan. Stipulations in special need of compliance monitoring include D-2 and K-1, 2, 3, 6 and 8. ROPs in need of compliance monitoring include A-1 through 7, E-9, 10, 11 and F-1. All acts of noncompliance or nonconformance to the ROPs, stipulations and enforceable elements of assumptions mentioned above will be reported in writing to the Field Supervisor, U.S. Fish and Wildlife Service, Fairbanks Fish and Wildlife Field Office, 101 12th Ave., Box 19, Fairbanks, AK 99701. In the event that noncompliance/nonconformance issues arise, BLM and the Service will cooperatively develop a strategy to eliminate the problem.

The Service believes that no more than 117 spectacled eiders and 9 Steller's eider will be incidentally taken during the life of the proposed project. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measure provided. The Federal action agency must provide, without unreasonable delay, an explanation of the causes of the take and review with the Service the need for possible modification of the reasonable and prudent measure. If Steller's and/or spectacled eiders are encountered injured or killed through collisions with oilfield structures,

please contact the Fairbanks Fish and Wildlife Field Office, Endangered Species Branch, Fairbanks, Alaska at (907) 456-0499 for instruction on the handling and disposal of the injured or dead bird.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. We recommend the following actions be implemented during the leasing and exploration phase of this lease sale:

1. To avoid the potential for significant population-level impacts to listed eiders from oil development that may ultimately result from this leasing action, we recommend excluding surface access and development from the following areas where significant concentrations of nesting listed eiders occur. These areas of special concern include:

- A. The “Barrow Triangle” which is approximately that area north of 70E 50' N, between Dease Inlet and the Chukchi Sea,
- B. The wetlands associated with Dease Inlet and Meade River,
- C. The wetlands to the immediate northwest, south, and southwest of Dease Inlet, including the Meade, Chip, and Inaru river drainages,
- D. The wetlands extending to the south of Peard Bay, including the Kugrua and Kungok river drainages,
- E. The estuaries and coastlines of Peard Bay and Dease Inlet

2. BLM is encouraged to contribute to monitoring efforts for threatened eiders and BLM special status species in the NW Planning Area. Results will allow the Service and BLM to better evaluate abundance, distribution, and population trends of listed eiders and other special status species. These efforts will also enhance the Service’s and BLM’s ability to ensure future oil development within the NW Planning Area will not jeopardize listed eiders or lead to listing additional species.

3. BLM is encouraged to work with the Service and other Federal and State agencies in implementing recovery actions identified in the spectacled and Steller’s eider recovery plans. Research to determine important habitats, migration routes, and wintering areas of spectacled and Steller’s eiders would be an important step toward minimizing conflicts with current and future oil and gas activities.

4. To minimize disturbance of nesting, brood-rearing, and migrating listed eiders with aircraft, aircraft activities should be restricted to the extent possible in the areas identified in Conservation Recommendation #1. The Service recommends the areas identified in Conservation Recommendation #1 should be afforded at least the same flight altitude protections as the Caribou Study Area in ROP F-1 (e). BLM should also work with the Service to cooperatively develop region-specific aircraft flight route strategies for exploration, delineation and support activities within the areas identified in Conservation Recommendation #1. Personnel and pilots should be provided with maps identifying the areas identified in Conservation Recommendation #1, so that these areas can be avoided as much as possible. The applicant will develop procedures to ensure compliance from

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pilots, and GPS or other navigational aids will be used to minimize deviation from the identified routes. Any decision made in regard to project-specific flight routes will account for safety concerns and will abide by all Federal Aviation Administration (FAA) rules, regulations and policies. This recommendation does not apply to aviation activities conducted when eiders are not present (October 31- May 1).

5. To better understand the potential adverse impacts field research, flight seeing and recreational activities have on listed species in the NW Planning Area, the Service encourages BLM to collect and make available data on those activities within NPR-A. Field research, flight seeing and recreational activities in NPR-A typically occur during the summer months, but numbers, locations, and type of activities remain speculative. Our experience tells us that on a case-by-case basis, these activities do not cause take of listed species. However, without a greater understanding of the extent of these activities in NPR-A, it is difficult to determine whether the cumulative effects may result in take. It is important to quantify these actions because they could result in: 1) displacing adults and/or broods from preferred habitats during pre-nesting, nesting, brood rearing and migration; 2) displacing females from nests, fragmenting broods and exposing eggs or small young to inclement weather or predators; and 3) reducing foraging efficiency and feeding time.

Additional conservation recommendations may be proposed during subsequent consultations on oil related activities in the NW Planning Area. In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the actions outlined in BLM's reinitiation letter received October 7, 2003. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: 1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; 3) the agency action is subsequently modified in a manner that causes an effect to listed or critical habitat not considered in this opinion; or 4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation. BLM must also reinitiate consultation if it becomes evident that any oil development and production resulting from this IAP/EIS may take place without separate consultation on that action.

Thank you for your concern for endangered species and for your cooperation in the development of this biological opinion. If you have any comments or require additional information, please contact Jonathan Priday at (907) 456-0499 with the Fairbanks Fish and Wildlife Field Office, Endangered Species Branch, Fairbanks, Alaska.

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APPENDIX 1-FINAL BIOLOGICAL OPINION

Northwest NPR-A IAP/EIS Consultation History

- 06/16/02 - FFWFO receives BLM written request for list of Federally listed threatened, endangered or candidate species under FFWFO's jurisdiction that could potentially be impacted by human activities in the Northwest Planning Area.
- 07/24/02 - FFWFO staff responds in writing to BLM's request for a list of endangered, threatened and candidate species, and critical habitats pursuant to Section 7 of the Endangered Species Act.
- 12/09/02 - FFWFO receives BLM's formal consultation request for the proposed IAP/EIS. BLM requested that consultation be concluded within 90 days and that the FFWFO deliver a final biological opinion to them 45 days after that (total of 135 days). BLM included a draft IAP/EIS as an attachment.
- 12/12/02 - MMS contacts FFWFO concerning maps missing from the draft IAP/EIS. FFWFO confirms that several maps are missing from the package MMS delivered.
- 12/15/02 - FFWFO receives maps from MMS that were missing from initial consultation package.
- 12/30/02 - FFWFO transmits memo acknowledging receipt of BLM's consultation request on December 9, 2002. FFWFO stated that all information required to initiate consultation was either included with BLM's letter or was otherwise accessible for our consideration and reference.
- 01/16/03 - FFWFO contacts MMS asking if they or BLM plans to reinitiate consultation for subsequent lease sales in the NW Planning Area. If not, FFWFO wanted to convey that incidental take numbers of threatened eiders would be generated using data in Table IV-07 of the IAP/EIS.
- 01/17/03 - MMS forwards FFWFO's questions concerning reinitiation of consultation for future lease sales in NW NPR-A to BLM staff.
- 01/31/03 - BLM notifies the FFWFO that "The intent of the NW NPR-A IAP/EIS is to follow the same procedures as the NE NPR-A IAP/EIS. That is, if subsequent lease sales, beyond a first lease sale are approved, then a review of NEPA would be completed. If the review indicates the current IAP/EIS is adequate, then Section 7 consultation with FWS would not be reinitiated, but a letter of concurrence would be requested."
- 03/13/03 - Service and MMS hold brief phone call to set up a conference call to brief the action agencies on what the Service has planned for "terms and conditions" in the BO. MMS promises to get both realty and biological staff within BLM to participate on the call.
- 03/19/03 - Service holds conference call with BLM and MMS to bring them up to date on how the BO is evolving. Service mentioned that due to uncertainty in the IAP/EIS, they could not discount a jeopardy determination at this time. Participants agreed to form and convene a working group immediately to reduce uncertainty in the document.

