



U.S. Fish & Wildlife Service

Arctic National Wildlife Refuge

**Revised Comprehensive
Conservation Plan**

Final Environmental Impact Statement

Volume 2 - Appendices



U.S. Fish and Wildlife Service Mission

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats, for the continuing benefit of the American people.



National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

This Comprehensive Conservation Plan describes programs that may exceed future budget allocations and therefore does not constitute specific commitments for future staff increases, project details, or funding.



U.S. Fish & Wildlife Service

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Conservation Plan**

Final Environmental Impact Statement

**Volume 2 - Appendices
January 2015**

**Prepared by Arctic Refuge and the Alaska Region of the U.S. Fish and Wildlife Service
in cooperation with the National Aeronautics and Space Administration**

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Acronyms

ADEC	Alaska Department of Environmental Conservation
ADFG	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
AIWFMP	Alaska Interagency Wildland Fire Management Plan
ANILCA	Alaska National Interest Lands Conservation Act
ANCSA	Alaska Native Claims Settlement Act
ASRC	Arctic Slope Regional Corporation
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BLM-AFS	Bureau of Land Management Alaska Fire Service
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CRMP	Comprehensive River Management Plan
DOI	Department of the Interior
EA	environmental assessment
EIN	easement identification number
EIS	environmental impact statement
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FMP	Fire Management Plan
FNSB	Fairbanks North Star Borough
GIS	Geographic Information System
GMU	Game Management Unit

Acronyms

GPS	Global Positioning System
I&M	Inventory and Monitoring
ICRMP	Integrated Cultural Resource Management Plan
IWSRCC	Interagency Wild and Scenic Rivers Coordinating Council
KIC	Kaktovik Iñupiat Corporation
LCC	Landscape Conservation Cooperative
LPP	Land Protection Plan
MPA	Marine Protected Area
MRA	Minimum Requirement Analysis
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NPR-A	National Petroleum Reserve-Alaska
NPS	National Park Service
NWPS	National Wilderness Preservation System
NWSRS	National Wild and Scenic Rivers System
ORV	outstandingly remarkable value
PLO	Public Land Order
PUNA	Public Use Natural Area
RIT	Refuge Information Technician
RNA	Research Natural Area
ROC	region of comparison
ROD	record of decision
SNAP	Scenarios Network for Alaska Planning
TUS	transportation or utility systems

USFS	U.S. Forest Service
USGS	U.S. Geological Survey
VUMP	Visitor Use Management Plan
WSA	Wilderness Study Area
WSP	Wilderness Stewardship Plan

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A Note about Wilderness Terminology

Throughout this Plan, the term “wilderness” has different meanings depending on the context in which it is used. To clarify the intent of these different meanings, the following conventions are used:

“w”ilderness versus “W”ilderness

Arctic Refuge is currently comprised entirely of wildlands that host natural, undeveloped conditions, a range of special values, and provide opportunities for isolated and primitive recreation. Refuge staff works to protect these qualities and special values throughout the Refuge. The word “wilderness” (“w” not capitalized) and the phrase “wilderness characteristics” are used when describing these qualities and special values across Arctic Refuge as a whole. The word “wilderness” (not capitalized) is also used as an adjective when describing the wilderness qualities referenced in the Alaska National Interest Lands Conservation Act (ANILCA) Section 101(b) (“wilderness resource values”) and Section 304(g) (“wilderness value”).

The word “Wilderness” (“W” capitalized) is used when it refers specifically to Refuge lands designated by Congress as part of the National Wilderness Preservation System. “Wilderness character” is a phrase from the Wilderness Act used to summarize the qualities the agency is mandated to preserve within designated Wilderness. These include the maintenance of “untrammeled,” “natural,” and “undeveloped” conditions and the provision for “solitude or primitive and unconfined recreation.” Note that these qualities are essentially the same as the wilderness characteristics found across all the wildlands of Arctic Refuge, including the approximately 60 percent of the Refuge currently under Minimal Management (see Chapter 2, Section 2.3.3). However, by statute, the Wilderness Act requires the Refuge provide a very high level of protection to these qualities of Wilderness character within designated Wilderness.

For More Information

“Wilderness” and related terms, such as “wilderness characteristics,” “Wilderness character,” and “wilderness values” are defined in Appendix M. For an explanation of the differences between Minimal Management and the management of designated Wilderness, see Chapter 2 (Sections 2.3.3 and 2.3.4) and Chapter 3 (Table 3-3).

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A Note about Acreages

Various acreages are reported throughout this Comprehensive Conservation Plan (Plan, Revised Plan for Arctic National Wildlife Refuge (Arctic Refuge, Refuge). These acreages come from many sources, including:

- Official land surveys
- Warranty deeds, patents, and other legal documents
- Public Laws, Public Land Orders (PLOs), Executive orders, etc.
- Geographic Information Systems (GIS) data

All acreages reported in this document are estimates of the true area represented on the ground. Some of these estimates are inherently more accurate, or closer to ground conditions, than are others. For example, surveys performed by a licensed land surveyor provide the most accurate acreage estimates. Acreages obtained from GIS data are typically less accurate. Acreages obtained from Public Laws, PLOs, and other legislation may or may not be derived from land surveys, making it difficult to ascertain the accuracy of these estimates. Because of the range of sources from which acreages are obtained, the following guidelines have been used to report acreages in this Plan.

- When reporting acreages that are based on surveys, patents, deeds, and interim conveyances, the reported acreage is that which is specified by the survey or legal document. These acreages will be reported to two decimal places.
- We handle acreages from laws, regulations, and other legal documents in two ways. If we are citing what the document said, we report the acreage as it is specified in the legal document, whether or not the acreage values are derived from actual surveys. We also use GIS to map acreages from laws, regulations, etc., and GIS-derived acreages may not agree with those in the legal document.
- When reporting acreages derived solely from GIS data, the acreages are rounded to take into account the approximation of digitally-constructed parcel boundaries. The magnitude of rounding is determined by the following:

ROUNDING FACTORS		EXAMPLES	
Acreage Range	Round Up to Nearest	GIS-derived Acreage	Rounded Up To
0 - 99	1	27.1857	28
100 - 999	10	133.5374	140
1,000 - 9,999	100	4,729.3048	4,800
10,000 - 99,999	1,000	87,637.1057	88,000
100,000 – and higher	10,000	684,304.5108	690,000

A Note about Acreages

- Very large acreages (in the millions) will be displayed in the text as a number with two decimal places (e.g., “19.64 million acres”). These acreages are still rounded per the tables here and should not be assumed to be highly accurate acreages such as from surveys or legal documents.

Based on these noted accuracy issues and guidelines, there may be cases in this Plan where the summation of individual acreages may not coincide with anticipated total acreages. This is to be expected given the inherent accuracy limits of the various acreage estimates.

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Appendix A

Legal, Policy, and Planning Guidance

A. Legal, Policy, and Planning Guidance

A.1 Legal Guidance

The U.S. Fish and Wildlife Service (Service) manages national wildlife refuges pursuant to various legal and administrative requirements. Management of Arctic National Wildlife Refuge (Arctic Refuge, Refuge) is dictated, in large part, by the Alaska National Interest Lands Conservation Act of 1980 (ANILCA), which established Arctic Refuge, re-designated the Arctic National Wildlife Range as part of the new Refuge, and identified the purposes for which it was established. However, other laws, regulations and policies, and agreements with the State of Alaska also guide the management of Arctic Refuge. This section identifies the acts and policy guidance that are integral in the development of this Comprehensive Conservation Plan (Plan, Revised Plan). Among the most important are the National Wildlife Refuge Administration Act, as amended by the National Wildlife Refuge System Improvement Act; the Refuge Recreation Act; the Alaska Native Claims Settlement Act (ANCSA); and the Endangered Species Act. A brief description of these and other pertinent legal documents that influence management of Arctic Refuge is found in the following subsections.

A.1.1 *International Treaties*

Several treaties affect how the Service manages Arctic Refuge. Among these are migratory bird treaties with Canada, Mexico, Japan, and Russia and the Convention on Nature Protection and Wildlife Conservation in the Western Hemisphere. These treaties differ in emphasis and species of primary concern but collectively provide clear mandates for identifying and protecting important habitats and ecosystems and for protecting and managing individual species.

A.1.1.1 *Migratory Birds*

A migratory bird is any species or family of birds that live, reproduce, or migrate within or across international borders at some point during their annual life cycle. Refuge and Service management of migratory birds must comply with the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712), as amended. Key amendments to the act include the Migratory Bird and Game Mammal Treaty with Mexico of 1936, the Migratory Bird Treaty with Japan of 1974, and the Migratory Bird Treaty with the Soviet Union of 1978 (USSR Treaty). Migratory bird management must also comply with the Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere of 1940 (Convention).

The Convention and the Migratory Bird Treaty Act and its amendments, provide a variety of management provisions, including:

- Unless permitted by regulations, a prohibition on “the pursuit, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird ... for the protection of migratory birds ... or any part, nest, or egg of any such bird” (16 U.S.C. 703).

- A prohibition on the disturbance of nesting colonies (USSR Treaty, Article II).
- An allowance for the Secretary of the Interior to establish seasons for the taking of birds and the collection of their eggs by “indigenous inhabitants” of Alaska for their own nutritional and other essential needs (16 U.S.C. 712).
- Direction for each nation to undertake, to the maximum extent possible, measures necessary to protect and enhance migratory bird environments and to prevent and abate pollution or detrimental alteration of their habitats (USSR Treaty, Article IV).
- A requirement that each nation provide immediate notification to the other when pollution or destruction of habitats occurs or is expected (USSR Treaty, Article IV).
- A stipulation that each nation shall, to the extent possible, establish preserves, refuges, protected areas, and facilities for migratory birds and their habitats and manage them to preserve and restore natural ecosystems (Convention).
- Stipulations that special habitats outside the jurisdictional boundaries (territorial limits) may be designated in which, to the maximum extent, persons under each nation’s jurisdiction shall act in accordance with the principles of the treaty (for instance, this stipulation might require U.S. oil tankers to avoid or prevent pollution of special seabird areas on the high seas).
- An allowance that protective measures under the treaty may be applied to species and subspecies not listed in the specific convention but that belong to one of the families containing listed species (USSR Treaty, Article VIII). All bird species that occur on Arctic Refuge, with the exception of grouse and ptarmigan, are covered by the Migratory Bird Treaty Act, as amended.