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Service promised to email BLM a list of possible dates and times for a meeting. Service committed to getting members of the working group a list outlining potential avenues of take for analysis by the end of the day.

- 03/25/03 - Service contacts BLM to discuss potential new approach to consultation. Service states that they would be open to consulting strictly on leasing/exploration if several conditions were agreed to. If any of the conditions were not satisfied, then BLM would have to reinitiate consultation. BLM agreed to proceed down that path. The Service and BLM commit to exchanging bits of language that could possibly be used as conditions/assumptions.
- 04/02/03 - BLM transmits lease clause language to Service that outlines BLM's authority to control oil and gas exploration/development on split-estate lands. Language is incorporated into draft BO.
- 04/15/03 - FFWFO transmits draft BO to BLM and MMS. Service requests BLM confirm receipt of the document, review the draft and provided us their comments expeditiously so that we can deliver them a final BO by the April 22, 2003 deadline.
- 04/30/03 - FFWFO contacts BLM concerning the status of their review of the draft BO delivered on April 15, 2003.
- 05/01/03 - BLM contacts FFWFO to convey that they have not yet reviewed the draft but should have comments to transmit by 05/09/03.
- 05/07/03 - BLM and FFWFO staff meet to review and discuss BLM's initial comments on the draft BO. The biggest discussion was on two items: 1) proactive control of predator populations, and 2) lighting schemes for drill rigs and permanent structures. FFWFO agreed to review BLM's comments and deliver a revised draft ASAP.
- 05/20/03 - FFWFO transmits final BO that deals strictly with leasing, exploration and delineation to BLM and MMS via email and post.
- 08/13/03 - FFWFO and DOI/FWS solicitors hold a teleconference to discuss potential legal inconsistencies with BO and past 9th Circuit decisions (Conner v. Burford). Solicitors agree to look into matter further.
- 08/19/03 - FFWFO and BLM hold a teleconference to discuss whether BLM can refine their project description to the point where FFWFO can generate a BO that addressed all phases of oil leasing, exploration, development, production and abandonment.
- 08/25/03 - FFWFO, BLM and DOI solicitors hold teleconference to discuss if BLM can impose condition on leases through future consultation and whether BLM could project numbers and locations of production facilities in the NW Planning Area.
- 08/28/03 - FFWFO, BLM and DOI solicitors hold teleconference to determine whether a BA will be required if BLM chooses to reinitiate consultation. FWS solicitors say that the ESA is very clear over the need for a BA. All parties agree that

any future BA would have to state several assumptions concerning number, location and type of oil development.

- 09/09/03 - Meeting in Anchorage among FFWFO, MMS and BLM to discuss reinitiation of consultation. BLM states that they will now comply with Conner v. Burford on a national level. BLM outlines their current assumption concerning locations, numbers and types of development they expect to result from leasing. FFWFO agrees to rewrite BO and finalize it prior to December 31, 2003.
- 09/15/03 - MMS transmits first draft of BA to FFWFO via email. MMS asked that FFWFO review the draft and provide feedback.
- 09/17/03 - Meeting in Fairbanks among FFWFO, MMS and BLM to discuss specifics of newly proposed development scenario. Agencies agree to listed eider densities that BLM will use in the BA's Effects Analysis.
- 09/20/03 - FFWFO reviews and submits comments on the draft BA's project description.
- 09/21/03 - Teleconference among FFWFO, MMS and BLM to discuss FFWFO's comments on draft of BA's project description.
- 09/24/03 - Teleconference among FFWFO, MMS and BLM to discuss FFWFO's comments on draft of BA's project description, background and species description.
- 10/01/03 - Meeting in Fairbanks between FFWFO and BLM to reach final agreement on all sections of the draft BA. Topics discussed included proposed pipeline routes, likelihood of gas production, staging area assumptions and possible additional mitigating measures.
- 10/02/03 - FFWFO receives letter from BLM requesting reinitiation of formal consultation for the NW NPR-A IAP/EIS.
- 10/02/03 - FFWFO and BLM hold impromptu meeting in Fairbanks. FFWFO requests that BLM provide them with a complete list of assumptions upon which FFWFO can cite within their BO. BLM agrees to generate this list.
- 10/15/03 - FFWFO and BLM hold a teleconference concerning FFWFO's need for a copy of BLM's final BA and a complete list of all assumptions used in their analysis. BLM asks for FFWFO's mailing address and promises to start drafting assumption list. FFWFO and BLM reiterate their understanding over the deadline for a final BO. FFWFO and BLM agree that no deadline has been set, rather the Service has agreed to deliver the final BO to BLM prior to issuance of BLM's Record of Decision for the IAP/EIS (late December 2003).
- 10/16/03 - FFWFO hold teleconference with DOI solicitors to update them on progression of BO. DOI solicitors are comfortable with progress.
- 10/17/03 - FFWFO receives a hard copy of BLM's final BA.
- 10/17/03 - FFWFO and BLM staff hold teleconference to discuss potentially problematic language in BLM's revised ROP E-11 (collision mitigation). FFWFO is

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uncomfortable with subjective language within the ROP that only requires mitigation “when practical”. BLM explains and FFWFO agree to revised language that leaves exceptions to the ROP only on gravel pads and when there are safety concerns. Both sides agree that the issue has been resolved.

- 10/24/03 - FFWFO and BLM hold teleconference to discuss progress on assumption list for inclusion to the BO. BLM stated that the list had been completed and that it was being reviewed by management. BLM plans on sending two copies to FFWFO: one informally by email and another post/parcel that will be signed by BLM’s State Director.
- 10/30/03 - FFWFO receives draft assumption list from BLM. BLM states that a signed list is in the mail and on route. FFWFO uses assumption list to build Effects of the Action Section of the BO. FFWFO incorporates draft assumption list into the BO as Appendix 4.
- 11/14/03 - FFWFO sends BLM portion of draft BO for review. FFWFO states its intention to deliver the remaining portions of the draft BO by 11/21/2003.
- 11/17/03 - BLM contacts FFWFO stating that they have forwarded portions of the draft BO to DOI solicitors for review. FFWFO restates their intention to get BLM a complete draft by 11/21/2003.
- 11/26/03 - FFWFO contacts BLM seeking final versions of the Assumptions List and revised ROP E-11. FFWFO explains that a final Assumption List is required form the basis of the BO’s Effects Analysis. BLM faxes over final signed copy of ROP E-11 and promises expedite finalizing the Assumption List.
- 12/01/03 - BLM contacts FFWFO inquiring on the status of the draft BO. FFWFO responds that the draft BO is almost completed. As soon as FFWFO receives BLM’s signed list of assumptions (must be identical to draft list we based the BO on), we will move expeditiously to complete the document. FFWFO later receives a faxed signed list of assumptions and checks them against the draft list.
- 12/01/03 - FFWFO transmits complete draft BO to BLM via email and to DOI Solicitor’s Office by fax.
- 12/10/03 - BLM transmits draft BO to FFWFO with their suggested changes. BLM and FFWFO set up a meeting on 12/17/2003 to discuss potential revisions.
- 12/10/03 - DOI Solicitor transmits comments to FFWFO in draft BO.
- 12/11/03 - BLM transmits additional information to FFWFO further explaining their suggested changes to the draft BO.
- 12/17/03 - FFWFO and BLM meet to work out BLM’s suggested changes to the draft BO. FFWFO and BLM reach agreement on all of BLM’s concerns. FFWFO tells BLM that the draft BO will only change from here on to resolve DOI Solicitor’s comments. BLM states that they do not wish to review the draft

- BO again. FFWFO commits to getting BLM a signed, final BO by 01/10/2004.
- 12/18/03 - FFWFO contacts DOI Solicitor to review her suggested changes to the draft BO.
- 12/22/03 - BLM contacts FFWFO requesting to see the final BO before FFWFO delivers a signed copy on 01/08/04.
- 12/29/03 - FFWFO responds to BLM's 12/22/03 request by stating that they are working on Solicitor's comments and will email BLM a copy when they send a copy of the final draft BO to Regional Office.
- 01/05/04 - BLM contacts FFWFO requesting to see the final BO by 01/05/04. BLM requests that FFWFO be able to sign and deliver final BO by 01/06/04 instead of 01/08/04.
- 01/06/04 - FFWFO contacts BLM stating that they will email BLM final BO by 5:00 p.m. and will mail them a signed copy on the morning of 01/07/04.

APPENDIX 2-FINAL BIOLOGICAL OPINION
Ranking of “Peer Reviewed Literature”
(in their general order of preference)

A. Primary Source: The information source from which evidence-based knowledge is derived. It has as a major component evidence derived directly from fully described (or referenced) formal observation, procedures or experiments performed with valid, scientifically accepted methods. In its strongest form, this material is usually (but not only) a paper in a refereed scientific publication.

- 1. Scientific Refereed Journal:** A journal that has a mission of publicizing and storing primary scientific evidence. By convention evidence published in such a journal is subjected to anonymous review by several experts (referees) in the field prior to publication and is published only once. The methods used to acquire the evidence must be described (or a primary reference cited) with sufficient detail to allow knowledgeable person to critically appraise the study design, replicate the study, or both. *Although the review processes these journals use is designated to ensure the integrity of the procedures, data, and analyses presented in a paper, a significant percentage of published papers still contain serious flaws, some which render the study invalid.* The presence of these flaws is one of the primary reasons why consulting biologists must assess published literature to determine if a paper is “the best scientific information available.”

Repetition of a study by other researchers, either in whole or in part, helps support or refute the conclusions of a previous study and is essential to the long-term development and acceptance of scientific theory. A paper whose results and conclusions have been verified by independent study or studies is generally a more reliable source than a paper whose results have not been verified in this way.

- 2. Scientific Proceedings:** A collection of current research reports, usually presented as brief abstracts, from a scientific meeting. These are a much weaker form of a primary source than is a full scientific journal article because the selection of the abstracts, which are of varying quality, is based on a much more cursory review, the reports are usually incomplete, and much of the work is in-progress. As such, these represent a form of “pre-primary” source.

B. Integrative Source (Studies): A source reporting the results of meta-analysis, which is a statistical procedure to mathematically combine the results from a number of valid studies to arrive at a stronger conclusion. An exhaustive search for all of the studies relevant to the question at hand and a critical analysis of these studies to exclude those with serious design or procedural flaws is required. Integrative studies are based on objective quantitative analysis rather than the more subjective analysis of the conventional critical review.

C. Secondary Source: An information source that does not have as a major component the description of formal observations or experiments but rather is synthesized from some combination of primary sources, experience, or authoritative belief (dogma). The primary literature used may have been selected in a biased or incomplete fashion and may have been used without comprehensive critical appraisal to establish the relative strength of evidence in each source. Examples of secondary sources are review articles in publications like *Annual Reviews in Ecology and Systematics*.

- D. Tertiary Source:** A compilation of information for application across a broad spectrum, typically represented by class notes and textbooks intended for use in core courses. The strength of the underlying evidence is not indicated and any current controversy between researches in the area is not addressed. The bibliography is usually predominately secondary literature and is usually intends to provide the interested reader with entry points to the underlying primary literature. Much of the evidence-based information contained in textbooks is filtered sufficiently that it is accepted by most all of the experts in the field, much of it is unlikely to change in the future, and most of the changes will be minor. However, depending on the field, textbooks contain a varying amount of dogma and interpretations of facts that will change with the progress of research in the area, sometimes significantly.
- E. Derivative Service:** A service that presents collections of abstracts, usually from a wide selection of primary literature, selected to meet the interests of a particular group of clinicians. Some derivative services, like *Biosis*, include copies of the abstract that was written by the authors of the journal article. Abstracts vary in quality and abstracters may interpret the evidence of the paper differently than intended by the original authors.
- F. “Gray” Literature:** This category consists of publications that are not “published” or contained in indices (like *First Search* or *Biosis*) that make it easier for other researchers to acquire and examine the results. Gray literature in general includes documents issued by government agencies (federal, state, or local), private consultancies, non-governmental agencies, and private organizations. The quality of the information contained in these documents can compare to that of published, refereed scientific journals (some “gray” literature undergoes extensive peer-review before publication) or it can compare to little more than anecdotal evidence.