A.1.1.2 Agreement on the Conservation of Polar Bears

This is an agreement between the governments of Canada, Denmark, Norway, the former USSR, and the United States. It recognizes the responsibilities of circumpolar countries for coordinating actions to protect polar bears.

The agreement prohibits hunting, killing, and capturing polar bears except for bona fide scientific and conservation purposes, preventing serious disturbance to the management of other living resources, and by local people under traditional rights. This multilateral agreement also commits each associated country to sound conservation practices by protecting the ecosystem of polar bears, with special attention to denning areas, feeding sites, and migration corridors based on best available science through coordinated research.

The agreement was signed by the United States on November 15, 1973, in Oslo, Norway; ratified on September 30, 1976; and entered into force in this country on November 1, 1976 (IUCN 2009).

A.1.1.3 International Porcupine Caribou Herd Agreement

In 1987, the U.S. and Canadian governments signed the “Agreement between the Government of the United States of America and the Government of Canada on the Conservation of the Porcupine Caribou Herd.” This bilateral agreement recognizes that the Porcupine caribou herd regularly migrates across the international boundary between Canada and the United States and that the herd should be conserved according to ecological principles emphasizing the importance of conserving habitat, including calving, post-calving, migration, wintering, and insect relief habitat.

The main objectives of the agreement are to conserve the herd and its habitat through international cooperation and coordination so that the risk of irreversible damage or long-term adverse effects, including cumulative effects, as a result of use of caribou or their habitat is minimized, and to ensure opportunities for customary and traditional uses of the Porcupine caribou herd.

The agreement set up the International Porcupine Caribou Board, composed of delegated representatives from both countries that give advice and recommendations to the countries on the conservation and management of the herd. The International Porcupine Caribou Board, in turn, set up the Porcupine Caribou Technical Committee, composed of biologists from each country to advise them in their recommendations. Refuge staff participate on the Porcupine Caribou Technical Committee.

This agreement was signed by the United States on July 17, 1987, in Ottawa, Canada, and entered into force in this country upon signing (United Nations 2004).

A.1.1.4 Yukon River Salmon Agreement

On January 28, 1985, the United States and Canada signed the Pacific Salmon Treaty to prevent over-fishing, provide for optimum production, and ensure that both countries receive benefits equal to the production of salmon originating in their waters. The treaty was revised in 1999 to renew the parties’ long-term fishing agreements. The Yukon River Salmon Agreement was signed by delegations from the U.S. and Canada on March 2001 and was implemented by management agencies that same year. However, official recognition of the

agreement wasn't until December 4, 2002, when it was signed by the U.S. and Canadian governments and officially inserted into the Pacific Salmon Treaty as Chapter 8 (Yukon River Drainage Fisheries Association and Yukon River Panel 2005)

Salmon that originate in the Canadian portion of the Yukon River drainage are a shared resource between the Yukon Territory (Canada) and Alaska (U.S.). Yukon River Chinook and chum salmon have some of the longest migratory journeys in the world and are prized for their size and oil content. The people along the river and its tributaries depend on this resource for food, as well as for social, ceremonial, recreational, and economic purposes. Due to sharp declines of Canadian-origin Yukon River salmon populations, the two countries negotiated a cooperative management arrangement for these resources. The agreement outlines steps to ensure the sustainability of Canadian-origin Yukon River salmon stocks and fisheries through conservation, management practices, stock rebuilding, harvest sharing, research, and habitat protection. In Arctic Refuge, salmon that occur in and/or migrate through the Porcupine River are subject to the terms of the agreement. Other Yukon River tributaries in Arctic Refuge with salmon include the Coleen and Sheenjek Rivers.

The agreement is implemented through the Yukon River Panel, an international body of 12 members, equal parts American and Canadian, which advises managers of Yukon River fisheries concerning restoration, conservation, and coordinated management.

A.1.2 National Guidance

A.1.2.1 National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd-668ee (Refuge Administration Act)

This act serves as the “organic act” for the National Wildlife Refuge System (Refuge System). The act, as amended, consolidated the various categories of lands administered by the Secretary of the Interior (Secretary) through the Service into a single, national system. The act establishes a unifying mission for the Refuge System, a process for determining compatible uses of refuges, and a requirement for preparing comprehensive conservation plans. This act states, first and foremost, that the mission of the Refuge System be focused singularly on wildlife conservation.

This act identifies six priority wildlife-dependent recreation uses, clarifies the Secretary's authority to accept donations of money for land acquisition, and places restrictions on the transfer, exchange, or other disposal of lands within the Refuge System. Most importantly, this act reinforces and expands the “compatibility standard” of the Refuge Recreation Act. The Refuge Administration Act authorizes the Secretary, under such regulations as he may prescribe, to “permit the use of any area within the [Refuge] System for any purpose, including but not limited to hunting, fishing, public recreation and accommodations, and access whenever he determines that such uses are compatible with the major purposes for which such areas were established.”

A.1.2.2 Refuge Recreation Act of 1962, as amended, 16 U.S.C. 460k-4

This act requires that any recreational use of areas in the Refuge System be “compatible” with the primary purpose(s) for which the area was acquired or established. It also requires that

sufficient funding be available for the development, operation, and maintenance of recreational uses that are not directly related to the area's primary purpose(s).

A.1.2.3 Alaska Native Claims Settlement Act of 1971

The Alaska Native Claims Settlement Act (ANCSA) provides for “a fair and just settlement of all claims by Natives and Native groups of Alaska, based on aboriginal land claims.” The law provided for grants of land and money and the establishment of Native corporations to maintain the economic affairs of Native organizations. In exchange for this settlement, all aboriginal titles and claims, including fishing and hunting rights, were extinguished. Section 17(d)(2)(A) provided the basis for the enactment of ANILCA. Under Section 22(g), refuge lands conveyed to village corporations remain subject to the laws and regulations governing use and development of the refuge. This section only applies to lands that were designated as refuge lands at the time ANCSA was passed. Section 17(b) of the Act provided for public easement across Native lands for access to Federal lands.

A.1.2.4 Alaska National Interest Lands Conservation Act of 1980, as amended, 16 U.S.C. 140hh-3233, 43 U.S.C. 1602-1784, Public Law 96-487

In addition to amending ANCSA, the Alaska Statehood Act, and the Wild and Scenic Rivers Act, and modifying portions of the Wilderness Act as it applies to lands in Alaska, the Alaska National Interest Lands Conservation Act (ANILCA) expanded the Federal conservation unit system throughout the State by adding or expanding national parks, refuges, forests, designated Wilderness areas, and designated wild and scenic rivers. ANILCA identifies the purposes of the Refuge, defines provisions for planning and management, and authorizes studies and programs related to wildlife and wildland resources, subsistence opportunities, and recreational and economic uses (such as oil and gas exploration and development, access, and transportation and utility systems). Section 1317 of ANILCA required that all refuge lands not designated as Wilderness be reviewed as to their suitability for Wilderness designation within five years of the enactment of ANILCA.

ANILCA Section 1002 provided for a comprehensive and continuing inventory and assessment of the fish and wildlife resources of the coastal plain of the Refuge, including an analysis of the impacts of oil and gas exploration, development, and production. Section 1002 authorized surface geological and seismic exploration of the coastal plain, provided it avoided significant adverse effects on fish and wildlife and other resources. Section 1002 also withdrew the public lands on the Refuge's coastal plain from all forms of entry, appropriation, and operation of mining laws and mineral leasing laws. Section 1003 of ANILCA prohibited the production of oil and gas from the Arctic Refuge and stated that “... no leasing or other development leading to production of oil and gas from the range shall be undertaken until authorized by an Act of Congress.”

Title VIII of ANILCA authorizes the State of Alaska to regulate subsistence uses on Federal public lands if several requirements are met. The State managed statewide subsistence harvests until late 1989, when the Alaska Supreme Court ruled that the rural residency preference required by Federal law violated the Alaska Constitution. Despite repeated efforts, the State has not amended its constitution to bring its regulatory framework back into compliance with ANILCA.

The Federal government began managing subsistence hunting, trapping, and fishing on Alaska's Federal public lands in July of 1990. For the purposes of Federal subsistence management, public lands include lands managed by the U.S. Fish and Wildlife Service, National Park Service, Bureau of Land Management, Bureau of Indian Affairs, and the U.S. Forest Service; non-navigable waters on these lands; and some navigable and marine waters. On October 1, 1999, management authority of the Federal Subsistence Board was extended to include navigable water within and adjacent to exterior boundaries of Federal conservation units in which the United States has an interest by virtue of the reserved water rights doctrine.

The board establishes regulations for the harvest of fish and wildlife for subsistence purposes by qualified rural residents on Federal public lands in Alaska. The Federal process involves substantial public input. Individuals and organizations submit proposals for regulations to the board that are reviewed by the Federal Subsistence Regional Advisory Councils (e.g., the North Slope Subsistence Regional Advisory Council, the Eastern Interior Alaska Subsistence Regional Advisory Council). The regional councils, which are composed of local citizens, make recommendations on proposals to the board. Federal subsistence staff also advise the board on regulatory proposals, providing data and analyses from local Federal managers and Alaska Department of Fish and Game (ADFG) biologists.

The State's recreational, commercial, personal use, and subsistence regulations continue to apply on all Federal lands unless superseded by Federal subsistence regulations. However, the board may establish Federal regulations to provide for use only by eligible rural residents in order to protect the ANILCA Title VIII preference for local rural users or to protect a wildlife population or fishery.

A.1.2.5 Wilderness Act of 1964

The Wilderness Act established the National Wilderness Preservation System. The act provides the framework for designation by Congress of new units to the system and prescribes policy for management of designated Wilderness areas. Section 702(3) designated approximately 7.16 million acres¹ of Wilderness in Arctic Refuge, and Section 707 says that, except as otherwise expressly provided for in ANILCA, Wilderness areas designated under ANILCA shall be administered in accordance with the Wilderness Act. Section 1317 of ANILCA required the "review, as to their suitability or non-suitability for preservation as wilderness, all land within ... units of the National Wildlife Refuge System in Alaska not designated as wilderness by this Act" This requirement was to be completed within five years of the enactment of ANILCA.