APPENDIX 3-FINAL BIOLOGICAL OPINION
Standards of Review

The standards used to prepare the biological opinion discussed in this memorandum are established by the Administrative Procedures Act [APA; 5 U.S.C. 701 et seq.], sections 7 and 10 of the Endangered Species Act of 1973, as amended [ESA; 16 U.S.C. 1536 and 16 U.S.C. 1539, respectively], and regulations promulgated to implement section 7 of the ESA [50 CFR 402].

1. Section 706 of the APA, among other things, cautions against Federal agencies from taking actions that are arbitrary, capricious, or not otherwise in accordance with law. When reviewing biological opinions for compliance with this standard, courts have concluded that biological opinions must demonstrate that USFWS conducted a reasoned evaluation of the best scientific and commercial data available and other relevant information and articulated a rational connection between the facts that were found and the conclusions we reached in our biological opinion.¹
2. Section 7(a)(2) of the ESA requires Federal agencies to insure that their actions are not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat. Regulations that implement section 7 of the ESA [50CFR 402] define “jeopardize the continued existence of” as to engage in an action that reasonably would be expected to appreciably reduce the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.
3. Section 7(a)(2) of the ESA requires Federal agencies to utilize the best scientific and commercial data available when insuring that their actions are not likely to jeopardize the continued existence of listed species in the wild or destroy or adversely modify designated critical habitat.
4. Section 10(a)(1)(A) of the ESA authorizes NMFS and the Service to permit any act otherwise prohibited by section 9 of the ESA for scientific purposes or to enhance the propagation or survival of the affected species.
5. Section 10(d) of the ESA allows the Secretary to grant exceptions under subsection 10(a)(1)(A) and (b) only if he finds and published his finding in the Federal Register that (1) such exceptions were applied for in good faith, (2) if granted and exercised will not operate to the disadvantage of such endangered species, and (3) will be consistent with the purposes and policy set forth in section 2 of the ESA².

¹ See *Idaho Department of Fish and Game v. National Marine Fisheries Service et al.* [850 F. Supp. 886(D.Or 1994)] in which the court concluded that “judicial review is limited to an assessment of whether the agency “conducted a reasoned evaluation of the relevant information and reached a decision that, although perhaps disputable, was not arbitrary or capricious.” *Mt. Graham Red Squirrel v. Espy* 986 F.2d 1568 (9th Cir. 1993). “A biological opinion is arbitrary and capricious and will be set aside when it has failed to articulate a satisfactory explanation for its conclusions or when it has entirely failed to consider an important aspect of the problem. While courts must defer to an agency’s reasonable interpretation of equivocal evidence, such deference is not unlimited. The presumption of agency expertise may be rebutted if its decisions, even though based on scientific expertise, are not reasons.” *Greenpeace et al. v NMFS* 55 F.Supp. 2d 1248.

² Section 2 of the Endangered Species Act of 1973, as amended establishes the purpose of the Act as to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in section 2(a) of the Act. Section 2 of the Act also sets the policy of the Congress that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of the Act.

APPENDIX 4-FINAL BIOLOGICAL OPINION

Assumptions BLM Used to Generate NW NPR-A Biological Assessment

Memorandum - 11/26/2003

To: Regional Director, Region 7, U.S. Fish and Wildlife Service

From: State Director, Alaska

Subject: Assumptions Used in Developing the Biological Assessment for Threatened and Endangered Species with Respect to the Proposed Northwest National Petroleum Reserve-Alaska Integrated Activity Plan

On October 17, 2003, the Bureau of Land Management received a telephone request from the Northern Fish and Wildlife Service Office to provide a list of assumptions used in the preparation of the Biological Assessment for Threatened and Endangered Species with Respect to the Proposed Northwest National Petroleum Reserve-Alaska Integrated Activity Plan, dated October 2, 2003. The purpose of the request was to aid the Northern Fish and Wildlife Service Office in the preparation of a Biological Opinion required under the Endangered Species Act of 1973, as amended, for the Proposed Northwest National Petroleum Reserve-Alaska Integrated Activity Plan.

The following assumptions are categorized into three categories that include 1) general assumptions that apply to all phases; 2) leasing and exploration; and, 3) success in discovery, followed by the construction of production facilities, operation and, in approximately 30 years, abandonment of the sites.

General Assumptions

- The Preferred Alternative would make available immediately approximately 82 percent of the Northwest Planning Area as defined in the Draft Northwest National Petroleum Reserve-Alaska Integrated Activity Plan/Environmental Impact Statement. Approximately 18 percent of the Northwest Planning Area would be deferred from leasing for 10 years.
- All of the projected development would occur in the areas of high potential for oil and gas development, as seen in Map 105.
- A reasonably foreseeable development scenario is based on a comprehensive geological analysis and computer simulation modeling, completed in 2002 that identified areas most likely to be discovered and developed using an average North Slope oil price of \$30/barrel.
- Leasing stipulations and Required Operating Procedures, described in Table II-3, Preferred Alternative Stipulations and Required Operating Procedures would be conducted in a manner that prevents unnecessary surface damage, minimizes ecological disturbances, and avoids conflicts with subsistence activities. A request for an exception to a stipulation or Required Operating Procedure will be considered on a case-by-case basis, but will be subject to consultation with appropriate Federal, State and North Slope Borough regulatory and resource agencies before the exception would be granted. Exceptions may be granted for emergencies of human health and safety.

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- Reasonably foreseeable development scenario is for oil extraction and does not include the development of marketable natural gas since there is currently no infrastructure available to move natural gas to markets outside of Alaska.
- No significant change in community population or tax base is expected to result from activities in the Planning Area.
- It is possible that an unknown number of subsistence activities could be enhanced by the road infrastructure described in this reasonably foreseeable scenario, but it is not quantifiable.
- All wastes would be removed and disposed of at approved disposal sites on the North Slope. No new landfill locations would be established. The approved landfill currently in operation at Deadhorse would be used for materials not requiring additional treatment. Organic wastes would be disposed of in accordance with the Clean Water and Clean Air Acts, and the disposal of any liquid or solid waste would not be permitted on site.
- The densities of listed eiders within the Planning Area are assumed equal to the highest densities of listed eiders observed within the area of highest geologic potential, as seen in Map 105.
- The density figure for Steller's eiders was derived from a multiyear aerial survey data set (1999-2002) designed specifically for detecting Steller's eiders in the "Barrow Triangle," a 2,757- square kilometer area south of Barrow and west of Admiralty Bay, which overlaps with the area of highest geologic potential, as seen in Map 105.