A.1.2.6 The Wild and Scenic Rivers Act (16 U.S.C. 1271-1287) Public Law 90-542, approved October 2, 1968, (82 Stat. 906)

This act establishes a National Wild and Scenic Rivers System (NWSRS) and prescribes the methods and standards through which additional rivers may be identified and added to the

¹ Acreages in this Plan are derived from many sources and may not agree with previously published values, including the draft Revised Plan. For more information, please refer to "A Note about Acreages" in the front pages of this volume.



system. Rivers in the NWSRS have outstanding, scenic, recreational, geologic, fish and wildlife, historic, cultural, or other values, and are managed in a way that protects these values for present and future generations. Rivers are classified as wild, scenic, or recreational, and hunting and fishing are permitted in components of the system under applicable Federal and State laws. Section 5(d)(1) requires that in all planning by Federal agencies for the use and development of water and related land resources, consideration be given to potential wild, scenic, and recreation rivers. This Revised Plan considers potential wild, scenic, and recreational rivers within Arctic Refuge, and ANILCA provides direction for management of designated rivers. Under ANILCA, portions of the Sheenjek, Ivishak, and Wind rivers in Arctic Refuge were designated as wild rivers and included in the NWSRS.

A.1.2.7 Marine Mammal Protection Act of 1972, as amended; (16 U.S.C. 1361-1421h; 50 CFR 13, 18, 216, and 229 as amended)

This act established a Federal responsibility for conservation of marine mammals. Management of walrus and polar bears is vested in the Department of the Interior (DOI). The act established a moratorium on the taking and importation of marine mammals and products made from them. Alaska Natives who take marine mammals for subsistence purposes, however, were exempt from the moratorium. This act has a direct effect on Refuge management decisions within our responsibility, such as managing visitor use effects upon individual animals. For example, for polar bears, Refuge responsibilities to satisfy the intent of both the Marine Mammal Protection Act and the Endangered Species Act are outlined in the Service's Polar Bear Interaction Guidelines (Service 2011) and Polar Bear Viewing Guidelines (Service 2010a).

A.1.2.8 Endangered Species Act of 1973, as amended; Public Law 93-205; (16 U.S.C. 1531-1544, et seq., as amended)

This act provides for the conservation of threatened and endangered species of fish, wildlife, and plants by Federal action and by encouraging the establishment of State programs. Among its provisions, the act authorizes the determination and listing of endangered and threatened species and habitat critical to those species; prohibits authorized taking, possession, sale, transport, etc., of endangered species; provides authority to acquire land for the conservation of listed species with land and water conservation funds; and authorizes the assessment of civil and criminal penalties for violating the act or implementing regulations.

Section 7 of the act requires Federal agencies to ensure that any action authorized, funded, or carried out by them does not jeopardize the continued existence of listed species or modify their critical habitat. Currently threatened or endangered species known to occur on Arctic Refuge include the polar bear, bowhead whale, Steller's eider, and spectacled eider. See Appendix B for Section 7 consultations.

A.1.2.9 Magnuson-Stevens Fishery Conservation and Management Act of 1996, Public Law 94-265, as amended by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act, Public Law 109-479 (16 U.S.C. 1801-1884)

The Magnuson-Stevens Fishery Conservation and Management Act is the primary law governing marine fisheries management in Federal waters of the United States. Among other things, it aids development of the domestic fishing industry by phasing out foreign fishing, managing the fisheries, and promoting conservation. The act was originally enacted as the Fishery Conservation and Management Act of 1976 and has been amended multiple times, most notably in 1996 and 2007. The 1996 amendments focused on rebuilding over-fished fisheries, protecting essential fish habitat, and reducing bycatch. The 2007 amendments mandate the use of annual catch limits and accountability measures to end over-fishing, provide for widespread market-based fishery management through limited access privilege programs, and call for increased international cooperation.

The Magnuson-Stevens Fishery Conservation and Management Act requires all Federal agencies to consult with the National Marine Fisheries Service on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect essential fish habitat. See Appendix B for essential fish habitat consultation.

A.1.2.10 National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321-4347, and the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of NEPA, 40 CFR 1500-1508

The National Environmental Policy Act (NEPA) is the basic national charter for protection of the environment. The procedural provisions in Council on Environmental Quality (CEQ) regulations require Federal agencies to integrate the NEPA process with other planning at the earliest possible time whenever taking a major Federal action that may significantly affect the human environment, so as to provide a systematic interdisciplinary approach. NEPA also requires Federal agencies to identify and analyze the environmental effects of their actions; describe appropriate alternatives to the proposal; involve affected State and Federal agencies, tribal governments, and the affected public in the planning and decision-making process; and

fully integrate all proposals that might have an impact on the environment with the provisions of NEPA (40 CFR 1501.2). Implementation of any one of the alternatives in this Plan for managing Arctic Refuge is such an action. Therefore, this planning process is subject to NEPA requirements.

A.1.2.11 Federal Water Pollution Control Act of 1972, as amended by The Clean Water Act of 1977, Public Law 95-217; (33 U.S.C. 1251-1387, et seq., as amended; 33 CFR 320ff; 40 CFR 15, 100-400, 220-233, 400-471)

This act regulates the discharge of pollutants into waters of the United States. The act protects fish and wildlife, establishes operation permits for all major sources of water pollution, and limits the discharge of pollutants or toxins into water. The act makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit is obtained under the Clean Water Act.

A.1.2.12 Coastal Zone Management Act of 1972

The Federal Coastal Zone Management Act was passed in 1972 in recognition of the increasing and conflicting uses that were causing irreparable harm to biological and physical systems associated with coastal areas. The act directs states to complete comprehensive coastal management programs or plans. Once a State's plan receives Federal approval, this law mandates that Federal actions be consistent with that State's coastal management program. The Alaska Coastal Management Program was terminated on July 1, 2011, per AS 44.66.030.

A.1.2.13 Antiquities Act (16 U.S.C. 431-433); Archaeological Resources Protection Act of 1979, Public Law 96-95; (16 U.S.C. 470as, et seq., as amended; 43 CFR 50-58); and the National Historic Preservation Act of 1966, (Public Law 89-665; 16 U.S.C. 470 et seq., as amended)

These laws make reference to cultural resources or govern the management of cultural resources on Federal lands. The various historic preservation laws, in general, do the following:

- Vest ownership of historic and prehistoric properties and of materials collected from such sites with the State and Federal government.
- Protect archeological and historic sites from unauthorized disturbance and prescribe penalties for individuals who damage (or collect from) such sites.
- Provide for issuing permits to qualified individuals and institutions to conduct scientific research.
- Mandate the inventory and evaluation of all sites on government owned and managed lands. The inventory is the responsibility of the individual Federal agency involved.
- Require that all projects with State or Federal involvement be conducted in such a way as to protect any significant cultural resources that may be present. This includes, but is not limited to, the performance of archeological surveys, site evaluations, and, if necessary, mitigation of adverse impacts to such resources.

A.2 Policy Guidance

Programmatic guidance and policy documents provide additional direction for the management of national wildlife refuges throughout the Refuge System. While it is not practical to provide information about all of these documents in this Plan, they are critical to management of the Refuge. This section summarizes key policies.

A.2.1 Wildlife Dependent Recreation Policy 605 FW 1-7

The National Wildlife Refuge System Improvement Act of 1997 states that “compatible wildlife-dependent recreation is a legitimate and appropriate general public use of the [Refuge] System.” The overarching goal of the Service’s wildlife-dependent recreation policy is to enhance wildlife-dependent recreation opportunities and access to quality visitor experiences on refuges while managing refuges to conserve fish, wildlife, plants, and their habitats.

A.2.2 Biological Integrity, Diversity, and Environmental Health 601 FW 3

The biological integrity, diversity, and environmental health policy is an additional directive for refuge managers to follow while achieving refuge purpose(s) and the Refuge System mission. It provides for the consideration and protection of the broad spectrum of fish, wildlife, and habitat resources found on refuges and associated ecosystems. It also provides refuge managers with an evaluation process to analyze their refuge and recommend the best management direction to prevent further degradation of environmental conditions and, where appropriate and in concert with refuge purposes and the Refuge System mission restore lost or severely degraded components.

A.2.3 Appropriate Refuge Uses 603 FW 1

The National Wildlife Refuge System Improvement Act of 1997 identified six priority wildlife-dependent recreation uses: hunting, fishing, wildlife observation and photography, environmental education, and interpretation. With the exception of these six uses, and with the exception of the taking of fish and wildlife under State regulations, the refuge manager follows the Service’s Appropriate Refuge Uses policy to decide if a new or existing use is an appropriate refuge use. If an existing use is not appropriate, the refuge manager will eliminate or modify the use. If a new use is not appropriate, the refuge manager will deny the use.

A.2.4 Compatibility 603 FW 2

A compatible use is a proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the Refuge System mission or the purposes of the national wildlife refuge. The refuge manager will not initiate or permit a new use of a national wildlife refuge or expand, renew, or extend an existing use of a refuge unless the refuge manager has determined the use is a compatible use. A compatibility determination is not an action under NEPA. Deciding whether or not to allow the use is the action—not the compatibility determination. Actions such as developing or revising comprehensive conservation plans or step-down plans and issuing special use permits are about allowing or

not allowing refuge uses and therefore require NEPA compliance. For more on compatibility determinations, see Appendix G.

A.2.5 Wilderness Stewardship Policy 610 FW 1-5

The Service's Wilderness Stewardship Policy provides an overview and foundation for implementing the Wilderness Act and the National Wildlife Refuge System Administration Act of 1966, as amended. The policy covers land management planning for congressionally designated Wilderness and addresses how to administer Wilderness in Alaska in light of ANILCA.

A.2.6 Refuge Planning 602 FW 1

The Refuge Planning Policy provides guidance for refuge planning, including the comprehensive conservation planning process and step-down management planning.

A.2.7 Comprehensive Conservation Planning 602 FW 3

Comprehensive conservation planning is a systematic decision making process founded on principles of sound fish and wildlife management and available science, and consistent with legal mandates and other policies, guidelines, and planning documents. The Service's planning policy provides guidance and step-by-step direction, and establishes minimum requirements for all comprehensive conservation plans.

A.3 Programmatic Guidance

Programmatic guidance developed by the Alaska Region, the Service, or DOI provides additional direction for the management of the Refuge System. Much of the management direction described in Chapter 2, and throughout this Plan, is influenced by general guidance from the programs and policies described in the next sections.

Several of these documents provide guidance that directs the Service to use an ecosystem approach in which the integrity of the entire ecosystem and its processes are considered when managing refuges. This broad-scale approach requires close collaboration with others in the form of effective landscape-level partnerships and coordinated efforts to address climate change. We provide a brief description of ecosystem management in the context of partnering and summarize the influential programs, strategies, and national and regional management plans that were reviewed during the development of this Plan.