Leasing and Exploration Assumptions

- The first lease sale is estimated to occur within the first half of 2004. The first exploration activities would then occur in the winter of 2004, and the first discovery in 2006.
- It is estimated that up to eight new fields would be developed as a result of multiple lease sales conducted in the Planning Area.
- There is an opportunity to lease in the immediate offshore area of the Planning Area including Dease Inlet, Admiralty Bay and Elson Lagoon; however the reasonably foreseeable scenario does not include the establishment of production facilities offshore.
- Seismic surveying would occur during winter months, however a limited amount of support activities would occur during summer months, use of fixed and rotary wing aircraft would be necessary to prepare for winter exploration.
- Annual maintenance would occur for exploration equipment during the summer months and would be generally limited to existing staging areas.
- There would be a maximum of three exploration drill rigs available for use in the Planning Area at any one time, over a 10 year maximum exploration phase.
- Ice roads would provide seasonal routes supporting winter activities. Ice pads would be constructed to support exploration drilling.

Production, Operation and Abandonment Assumptions

- Prior to any development activities all proposed plans would be subjected to National Environmental Policy Act evaluation, and consultation with Fish and Wildlife Service on any species listed under the Endangered Species Act of 1973, as amended.
- The first production would begin in 2013 (nine years after the lease sale).
- There would be a maximum of eight development rigs operating at any given time over a period of 6 years.
- The field infrastructure would operate year-round for at least 20 years.
- Production facilities would be “Alpine” like in operation and appearance. There would be two anchor facilities, each having an airstrip and three satellite facilities.
- “Alpine” like facilities would be constructed on gravel pads that support both anchor and satellite structures. These gravel pads will raise five feet, or more, above a wet tundra surface and would cover approximately 100 acres for an anchor facility, including infrastructure, road and airstrip. Each satellite pad would require a gravel pad of approximately 100 acres, including connecting roads, up to 20 miles in length, to the anchor facility. One roadless pump station, located on a gravel pad of approximately 40 acres, would be required to support the infrastructure.
- Gravel requirements for current “all gravel” pads raised 5 feet or more above a wet tundra surface are approximately 8,000-12,000 cubic yards per acre of surface footprint. Total gravel estimates for an Alpine-like field, with a footprint of 100 acres, is approximately 1,000,000 cubic yards. Any staging area or pump station sites would have similar gravel requirements. A staging area (150 acres) and pump station (40 acres) would require an additional 1,400,000 cubic yards of gravel.
- BLM is assuming both a 200- and a 500-meter zone of influence around all gravel pads and roads.
- Eight gravel extraction sites at an average size of 40 acres would be required to construct the anchor pads, airstrips, satellite pads, and connecting infrastructure.
- All development facilities are considered to be “roadless.” This means no roads would connect, anchor or satellite, facilities to infrastructure outside the “Alpine” like development.
- Current pipeline engineering constraints dictate satellite fields be located within 20 miles of an anchor field.
- Development staging areas would be at the same existing locations as the exploration staging areas but may be larger, up to 150 acres. Any expansion of existing staging areas would occur during winter months.
- Equipment will be transported to staging areas during summer months by sealift requiring up to 20 barges/year over a two year period. Off-loading these barges would require 3-5 days and equipment off-loaded would not be moved to development locations until winter months

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allow construction of ice roads. There likely would be two large sealifts (1 year apart) for each anchor development. The typical container is less than 10 feet in height.

- The first production pad (anchor pad) would be installed in 2012, 8 years after the lease sale.
- Power, telephone and other communication lines would be buried in roads or installed on pipeline vertical support members. Each anchor facility would have one communication tower up to 60 feet in height.
- Fields developed early would establish a pipeline corridor connecting the Planning Area to the existing Alpine infrastructure. Pipelines would be constructed during winter months and would require routine maintenance during winter months and no summer maintenance except during an emergency event.
- There would be a total of 240 miles of pipeline corridors in the Planning Area, but actual routes will be determined when a permit to drill is requested. It would consist of approximately 115 miles of elevated field gathering lines for oil and 125 miles of elevated oil trunk lines. The pipelines would be installed aboveground on VSM's, and would be an average of 7 feet above the tundra.
- 225 miles of common carrier trunk line would be constructed in the Northeast NPR-A area, with an additional 120 miles constructed on State lands to the east to transport product to market.
- If a commercially viable discovery is made in the offshore area, it most likely would be reached using directional drilling techniques anchored onshore. If development occurred offshore, it likely would be constructed using materials and techniques similar to those used at island bearing the Northstar development.
- No pipelines would be established as subsea infrastructure.
- The highest level of human activity would occur during the period when both construction and development drilling are occurring. .
- The number of aircraft flights to support the facility is estimated at four propeller-driven passenger planes (CASA, Twin Otter, Navajo, Beech) and 5-10 helicopter flights per week. There would be helicopter flights along the length of the pipeline to monitor its integrity on a monthly basis at minimum.
- Using Alpine as the example, the highest level of aircraft support activity during production would occur from June 1- July 15. Approximately one-half of the aircraft operations would be rotary wing.
- While the use of non-recreational airboats are permitted on streams, lakes and estuaries seasonally accessible by motorboats, it is assumed no facilities would be constructed adjacent to waterways that could support non-recreational use of watercraft because of setbacks required by stipulations K-1, 2 and 3.
- Abandonment and reclamation of infrastructure would include removal of all equipment, cutting well casing a minimum of three feet below the surface, and plugging wells. Gravel pads would not be removed, but allowed to bed naturally.

- Monitoring abandonment would require periodic revisits. Normally, one helicopter with a crew of three would visit the sites annually for the first 5 years followed by increasing time gaps over the next 10 years. Site visits would include a maximum of 1 day per visit, and one visit per year.
- Abandonment activities would occur during winter months.

If you have any questions, or require additional clarification of these assumptions, please contact John Payne at (907) 271-3431.

Figure 1: Areas of Geologic Oil and Gas Potential Within the NW Planning Area

(BLM assumes all oil development will occur within the area labeled “High”)

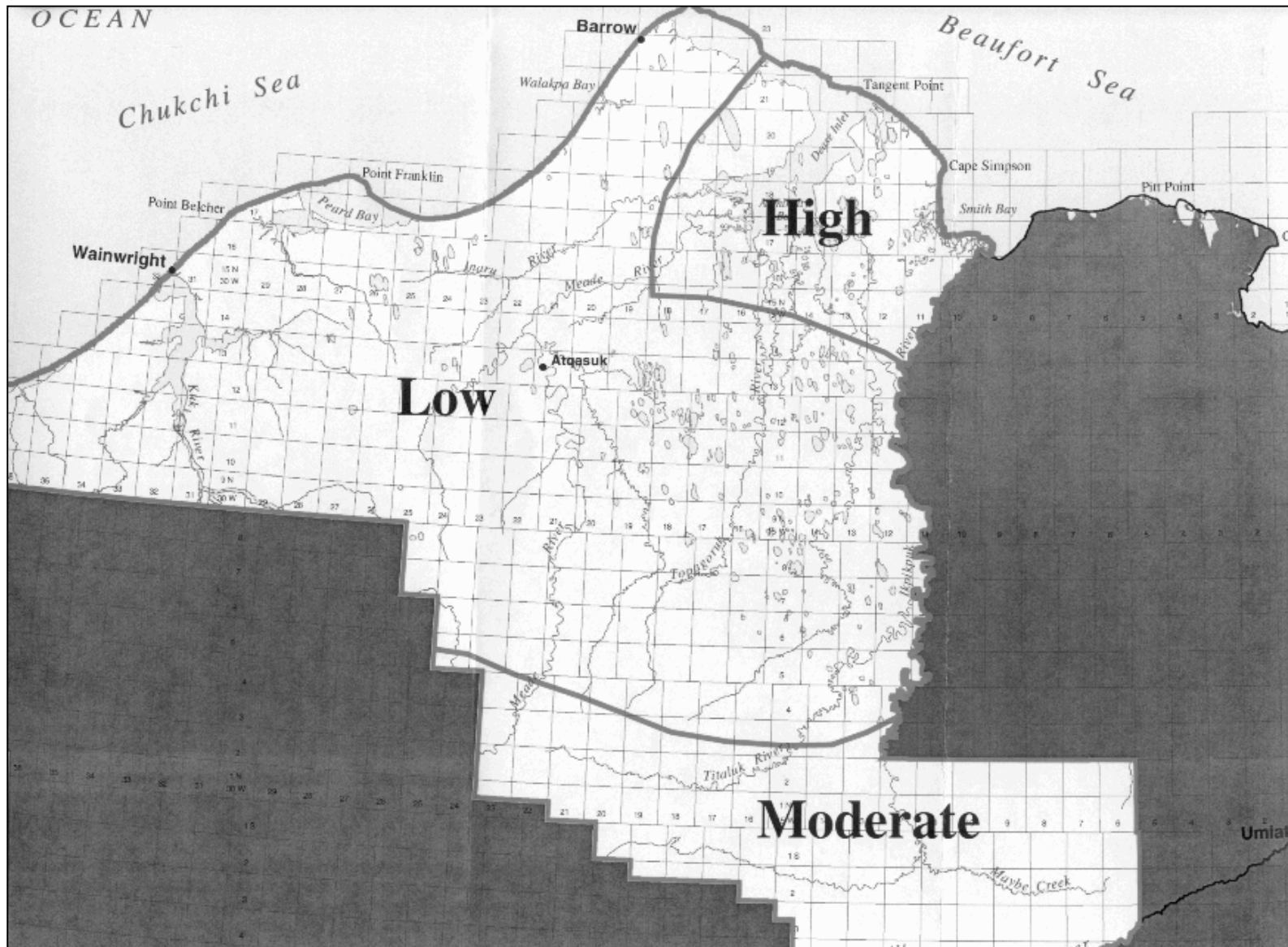


Figure 2: Spectacled Eider Distribution Across the North Slope

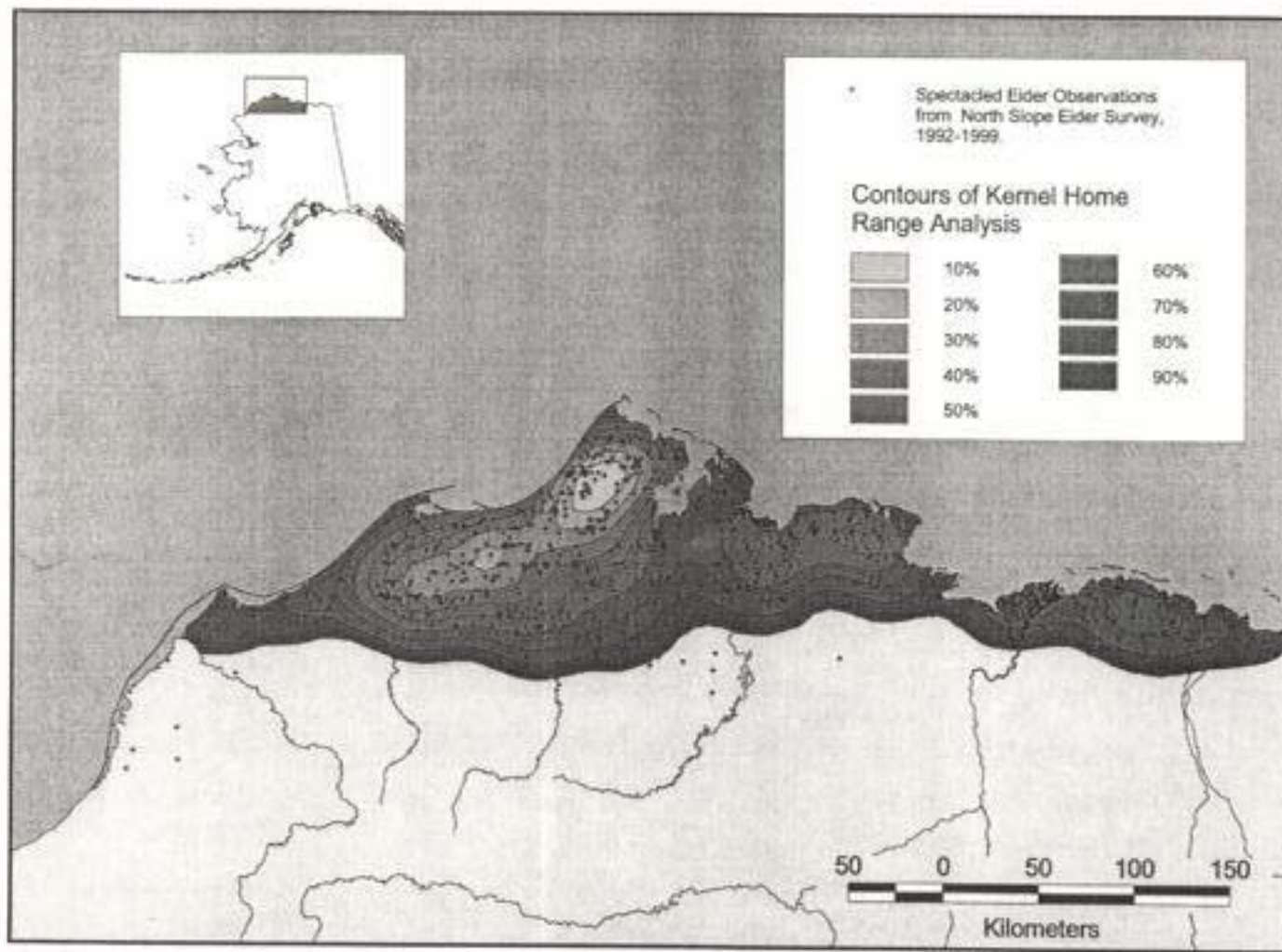


Figure 2. Probability contours from fixed kernel home range analysis. Contours show probability of occurrence of spectacled eider observations.