A.3.1 Ecosystem Management and Conservation Partnerships

An ecosystem approach to refuge management was initiated by the Refuge System Improvement Act. The Service recognizes the complex and interconnected relationships that are present within ecosystems and across landscapes and recognizes that ecosystems may not be confined within the boundaries of a refuge, a state, or even the nation. The Service also recognizes that people and their socio-cultural and economic systems are important components of ecosystems. Therefore, working with people in conservation partnerships and other collaborative efforts is necessary in applying ecosystem management.

Creating and maintaining conservation partnerships across entire landscapes is crucial for reaching the goal of ecosystem management because fish, wildlife, and their habitats are not constrained by the administrative boundaries of specific protected areas. Without physical barriers, and with available habitat, fish and wildlife will freely move through ownerships and management jurisdictions. In the face of accelerating climate change and other environmental stressors, some species may shift their ranges into different ecosystems and political or administrative jurisdictions.

Conservation of biological diversity on refuge lands and outside refuge boundaries is an ambitious but fundamental goal of the Service's ecosystem approach to management. Through



its refuge-specific, regional, national, and international programs, the Service contributes to the conservation of biological diversity by directly protecting habitats and managing for the recovery of fish and wildlife populations that are threatened or endangered. The Service also restores habitats, conducts environmental clean ups, monitors ecological integrity, and provides technical assistance to private landowners. The Service has learned that it cannot work alone to accomplish these efforts because conservation of biological diversity requires coordination among many public agencies, private organizations, landowners, and citizens across different landscapes, societies, and cultures.

A.3.2 Landscape Conservation Cooperatives

Two decades of ecosystem management, combined with the realities of accelerating climate change, have made it clear to the Service that conservation must be coordinated on a landscape-level basis. In September 2009, DOI issued Secretarial Order No. 3289 (amended February 2010) to address the impacts of climate change on the nation's waters, lands, and other natural and cultural resources. Section 3(c) of the order states: "Interior bureaus and agencies, guided by the Energy and Climate Change Council, will work to stimulate the development of a network of collaborative 'Landscape Conservation Cooperatives.' These cooperatives ... will work interactively with the relevant DOI Climate Science Center(s) and help coordinate adaptation efforts [in response to climate change] in the region."

A Landscape Conservation Cooperative (LCC) is an applied conservation partnership that provides scientific and technical support for conservation at a landscape scale. The fundamental role of the LCC is to help address conservation science needs within a broad geographic area such as the entire range of a species, population, or groups of species of fish or wildlife. Although the LCC concept was initially motivated by climate change, the role of these partnerships is to help improve the collective ability of the conservation community to address a wide variety of environmental stressors and conservation challenges within entire landscapes, including management response to climate change.

Implementing the LCC concept includes bringing partners together to identify what they can collectively agree on in terms of conservation interests and science needs. The partners will then work toward collectively addressing those interests and needs. The intent of LCC partnerships is to accomplish a conservation mission that no single agency or organization could accomplish alone.

A.3.3 National Management Plans

Nature is not constrained by the administrative boundaries that are used to determine ownership or management of specific areas of land. Without physical barriers, and with available habitat, fish and wildlife will freely roam through lands and waters regardless of ownership or management. To ensure the conservation of the many species that migrate over political and administrative lines, there are several national efforts designed to monitor and protect these species. These plans were reviewed during the revision of the Refuge Plan to ensure that the revised management direction is consistent with these national conservation plans.

A.3.3.1 Strategic Habitat Conservation

The Strategic Habitat Conservation report (U.S. Geological Survey and Service 2006) and technical implementation handbook (Service 2008) combine to create a framework rooted in the principles of adaptive natural resource management. Adaptive management incorporates new information learned from research and monitoring into future management actions. Strategic Habitat Conservation provides a guiding tool for setting and achieving conservation objectives at multiple scales based on the best available information, data, and ecological models.

Implementation of Strategic Habitat Conservation involves the integration of four elements that occur in an adaptive management feedback loop. These are biological planning, conservation design, delivery of conservation actions, and monitoring and research. Information learned from implementing Strategic Habitat Conservation is used to help a refuge determine what contribution(s) it can make for meeting conservation priorities at the landscape level. Project leaders and planning teams consider Strategic Habitat Conservation together with other Federal policies and guidance when developing goals and objectives for refuge comprehensive conservation plans.

A.3.3.2 Strategic Plan for Responding to Accelerating Climate Change

In 2010, the Service completed a strategic plan for responding to the effects of accelerating climate change (Service 2010b). The primary purpose of the Service's strategic plan is to provide a vision and direction for the agency by defining its role within the context of the larger conservation community as both the Service and the larger community respond to global climate change on a landscape-level basis. Another key component of the Service's strategic plan is close coordination with the regional Climate Science Centers that are being established by the U.S. Geological Survey and other DOI agencies as they implement Secretarial Order No. 3289, as amended.

Rooted in the mission of the Service, the strategic plan outlines goals, objectives, and actions organized under three major strategies: adaptation, mitigation, and engagement. Adaptation is helping fish, wildlife, and their habitats adapt to climate change. The Service's strategic plan establishes applied science partnerships for conservation (i.e., LCCs) through the adaptation section of the document. Mitigation is reducing levels of greenhouse gasses in the earth's atmosphere. Engagement is reaching out to and communicating with existing partners and others to join forces with them in seeking solutions to the challenges and threats to fish and wildlife conservation posed by climate change. Project leaders and planning teams consider these strategies, together with other Federal policies and guidance, when developing goals and objectives for refuge comprehensive conservation plans.

A.3.3.3 Centennial Legacy

Between 2000 and 2003, in preparation for the 100th anniversary of the Refuge System, the Service planned numerous events and developed a number of publications to mark the centennial. The planning was in response to the National Wildlife Refuge Centennial Act of November 1, 2000. The celebration was intended to serve as a vision to provide resources for the Refuge System over the next 100 years. Materials developed for the centennial and beyond prioritized and addressed the Refuge System's most pressing needs in three main categories: essential staff, mission-critical projects, and major maintenance.

A.3.3.4 North American Waterfowl Management Plan

The North American Waterfowl Management Plan is dedicated to the recovery of waterfowl populations through the restoration and management of wetland ecosystems (NAWMP Committee 2004). The North American Waterfowl Management Plan seeks to conserve biological diversity in the Western Hemisphere, integrate wildlife conservation with sustainable economic development, and promote partnerships of public and private agencies, organizations, and individuals for conservation. Canada, the United States, and Mexico are committed to this ongoing continental effort and have formed an international partnership to identify priority waterfowl habitats and to establish goals and objectives for the management of waterfowl populations and habitats. Arctic Refuge provides important breeding and migration habitat for a variety of waterfowl from throughout North America.

A.3.3.5 Partners in Flight Bird Conservation Plans

Partners in Flight is a cooperative effort among Federal, State, and local government agencies; philanthropic foundations; professional organizations; conservation groups; industry; universities; and private individuals. Partners in Flight was created in 1990 in response to growing concerns about declines in the populations of many landbird species and to emphasize the conservation of birds not covered by existing conservation initiatives. Bird conservation plans are developed in each region to identify species and habitats most in need of conservation, to establish objectives and strategies to meet those needs, and to implement plans and monitor progress on them.

A.3.3.6 U.S. Shorebird Conservation Plan

The U.S. Shorebird Conservation Plan (Brown et al. 2001) seeks to stabilize populations of all shorebirds that are in decline because of factors affecting habitat in the United States. At a regional level, the plan's goal is to ensure that shorebird habitat is available in adequate quantity and quality to support shorebird populations in each region. Ultimately, the goal of the Shorebird Conservation Plan is to restore and maintain shorebird populations throughout the Western Hemisphere through an international partnership. Arctic Refuge provides important breeding and staging habitats for a variety of shorebirds.



A.3.3.7 North American Waterbird Conservation Plan

The North American Waterbird Conservation Plan (Kushlan et al. 2002) is the product of an independent partnership of individuals and institutions having interest and responsibility for conservation of waterbirds and their habitats in the Americas. The partnership, called Waterbirds of the Americas, was created to “support a vision in which the distribution, diversity, and abundance of populations and habitats of breeding, migratory, and non-breeding waterbirds are sustained or restored throughout the lands and waters of North America, Central America, and the Caribbean.” Their plan “provides a continental-scale framework for the conservation and management of 210 species of waterbirds ... in 29 nations throughout North America” Over 30 species of migratory waterbirds have been recorded on Arctic Refuge, and 18 of these species are regular breeders. Included are such diverse groups as loons, gulls, seabirds, and cranes.

A.3.4 Regional Management Plans

In addition to considering national conservation plans, this Revised Plan must consider the management of neighboring lands by reviewing regional conservation plans and other land management goals of the region. Regional plans, goals, and objectives from other programs were reviewed to understand how the Refuge can contribute to the goals for conservation within the State or local region. This list is not intended to be comprehensive, but it demonstrates some of the major regional plans that were reviewed during the development of this Plan.

A.3.4.1 Alaska Interagency Wildland Fire Management Plan

Interagency fire management plans for 13 geographic areas of the State were prepared between 1982 and 1988 to provide a coordinated and cost-effective approach to fire management on all lands in Alaska. In 1998, an amendment was produced called the Alaska Interagency Wildland Fire Management Plan (AIWFMP). This amendment consolidated the original 13 plans into a single document and provided land managers, land owners, and fire suppression organizations a single reference for interagency fire management operational information. The amended plan also incorporated operational changes that occurred since the inception of the statewide fire management planning effort. In 2010, the AIWFMP was updated again in response to public requests for more information regarding Alaskan fire management practices (Bureau of Land Management 2010). The 2010 revision clarifies interagency guidelines, policies, and operational direction for responses to wildland fires, and brings terminology up to date. The purpose of the plan is to be the interagency reference for wildland fire operational information and to promote a cooperative, consistent, cost-effective, interagency approach to wildland fire management in Alaska. While the plan does not supersede individual agency policies and requirements, it is intended that unit-specific fire management plans (such as the Arctic Refuge Fire Management Plan) be used in conjunction with the interagency plan.

A.3.4.2 Landbird Conservation Plan for Alaska Biogeographic Regions

Continental and local declines in numerous bird populations have led to concern for the future of migratory and resident bird species. The Landbird Conservation Plan for Alaska

Biogeographic Regions (Boreal Partners in Flight Working Group 1999) was developed through the Partners in Flight national initiative in recognition of the need for a coordinated, cooperative conservation initiative focusing on nongame landbirds. It provides conservation priorities and objectives for landbirds in each region of Alaska. Arctic Refuge contributes to this plan through a variety of inventory and monitoring studies of landbirds within the Refuge.

A.3.4.3 Alaska Shorebird Conservation Plan

Over 70 species of shorebirds have been recorded in Alaska, representing one-third of the world's shorebird species (Alaska Shorebird Group 2008). Shorebirds worldwide have suffered dramatic population declines in the past decade. The Alaska Shorebird Conservation Plan (Alaska Plan) is one of 11 regional plans associated with the U.S. Shorebird Conservation Plan. The Alaska Plan identifies shorebird species of concern in Alaska and provides goals, objectives, and conservation priorities for shorebird conservation throughout the State. The Alaska Plan also provides a new framework for building a conservation strategy in a landscape context. The four major components to the conservation strategy are research, population monitoring, habitat management, and education and outreach. The overall goal of the plan is to keep shorebirds and their habitats well distributed — not only across the Alaska landscape, but also throughout regions used by these populations during other phases of their annual cycle. Additionally, the “Program for Regional and International Shorebird Monitoring” Boreal Committee is presently investigating techniques for monitoring shorebirds in the boreal forest. Arctic Refuge supports several species that are showing declines throughout the North American continent, including American golden plover, buff-breasted sandpiper, solitary sandpiper, dunlin, and upland sandpiper. The Boreal Program for Regional and International Shorebird Monitoring program is presently in its development phase and has yet to be implemented in Alaska.

A.3.4.4 Utility Corridor Resource Management Plan

The Utility Corridor Resource Management Plan is a long-range comprehensive plan that directs management of the approximately 6.1 million acres of Bureau of Land Management (BLM) lands through which the Dalton Highway and Trans-Alaska Pipeline pass. The utility corridor, which was established by Public Land Order (PLO) 5150 on December 30, 1971, is an essential component of the national oil and gas transportation system (BLM 1989). The plan identifies special management areas and development nodes in the utility corridor, and describes provisions for appropriate uses and protections for valuable resources. Included in the plan is the Galbraith Lake Area of Critical Environmental Concern that is directly adjacent to the western boundary of Arctic Refuge. The 1989 plan, which provided management guidance for 20 years, is scheduled to be revised by BLM; however, a timeline for the revision has not yet been set.

A.3.4.5 Dalton Highway Recreation Management Plan

The Dalton Highway Recreation Management Area includes those public lands adjacent to the Dalton Highway from the Yukon River, north to a point near the confluence of the Sagavanirktok and Ivishak rivers, approximately 60 miles south of Prudhoe Bay, Alaska. The 1989 Utility Corridor Resource Management Plan (see Section A.3.4.4) established the

boundaries of the plan area, which includes lands adjacent to the western boundary of Arctic Refuge.

BLM completed the Dalton Highway Recreation Area Management Plan (1991) because of increasing public interest and use of the Dalton Highway after the highway was opened to the public in 1981. The plan divides the recreation management area into zones according to the recreation opportunity spectrum, and it establishes recreation management objectives for the zones within the utility corridor. Issues addressed in the plan include information and interpretive services, facility development, resource manipulation and rehabilitation, and Dalton Highway Recreation Management Area administration.

A.3.4.6 Dalton Highway Scenic Byway Corridor Partnership Plan

The Dalton Highway Scenic Byway Corridor Partnership Plan (ADNR 2010) provides a comprehensive evaluation of the intrinsic qualities of the byway and intends to guide management, protection, and enhancement of those qualities over time. The plan is directed toward discussing the primary concerns and challenges associated with living and operating in the corridor. The plan also acknowledges issues and concerns associated with managing the byway; provides a descriptive overview of the route; summarizes road and transportation characteristics, such as traffic volumes, accident statistics, and signage; assesses current and future visitation; and provides a framework that will help local byway organizations succeed in reaching their stated vision, goals, and objectives. Arctic Refuge staff participated on the advisory committee for the Byway Corridor Partnership Plan.

A.3.4.7 Strategy for Conserving Alaska's Diverse Wildlife and Fish Resources

The Alaska Department of Fish and Game (ADFG) published a strategic plan for Alaska fish and wildlife in 2006 (ADFG 2006). It serves as the State's comprehensive wildlife conservation strategy and focuses on nongame species. The goal of the strategy is to conserve the diversity of Alaska's wildlife and fish resources, focusing on species with the largest need for conservation interventions. The strategy was designed with the intent to integrate new conservation actions and strategies with existing State wildlife management and research programs to build upon earlier successes. The strategy outlines the conservation needs of hundreds of species and many species assemblages, highlighting a growing need in the State for initial inventorying studies for lesser known species. The strategy also provides detailed natural history information and specific and measurable objectives for species conservation in Alaska.

A.3.4.8 Alaska Natural Heritage Program

This program was established in 1989 by The Nature Conservancy; in 1993, it became part of the University of Alaska Anchorage, residing in the College of Arts and Sciences. The Alaska Natural Heritage Program is Alaska's clearinghouse for information on plant and animal species of conservation concern, natural communities of conservation concern, and invasive non-native plant species. The information is collected, validated, and distributed, and assistance is provided to natural resource managers and others in applying it effectively. The program has developed a biological conservation database that is linked to similar programs in all 50 states, most Canadian provinces, and many Latin American countries.

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Appendix B

Consultation and Coordination with Others

B. Consultation and Coordination with Others

B.1 Coordination with State Agencies

Consistent with the principles of ecosystem management and the laws and policies described in this section, effective management of Arctic National Wildlife Refuge (Arctic Refuge, Refuge) must be done in close coordination with the State of Alaska. This appendix is not intended to be a comprehensive list of State agencies but rather describes the primary State agencies that share concern and responsibilities for fish, wildlife, and other natural resources.

B.1.1 Alaska Department of Fish and Game

The Alaska Department of Fish and Game (ADFG) has the primary responsibility for managing resident fish and wildlife populations in Alaska, and the U.S. Fish and Wildlife Service (Service) has final authority for managing all fish and wildlife on Refuge lands and waters. On Refuge lands, the Service and ADFG share a mutual concern for all fish and wildlife resources and their habitats, and both are engaged in extensive fish and wildlife conservation, management, and protection programs. In 1982, the Service and ADFG signed a Master Memorandum of Understanding (dated March 13, 1982) that defines the cooperative management roles of each agency. This memorandum sets the framework for cooperation between the two agencies (see section B.1.1.1).

Through the direction of the Boards of Fisheries and Game, the State of Alaska establishes fishing, hunting, and trapping regulations throughout the State. These regulations apply to



Federal public lands unless found to be inconsistent with Refuge purposes, goals, and objectives, and they are superseded by Federal subsistence regulations. The State is divided into 26 Game Management Units (GMUs); most of these are further divided into subunits. Management objectives are developed for populations within the GMUs. All Refuge lands lie within GMU 25A, 25B, 26B, and 26C.

The State process for developing regulations involves substantial public input to the Alaska Board of Fisheries and Game concerning changes in regulation and allocations. Input may be directly to the boards through testimony and proposals or indirectly through participation in local fish and game advisory committees. The advisory committees assist the boards in assessing local fish and wildlife issues and proposed regulations. ADFG biological staff also provides data and analysis of proposals to the boards. Regulations may be changed by the boards at regular meetings, by emergency regulation, or by emergency order.

Although many biologists within ADFG have law enforcement authority, Refuge law enforcement officers and officers of the Alaska Department of Public Safety, Division of State Fish and Wildlife Protection, carry out most enforcement of fishing and hunting regulations.

The Division of Wildlife Conservation works to conserve and enhance Alaska's wildlife and to provide for a wide range of uses for the greatest benefit of current and future generations of the people through management of wildlife populations and habitat, research, information transfer, regulatory activities, and public service.

The ADFG Division of Commercial Fisheries manages, protects, rehabilitates, enhances, and develops fisheries and aquatic plant resources in the interest of the economy and general well-being of the State, consistent with the sustained-yield principle and subject to allocations established through public regulatory processes. It is responsible for management of the State's commercial, subsistence, and personal-use fisheries.

The Division of Sport Fish is responsible for the State's recreational fishery resource. Responsibilities include the conservation of self-perpetuating populations of fish; management of sport fisheries in salt and fresh water; management of hatchery reproducing populations of sport fish species to provide a diverse mix of sport fishing opportunities; and optimizing the social and economic benefits of Alaska's recreational fisheries.

The Division of Subsistence is the research branch of ADFG responsible for providing comprehensive information on the customary and traditional use of wild resources. Information is provided to meet management goals, aid in regulation development, facilitate collaborative agreements, assess environmental impacts, and describe the unique role of wild resources in Alaska.

B.1.1.1 Master Memorandum of Understanding

MASTER MEMORANDUM OF UNDERSTANDING
 BETWEEN
 THE ALASKA DEPARTMENT OF FISH AND GAME
 Juneau, Alaska
 AND
 THE U.S. FISH AND WILDLIFE SERVICE
 DEPARTMENT OF THE INTERIOR
 Anchorage, Alaska

This Master Memorandum of Understanding between the State of Alaska, Department of Fish and Game, hereinafter referred to as the Department, and the U.S. Fish and Wildlife Service, hereinafter referred to as the Service, reflects the general policy guidelines within which the two agencies agree to operate.

WHEREAS, the Department, under the Constitution, laws, and regulations of the State of Alaska, is responsible for the management, protection, maintenance, enhancement, rehabilitation, and extension of the fish and wildlife resources of the State on the sustained-yield principle, subject to preferences among beneficial uses; and

WHEREAS, the Service, by authority of the Constitution, laws of Congress, and regulations of the U.S. Department of Interior, has a mandated management responsibility for certain species or classes of wildlife, and is responsible for the management of Service lands in Alaska, and the conservation of fish and wildlife resources on these lands; and

WHEREAS, the Department and the Service share a mutual concern for fish and wildlife resources and their habitats and both are engaged in extensive fish and wildlife conservation, management, and protection programs and desire to develop and maintain a cooperative relationship, which will be in the best interests of both parties, the concerned fish and wildlife resources, and their habitats, and produce the greatest public benefit; and

WHEREAS, it has been recognized in the Alaska National Interest Lands Conservation Act and subsequent implementing Federal regulations that the resources and use of Service lands in Alaska are substantially different than those of other states; and

WHEREAS, the Department and the Service recognize the increasing need to coordinate resource planning and policy development;

NOW, THEREFORE, the parties hereto do hereby agree as follows:

THE DEPARTMENT OF FISH AND GAME AGREES:

1. To recognize the Service as the agency with the responsibility to manage migratory birds, endangered species, and other species mandated by Federal law, and on Service lands in Alaska to conserve fish and wildlife and their habitats and regulate human use.
2. To manage fish and resident wildlife populations in their natural species diversity on Service lands.
3. To consult with the Regional Director in a timely manner and comply with applicable Federal laws and regulations before embarking on enhancement or construction activities on Service lands.