NAES file crthab/nslape1_dst_khr.apr 9/26/00

Figure 3: Steller's Eider Distribution Across the North Slope

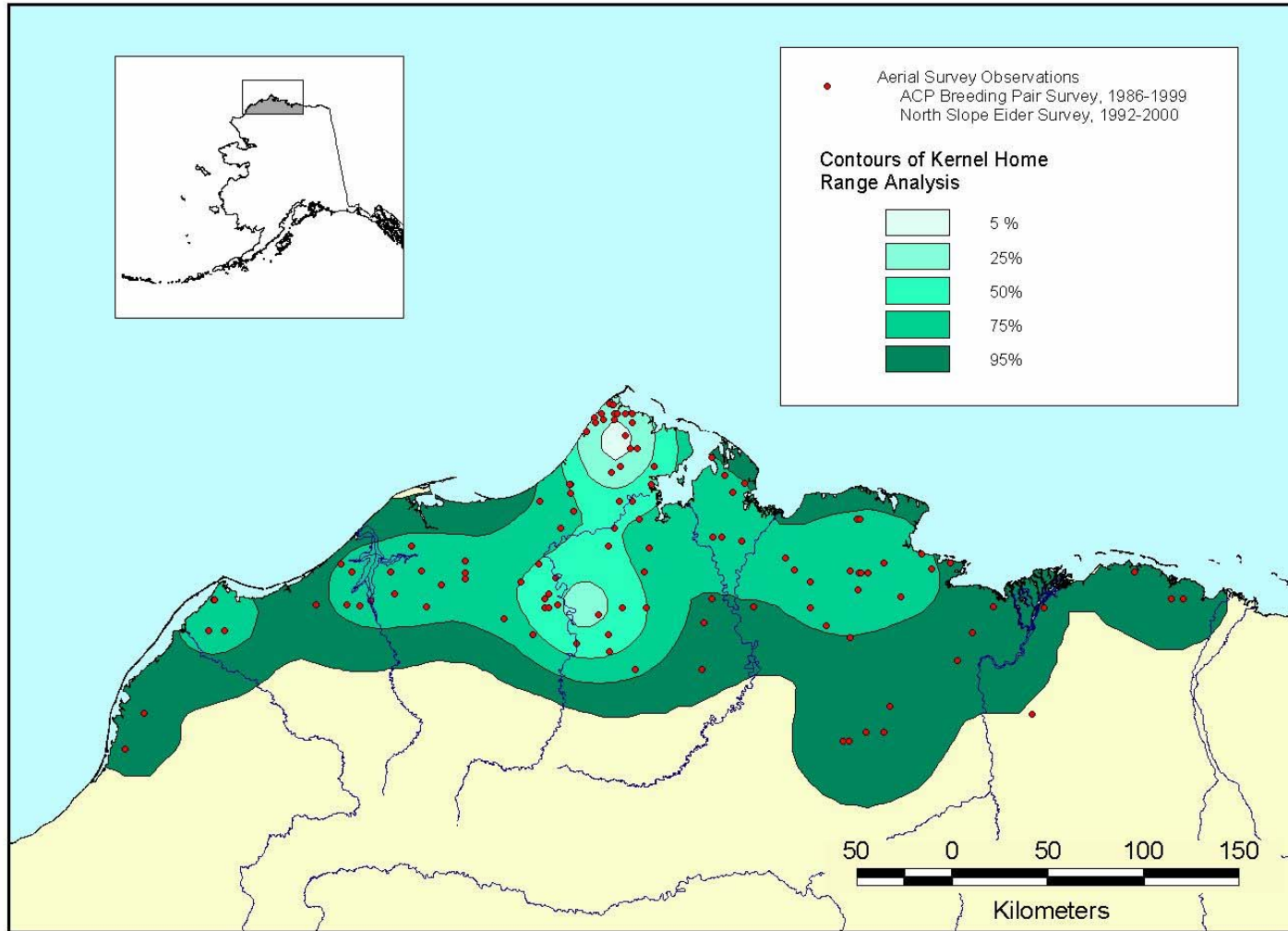


Figure 2. Probability contours from fixed kernel home range analysis. Contours show probability of occurrence.

Figure 4: Barrow Triangle
Area of Highest Steller's Eider Nesting Density

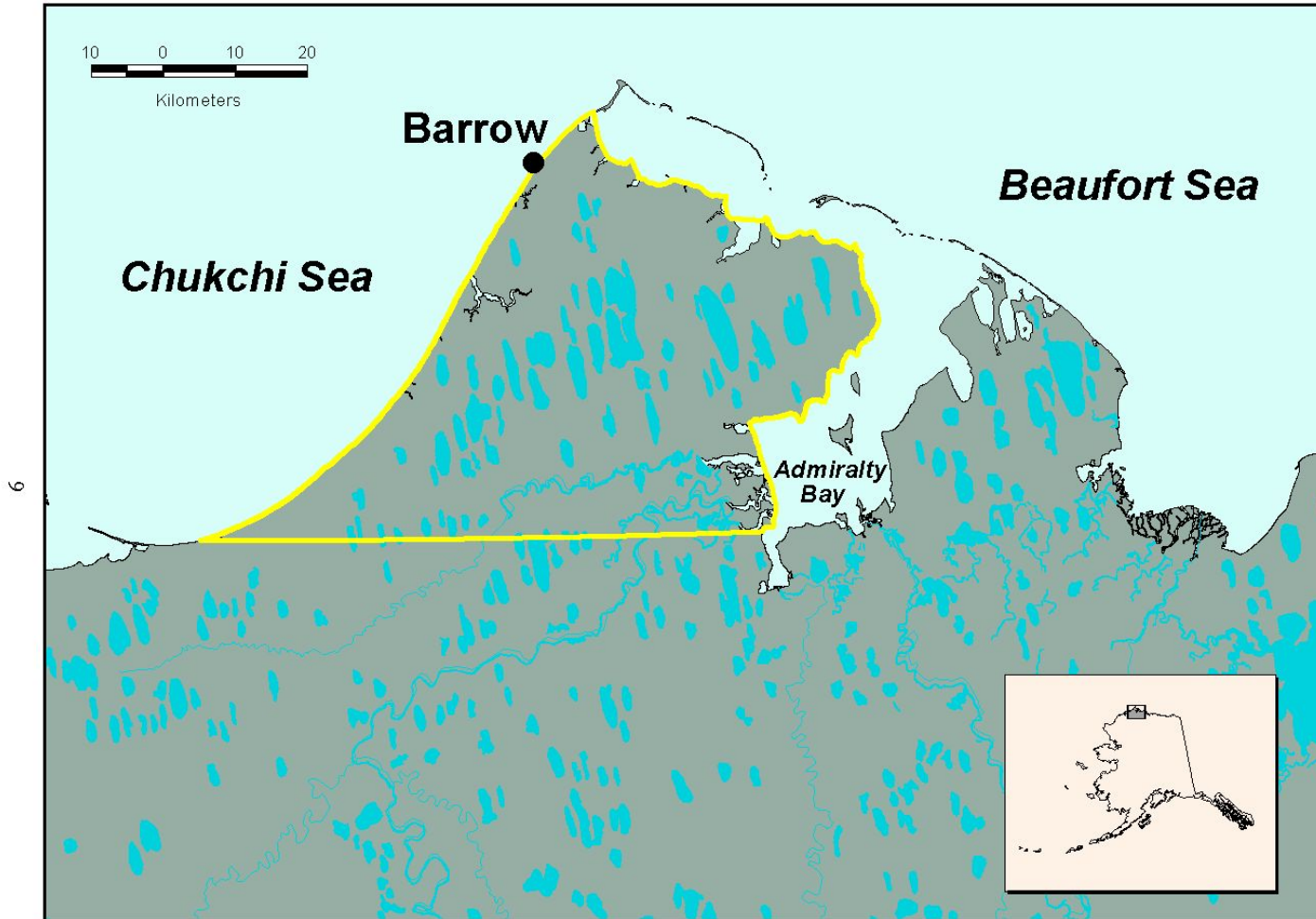
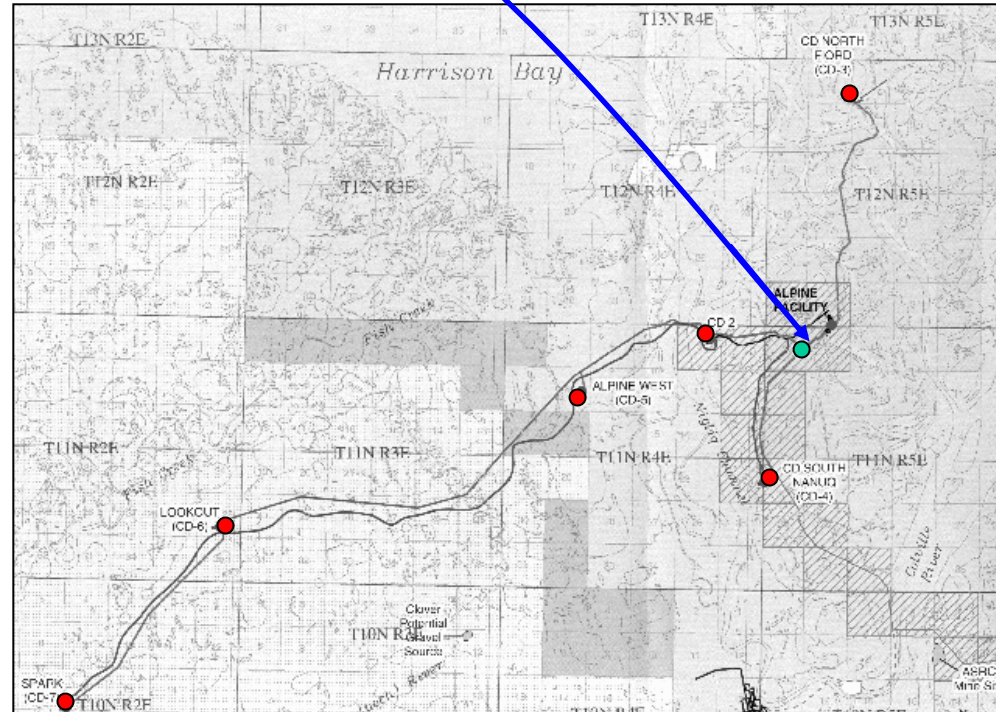
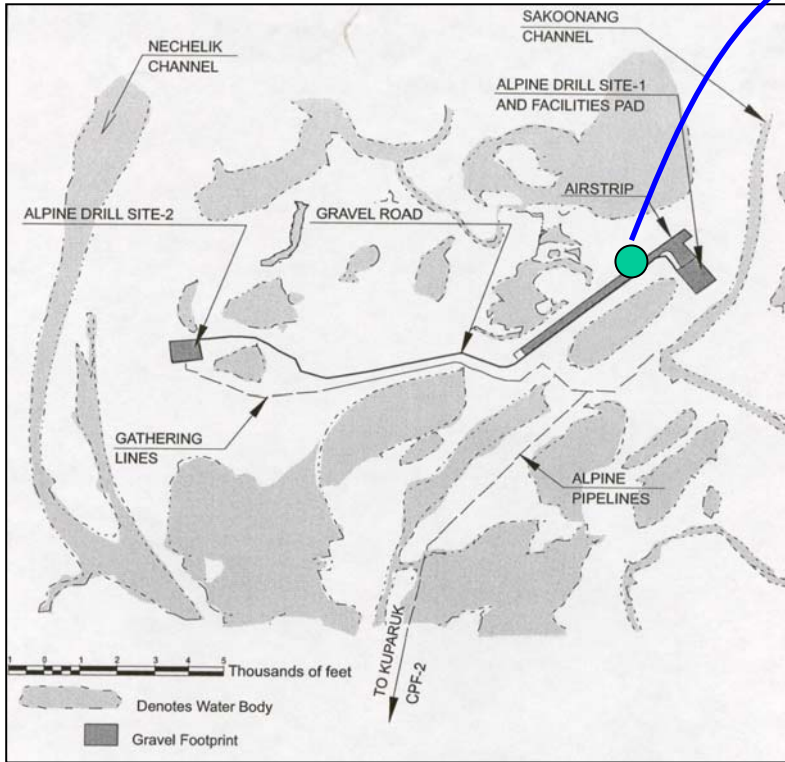


Figure 5: Alpine Oilfield



Original Layout/Design:
Anchor Facility (12/01/2000)

Proposed Satellite Project:
Includes 6 satellites and infield roads (10/24/2003)

BLM assumes all oilfield development within the NW Planning Area will be modeled after Alpine. Alpine's total surface footprint covers approximately 100 acres, which is less than 1 percent of the subsurface drainage area for this 500-million-barrel field. (BA page ???)