THE FISH AND WILDLIFE SERVICE AGREES:

1. To recognize the Department as the agency with the primary responsibility to manage fish and resident wildlife within the State of Alaska.
2. To recognize the right of the Department to enter onto Service lands at any time to conduct routine management activities which do not involve construction, disturbance to the land, or alterations of ecosystems.
3. To cooperate with the Department in planning for enhancement or development activities on Service lands which require permits, environmental assessments, compatibility assessments, or similar regulatory documents by responding to the Department in a timely manner with requirements, timetables, and any other necessary input.
4. To manage the fish and wildlife habitat on Service lands so as to ensure conservation of fish and wildlife populations and their habitats in their natural diversity.
5. To consider carefully the impact of any proposed treaties or international agreements relating to fish and wildlife resources on the State of Alaska which could diminish the jurisdictional authority of the State and to consult freely with the State when these treaties or agreements have a primary impact on the State.
6. To review present U.S. Fish and Wildlife Service policies and any future proposed changes in those policies in consultation with the Department to determine if modified or special policies are needed for Alaska.
7. To adopt refuge management plans whose provisions—including provision for animal damage control—are in substantial agreement with the Department's fish and wildlife management plans, unless such plans are determined formally to be incompatible with the purposes for which the respective refuges were established.
8. To utilize the State's regulatory process to maximum extent allowed by Federal law in developing new or modifying existing Federal regulations or proposing changes in existing State regulations governing or affecting the taking of fish and wildlife on Service lands in Alaska.

THE DEPARTMENT OF FISH AND GAME AND THE FISH AND WILDLIFE
SERVICE MUTUALLY AGREE:

1. To coordinate planning for management of fish and wildlife resources on Service lands so that conflicts arising from differing legal mandates, objectives, and policies either do not arise or are minimized.
2. To consult with each other when developing policy and legislation which affect the attainment of wildlife resource management goals and objectives or management plans.
3. To recognize that the taking of fish and wildlife by hunting, trapping, or fishing on Service lands in Alaska is authorized in accordance with applicable State and Federal law unless State regulations are found to be incompatible with documented refuge goals, objectives, or management plans.
4. To develop such supplemental memoranda of understanding between the Commissioner and the Regional Director as may be required to implement the policies contained herein.
5. That this Master Memorandum of Understanding shall become effective when signed by the Commissioner of the Alaska Department of Fish and Game and the Alaska Regional Director of the U.S. Fish and Wildlife Service and shall continue in force until terminated by either party by providing notice in writing 120 days in advance of the intended date of termination.
6. That amendments to this Master Memorandum of Understanding may be proposed by either party and shall become effective upon approval by both parties.

STATE OF ALASKA

Department of Fish and Game

/signed/ Ronald O. Skoog

Commissioner

March 13, 1982

Date

U.S. DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

/signed/ Keith M. Schreiner

Regional Director, Alaska

March 13, 1982

Date

B.1.2 Alaska Department of Natural Resources

The Alaska Department of Natural Resources (ADNR) and its subdivisions coordinate with the Service and other Federal and State agencies in managing public lands (Federal and State) in Alaska. ADNR manages all State-owned land, water, and surface and subsurface resources except for fish and game. The ADNR Division of Mining, Land and Water manages the State's water and land interests, including and within national wildlife refuges. This Comprehensive Conservation Plan (Plan, Revised Plan) was developed in consultation with the ADFG and ADNR.

B.1.3 Alaska Department of Environmental Conservation

The Alaska Department of Environmental Conservation (ADEC) is also a key partner regarding Refuge management efforts, in light of its mission of “conserving, improving, and protecting Alaska’s natural resources and the environment.” For example, ADEC has direct statewide responsibility for monitoring and maintaining air and water quality. Some of the interagency coordination agreements and mechanisms involving ADEC also involve ADNR and ADFG; others are specific to ADEC. Issues of interest to the Service and Arctic Refuge that may include authorizations from or cooperation with ADEC include air and water quality monitoring, invasive species management, and hazardous material spills.

B.1.4 Coastal Zone Management***B.1.4.1 Alaska Coastal Management Program***

Section 307(c) of the Coastal Zone Management Act of 1972, as amended (Public Law 92-583), states that “each Federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved State coastal management programs.” Federal agency consistency requirements are addressed in 15 CFR 930.

The Alaska Coastal Management Program was terminated on July 1, 2011, per AS 44.66.030. Prior to its termination, the Refuge contacted the Alaska Coastal Management Program in November 2010. We were informed that a consistency determination is not required for this Plan. No additional coordination regarding coastal zone management is needed.

B.1.4.2 North Slope Borough Coastal Management Plan

The Final Draft Plan Amendment of the North Slope Borough Coastal Management Plan (2007) revised the 1988 Coastal Management Program for the North Slope Borough. It incorporated new requirements for district coastal management plans required by State legislation passed in 2003 and revisions to the Alaska Coastal Management Program regulations effective in 2004. It further established enforceable policies of the North Slope Borough Coastal Management Program.

The Alaska Coastal Management Program was terminated on July 1, 2011, per AS 44.66.030. Prior to its termination, Arctic Refuge contacted the North Slope Borough Coastal District in November 2010, and we were informed that a consistency determination is not required for this Plan. No further coordination regarding coastal zone management is needed.

B.1.5 State Historic Preservation

Section 106 of the National Historic Preservation Act requires review of any project funded, licensed, permitted, or assisted by the Federal government for impact on significant historic properties. The agencies must allow the State Historic Preservation Officer and the Advisory Council on Historic Preservation, a Federal agency, to comment on a project. The Alaska Historic Preservation Act contains a provision similar to Section 106, which mandates that any project with State involvement be reviewed in a similar manner.

Through the Section 106 review process, Office of History and Archeology staff work with Federal and State agencies during the early stages of project planning to protect cultural resources. They do this by providing information on the location of sites and on cultural resources surveys previously done in an area. If the potential to discover unknown sites is high, a survey may be recommended. When there are sites in a project area, the Service consults with State Historic Preservation Officer on National Register eligibility, on how the project will affect sites, and on ways to lessen unavoidable damage.

In January 2011, the Service's regional archaeologist spoke with staff in the Office of History and Archeology about the pending draft Plan. This office is particularly interested in the Plan's goals, objectives, and management guidelines and policies (Chapter 2). On October 13, 2011, the State Historic Preservation Office provided formal comments on the draft Plan in which they stated their support for the Service's stated objectives with respect to cultural resources. The regional archaeologist continued to consult with the Office of History and Archeology between the release of the draft Plan and Revised Plan.



B.2 Consultation with Federal Agencies

B.2.1 Federal Agency Coordination

In late October 2009, the Refuge invited four Federal agencies to participate in the comprehensive conservation planning process. One of these agencies, the Bureau of Land Management (BLM), asked to participate as a member of the extended planning team. The agencies contacted were:

- National Park Service (NPS)
- Bureau of Indian Affairs (BIA)
- Bureau of Land Management (BLM)
- U.S. Geological Survey (USGS)

The Refuge has engaged in periodic information exchange and informal coordination with the NPS, especially pertaining to the Gates of the Arctic National Park General Management Plan planning process; the Bureau of Indian Affairs, especially relating to Native allottees; and the BLM (for Arctic region planning coordination, cumulative effects, and climate change). The USGS Alaska Science Center provided us with a consultation and coordination point of contact for the Refuge planning effort.

In a December 14, 2011, letter to the Service's director, the National Aeronautics and Space Administration (NASA) requested cooperating agency status on the Revised Plan (see Section B.5). In January 2012, NASA assigned a representative to participate on the core planning team. As such, NASA has had the opportunity to participate in all core team meetings held since early January 2012, review internal drafts of the Plan, and represent NASA's views regarding Refuge-level decisions associated with the Revised Plan. NASA provided the Refuge with text and analyses that are included in Chapters 4 and 5 of the Plan.

B.2.2 Section 7 Compliance

The Service is required to ensure that any action authorized, funded, or carried out on the Refuge, including the Revised Plan, does not jeopardize the continued existence of species listed under the Endangered Species Act or modify their critical habitat. Under Section 7 of the Endangered Species Act, consultation within the Service and with the National Marine Fisheries Service is required.

In January 2011, a programmatic Section 7 consultation was completed in consultation with the Service's Endangered Species and Marine Mammals Management divisions. The programmatic consultation covers field activities on Arctic Refuge or authorizations for on-the-ground activities in polar bear critical habitat and those portions of the Refuge where a polar bear encounter is possible.

Because the programmatic Section 7 consultation does not apply to the Plan, in January 2011, the Refuge contacted the Service's Endangered Species Division and the National Marine Fisheries Service about the pending draft Plan. Both agencies provided the Refuge with a list of species and critical habitat. Four species listed under the Endangered Species Act occur in or near Arctic Refuge: polar bear, bowhead whale, Steller's eider, and spectacled eider. Four candidate species also occur in or near the Refuge: yellow-billed loon, Pacific walrus, bearded seal, and ringed seal. Polar bear critical habitat has been designated, including parts of Arctic Refuge.

On May 14, 2012, the Refuge completed informal consultation with the Service's Endangered Species Division. The Service concurred that implementing the Revised Plan—including the goals, objectives, management policies, and guidelines—would not be likely to adversely affect candidate or listed species or their designated critical habitat. The Refuge completed informal consultation with the National Marine Fisheries Service on July 16, 2012. The National Marine Fisheries Service stated that while the proposed alternatives might affect bowhead whale, bearded seal, and ringed seal, their assessment found any such effects to be insignificant or discountable. They concurred that implementing the Revised Plan is not likely to adversely affect listed or candidate species.

B.2.3 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996, requires all Federal agencies to consult with the National Marine Fisheries Service on all actions permitted, funded, or undertaken by the agency that might adversely affect essential fish habitat. The Service consulted with the National Marine Fisheries Service on essential fish habitat in January 2011. The Service determined that none of the alternatives or objectives presented in the Plan would adversely affect essential fish habitat, and there would be no effect to the habitat as a result of the Plan. The National Marine Fisheries Service concurred with this finding on January 18, 2011. No additional consultation on essential fish habitat is required.

B.3 Consultation with Tribal Governments

In early October 2009, Refuge staff initiated consultation with phone calls and formal letters to leaders of nine federally-recognized tribes with geographic and cultural ties to Arctic Refuge. These tribes are:

- Gwichyaa Zhee Gwich'in Tribal Government, Fort Yukon
- Native Village of Kaktovik, Kaktovik
- Native Village of Stevens Tribal Government, Stevens Village
- Native Village of Venetie Tribal Government, Venetie
- Naqsrarmuit Tribal Council, Anaktuvuk Pass
- Beaver Traditional Council, Beaver
- Denduu Gwich'in Tribal Council, Birch Creek
- Chalkyitsik Traditional Council, Chalkyitsik
- Circle Traditional Council, Circle

Arctic Refuge requested tribal participation in the planning process and invited the tribes to participate in any way that would be meaningful to them, including (but not limited to) participation on any of the core, extended, or advisory teams.

Refuge staff placed follow-up phone calls to each of the tribes in late November and again in mid-December 2009 to determine what level of involvement each tribe wished to have and whether they wanted to engage in formal government-to-government consultation. One tribe, the Native Village of Kaktovik, opted to participate on the extended team; another tribe, the Naqsrarmuit Tribal Council of Anaktuvuk Pass, appointed a representative to the advisory team. Refuge staff mailed follow-up letters to each tribe in early January 2010 informing them that the process to revise the Plan was underway and planning involvement teams had been formed. However, because of the tribe's special governmental status, they were welcome to contact the Refuge or the planning teams at any time and make recommendations or comments.

Public scoping meetings were held in tribal or council buildings at Arctic Village, Fort Yukon, Kaktovik, and Venetie, as well as in Fairbanks, Anchorage, and Barrow during spring and summer of 2010. In October 2010, the Refuge telephoned and then mailed a letter and preliminary draft planning documents to the First Chiefs of each of the nine tribes and to each of the tribal council members for Gwichyaa Zhee Gwich'in Tribal Government, Native Village of Kaktovik, and Native Village of Venetie Tribal Government requesting consultation with the Native councils on an internal review draft of the Revised Plan. We also sent these materials to the First and Second Chiefs and First Council for the Arctic Village Council and Venetie Village Council. These contacts were made out of courtesy to our tribal partners and were not available to the general public.

On February 8, 2011, the Gwichyaa Zhee Gwich'in Tribal Government passed Resolution 11-L-02 along with recommended changes for the internal review draft of the Plan. The Resolution included a request for government-to-government consultation. Resolution 11-L-02 was not sent to Arctic Refuge until April 13, 2011. On April 22, 2011, the Refuge manager responded to the Gwichyaa Zhee Gwich'in Tribal Government acknowledging their request and stating, "If the Gwichyaa Zhee Gwich'in Tribal Government wishes to have formal Government to Government consultation meetings with members of the council, independent of the scheduled

public meetings, please let me know and we will schedule a meeting as appropriate.” The Refuge requested through various Gwichyaa Zhee Gwich’in Tribal Government officials to be put on the tribal council’s meeting agenda either before or during the public review period of the draft Revised Plan.

In August 2011, Refuge staff met with members of the Council of Athabaskan Tribal Government Chiefs at their annual meeting in Arctic Village; the members include many of the tribes we have engaged through our planning process. At the meeting, we discussed the Plan’s progress, an Arctic Village Sheep Management Area hunting proposal, and the desire to have more involvement from local Native communities.

Additional meetings on the Plan were scheduled with tribal and village councils during fall 2011 to present and take comments on the public review draft of the Revised Plan. One or more meetings were held in Arctic Village, Fort Yukon, Kaktovik, and Venetie between October 4 and November 15, 2011. During the meeting in Fort Yukon, Mike Peter (First Chief, Gwichyaa Zhee Gwich’in Tribal Government) requested the Refuge wait until after the annual tribal council elections were completed on October 29, 2011, and new members seated and officially sworn in before meeting with the Refuge and the full tribal council. The Refuge asked to be notified upon completion of the election process; we were especially interested in learning when the next official tribal council meeting was scheduled in which the Refuge could be on the agenda.

Between February 27 and July 10, 2012, the Refuge submitted planning materials to the First Chiefs of each of the nine federally-recognized tribes and to each of the council members of Gwichyaa Zhee Gwich’in Tribal Government, Native Village of Kaktovik, and Native Village of Venetie Tribal Government. We also sent materials to the First and Second Chiefs and First Councils of the Arctic Village Council and Venetie Village Council. Materials provided included: samples of public comments on the draft Plan and draft Service responses; a list of key changes made to the Plan based on public and internal agency comments; a revised planning process timeline; bound copies of the internal review draft of the Plan; and a letter repeating our availability to meet with the tribes and to accept their comments.

The Refuge manager participated in government-to-government consultation with three federally-recognized tribes in 2012. He met with the Gwichyaa Zhee Gwich’in Tribal Government in Fort Yukon on May 10; with the Native Village of Venetie Tribal Government in Venetie on June 6; and with the Native Village of Kaktovik on June 27 in Kaktovik. During the meeting with the Gwichyaa Zhee Gwich’in Tribal Government, the tribe said they will be passing a resolution for formal tribal consultation on any final decision made regarding the Revised Plan and that they want to consult at the highest government level. The tribe is prepared to send a tribal representative to Washington, D.C., to be part of any decision-making discussions. In addition to the federally-recognized tribes, the Refuge manager met with the Arctic Village Council on May 29 in Arctic Village, and he met with members of the Venetie Village Council during the June 6 meeting in Venetie. Consultation with all nine federally-recognized tribes and the two village councils was again initiated with the release of the Revised Plan and final EIS.

On August 10, 2012, the Secretary of the Interior supplemented the December 2011 Department of the Interior “Policy on Consultation with Indian Tribes” with a requirement to consult with Alaska Native Claims Settlement Act (ANCSA) corporations on actions or activities that may have a substantial direct effect on Alaska Native corporations, including corporation lands, waters, or resources. A representative from the Arctic Slope Regional

Corporation (ASRC) served on the planning team for the Revised Plan throughout the planning process (see Appendix L), and we periodically communicated with Doyon Limited. On August 20, 2012, the Refuge manager sent letters to the two regional corporations and to eight village corporations requesting consultation on the Revised Plan and Final EIS. Doyon Limited responded on September 4, 2012, with a request for formal consultation.

The Plan's mailing list includes nine tribes, two village councils, two regional Native corporations, and five village corporations that have land ownership, geographic, and/or cultural ties to Arctic Refuge (see Appendix K). They receive copies of any document distributed as part of our general public involvement strategy. Tribes and Native corporations shall be notified of pending final decisions prior to the decision going into effect.

B.4 Consultation with Local Governments

B.4.1 Meetings

The Refuge engaged in several outreach efforts with local governments. Public scoping meetings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie during spring 2010. Additional meetings were held in these communities in fall 2011 during the public review period for the draft Plan. During scoping meetings, the November and December 2010 tribal coordination period, and meetings on the public review draft of the Revised Plan, Refuge staff met informally with members of the tribal and village councils in Arctic Village, Fort Yukon, Kaktovik, and Venetie. The Refuge will continue to meet with these tribes throughout the planning process.

At the request of the North Slope Borough and the Arctic Slope Regional Corporation, a public scoping meeting was held in Barrow in June 2010. We also made an effort to meet face-to-face with representatives of the North Slope Borough and ASRC during fall 2011 but were unable to arrange a meeting date. The Refuge will continue to communicate with the North Slope Borough and ASRC during the remainder of the planning process.

B.4.2 Mailing List

The Refuge's mailing list includes the North Slope Borough, the Fairbanks North Star Borough, the cities of Fairbanks and North Pole, and several local Native corporations and organizations (e.g., Doyon Limited, ASRC, Tanana Chiefs Conference, Council of Athabaskan Tribal Governments, etc). The following village governments are also on the mailing list:

- City of Kaktovik
- City of Fort Yukon
- Venetie Village Council
- Arctic Village Council
- Chalkyitsik Traditional Council
- City of Anaktuvuk Pass
- Beaver Traditional Council
- Circle Traditional Council
- Birch Creek Village Council
- Native Village of Stevens

Please refer to Appendix K for a comprehensive list of corporations and organizations. All governments, organizations, and corporations on our mailing list received copies of documents distributed as part of our public involvement strategy. In addition, the Refuge manager sent letters to Doyon Limited, Tanana Chiefs Conference, and the Anchorage and Fairbanks chambers of commerce, specifically inviting their representatives to attend public meetings.

B.4.3 Wild and Scenic River Review

During the wild and scenic river review, Arctic Refuge identified a number of local governments, corporations, and organizations as stakeholders. The Refuge solicited information addressing the suitability criteria from these entities. For more information, please refer to Appendix I.

B.5 Formal Cooperating Agency Status

In late October 2009, the Refuge invited 11 potential cooperators to participate in the Revised Plan planning process. These were:

- Alaska Department of Fish and Game (ADFG)
- Alaska Department of Natural Resources (ADNR)
- Alaska Department of Transportation and Public Facilities
- National Park Service (NPS)
- Bureau of Indian Affairs (BIA)
- U.S. Geological Survey (USGS)
- Bureau of Land Management (BLM)
- Arctic Slope Regional Corporation (ASRC)
- Doyon Limited
- Kaktovik Inupiat Corporation (KIC)
- North Slope Borough

None of the agencies opted for formal cooperating agency status. However, ADFG and ADNR chose to assign representatives to participate as members of the core planning team. As such, they have had the opportunity to participate in all core team meetings and represent State views regarding Refuge decisions associated with the Revised Plan. An Alaska Department of Transportation and Public Facilities representative was also appointed to the advisory team. Advisory team members received periodic updates on the status of the planning effort and have been included as document reviewers. The State participation has been mutually beneficial; however, the State does not endorse the Revised Plan. The BLM and Arctic Slope Regional Corporation also asked to participate as members of the extended planning team. They have been invited to all extended team meetings and have similarly had the opportunity to express their views about key Refuge planning decisions.

In December 2011, the National Aeronautics and Space Administration (NASA) wrote a letter to Service director Dan Ashe requesting cooperating agency status. On January 31, 2012, NASA and the Service signed a Memorandum of Understanding by which NASA became a cooperating agency on the Revised Plan. NASA offered the Service specialized expertise on the potential conflicts between Sounding Rockets Program operations at the Poker Flat Research Range (Poker Flat) and alternatives under consideration in the Revised Plan and environmental impact statement. NASA has provided the Service with relevant information about NASA's operations at Poker Flat and an analysis of the potential consequences of the proposed alternatives on NASA's programs.

B.6 Additional Consultation

The Refuge sent informational Plan materials to over 2,000 individuals, businesses, organizations, etc. For the complete mailing list, see Appendix K. In addition to the publicized public involvement opportunities and consultation with public agencies, the Refuge responded to requests for meetings, discussion, or information from a wide variety of individuals, organizations, agencies, and other entities.

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Appendix C

Other Planning Efforts

C. Regional Planning Efforts and Considered Actions

C.1 Introduction

This appendix contains information about known, concurrent statewide and/or Arctic region planning efforts and relevant actions in the vicinity of Arctic National Wildlife Refuge (Refuge, Arctic Refuge). Actions that were considered to be reasonably foreseeable future actions are included in the effects analysis of the Comprehensive Conservation Plan (Plan, Revised Plan) (see Chapter 5, Sections 5.1.4 and 5.2.5).

C.2 List of Plans

C.2.1 Alaska Federal Lands Long Range Transportation Plan

In 2009, the Alaska Department of Transportation and Public Facilities launched a pioneering effort to develop a multi-agency transportation plan. The plan's objective is to identify and prioritize transportation improvements on Federal lands in the State of Alaska. Along with the Alaska Department of Transportation and Public Facilities, the following Federal agencies are involved: National Park Service, U.S. Fish and Wildlife Service (Service), Bureau of Land Management (BLM), U.S. Forest Service, and the Federal Highway Administration's Western Federal Lands Highway Division. The plan will not seek to identify specific projects or suggest changes to Federal lands management. Instead, its intent is to serve as a tool to collectively engage agencies on how to work together and leverage funding. The Long Range Transportation Plan consists of two parts: 1) an overarching plan addressing common objectives among the agencies, and 2) "dropdown" plans specific to each agency to address individual transportation needs. The draft overarching plan and each agency's draft dropdown plans were made available for public comment in November 2011; the comment period ran through April 2012.

Because of its emphasis on cooperation and collaboration, combined with its efforts to develop agency-specific dropdown plans, the Long Range Transportation Plan is not anticipated to adversely affect Arctic Refuge management goals or objectives at this time, and it is not considered to be a reasonably foreseeable future action. The Service's dropdown plan was developed in close collaboration with Region 7 Refuges program, and we do not expect the Arctic Refuge Revised Plan will affect the Long Range Transportation Plan.

C.2.2 Gates of the Arctic National Park and Preserve, General Management Plan

In February 2010, Gates of the Arctic National Park and Preserve filed a Notice of Intent to prepare an Environmental Impact Statement (EIS) for an amendment to its 1986 General Management Plan and to conduct a wilderness study. The establishing purposes for Gates of the Arctic are in Section 201 of the Alaska National Interest Lands Conservation Act (ANILCA): "The purpose of Gates of the Arctic National Park and Preserve is to preserve the vast, wild, undeveloped character and environmental integrity of Alaska's central Brooks Range and to provide opportunities for wilderness recreation and traditional subsistence uses."

While still in its early stages of development, at this time the General Management Plan is not anticipated to adversely affect Arctic Refuge because both conservation system units operate

under the mandates of ANILCA and have similar management objectives. In addition, we do not anticipate the Revised Plan adversely affecting the General Management Plan. For those resources that are shared between the conservation system units, such as far-ranging wildlife populations, the Revised Plan's focus on perpetuating natural diversity and letting ecological systems prevail should be positive for the General Management Plan. It is possible that some commercial service providers could decide not to operate in Arctic Refuge in response to the Service's management policies, and they could be displaced to Gates of the Arctic. These effects would likely be negligible.

The two ongoing planning processes overlap in their analyses of cumulative effects across the Arctic Region, so the Service and National Park Service will continue to coordinate their respective planning efforts. The Gates of the Arctic General Management Plan is a reasonably foreseeable future action for the purposes of the Revised Plan and is considered in our analysis of cumulative effects (see Chapter 5).

C.2.3 Arctic Landscape Conservation Cooperative

The Landscape Conservation Cooperative (LCC) is a new management-science partnership developed by the Service to identify strategies for understanding and responding to impacts from climate change at the landscape scale. The LCC seeks to coordinate discussion among its partners to identify shared conservation goals and prioritize science and information needs essential to achieve its goals. Partnerships include Federal, State and local agencies, tribes, non-governmental organizations, the academic community, and other entities in Arctic Alaska and northern Canada regions. The Arctic LCC is one cooperative in a national and future international network. The area includes the Arctic Plains and Mountains Bird Conservation Regions, which extend into Canada, the North Slope of Alaska, and adjacent marine areas of the Beaufort and Chukchi Seas. Arctic Refuge falls within the boundaries of the Arctic LCC. The goals of the Arctic LCC are not counter to the goals and objectives identified by Arctic Refuge. Instead, the overall goal of the Arctic LCC is to increase and share expertise and capacity to achieve common landscape conservation goals. The LCC is not considered a reasonably foreseeable future action. Arctic Refuge would likely benefit from the mission and work of the Arctic LCC. In addition, it is not anticipated that the Revised Plan will affect the Arctic LCC.

C.2.4 Parks Canada, Vuntut National Park, Five-year Management Plan and Review

In 2010, Parks Canada completed its five-year management plan and review for Vuntut National Park. The park is located in the northwestern region of the Yukon Territory in Canada. It shares a border with Arctic National Wildlife Refuge. The purpose of the park is, "To protect for all time a representative natural area of Canadian significance in the Northern Yukon Natural Region and to encourage public understanding, appreciation and enjoyment of the area in a manner which leaves it unimpaired for future generations; and to recognize Vuntut Gwich'in history and culture and protect the traditional and current use of the park by the Vuntut Gwich'in." One major change to the 2004 management plan included wilderness declaration in the northern three-quarters of the park. This designation includes the portion of the park that shares a border with Arctic Refuge. Considering the additional wilderness designation combined with the Park's overall goals and objectives, it is not anticipated that the new management plan will adversely affect the Arctic Refuge Plan, and the Vuntut National

Park Five-year Management Plan is not considered to be a reasonably foreseeable future action. The Revised Plan is not expected to affect Vuntut National Park's management plan.

C.2.5 National Petroleum Reserve-Alaska Integrated Activity Plan and EIS

The Naval Petroleum Reserve-Alaska was established in 1923 to reserve land for oil and gas development for naval defense purposes. In 1976, the jurisdiction on the Naval Petroleum Reserve-Alaska was transferred to the Department of the Interior (DOI) and its name changed to National Petroleum Reserve-Alaska (NPR-A). The reserve is approximately 22 million acres in size, encompassing several Iñupiat villages. Since the late 1990s, the BLM has written plans for the northeastern and northwestern portions of the NPR-A, leaving approximately nine million acres of land without a land use plan.

On March 30, 2012, BLM released a draft Integrated Activity Plan and EIS for the entire reserve. This document updates and replaces current plans for the northeastern and northwestern part of the NPR-A and would, for the first time, provide a plan for the southernmost part of the area. The draft plan incorporates the most current information and lays out management goals, objectives, and actions across the entire NPR-A. Other issues the plan considered are climate change, invasive species, raptor habitat, and the recent listing of polar bears as a threatened and endangered species.

DOI announced the preferred alternative for the Integrated Activity Plan on August 14, 2012, about one month after the close of the public comment period on the draft plan. Under the preferred alternative, approximately 11.8 million acres of the reserve would be available for leasing, and areas such as Teshekpuk Lake, some coastal areas, Colville River raptor nesting areas, and areas important for subsistence would receive special protections from development. The Final Integrated Activity Plan and EIS are scheduled to be released in November 2012 with a record of decision (ROD) by the end of the calendar year.

Due to the distance to the Refuge, it is not anticipated that the Integrated Activity Plan and EIS will affect management goals and objectives in the Revised Plan. In addition, it is not anticipated the Revised Plan will affect the Integrated Activity Plan and EIS. However, the two planning efforts do overlap in their analyses of cumulative effects across the Arctic Region. The Integrated Activity Plan and EIS are considered to be a reasonably foreseeable future action and are considered in our analysis of cumulative effects (see Chapter 5). The Service and BLM will continue to coordinate their respective planning efforts.

C.2.6 Eastern Interior Resource Management Plan

The BLM is developing a Resource Management Plan for their Eastern Interior Planning Area. The Resource Management Plan will provide future direction for 6.7 million acres of public land including the White Mountains National Recreation Area, the Steese National Conservation Area, and the Fortymile area near Chicken and Eagle, Alaska. In addition, it will cover public lands managed by the BLM in the upper Black River area, a portion of which borders Arctic Refuge. BLM lands in the upper Black River area are currently not included in any existing land use plan. The area is extremely remote and BLM receives few applications for the use of these lands.

Resource management plans provide the BLM with comprehensive, long-term direction concerning the use and management of resources on BLM-managed public lands. The Eastern

Interior Resource Management Plan will establish goals and objectives for managing resources, and it will outline the measures needed to achieve those goals and objectives. It will identify lands available for certain uses, along with any restrictions on those uses, and will identify lands closed to certain uses.

The draft Eastern Interior Resource Management Plan was released on February 24, 2012, with public review and comment analysis extending through the summer of 2012. BLM's preferred alternative is to open the Upper Black River Subunit, which includes BLM lands adjacent to the Refuge's southeastern boundary, to new mining claims and to open 74 percent of the subunit to oil and gas leasing. The Salmon Fork watershed, which would be designated as an Area of Critical Environmental Concern, would be closed to mineral leasing and would be managed to maintain wilderness characteristics. Thirteen watersheds would be identified as Riparian Conservation Areas, and the subunit would be managed for dispersed recreation. Off road vehicles would be limited by weight and width.

The proposed final plan release date has not been published, but the ROD should follow in 2013. At this time, the Resource Management Plan is not anticipated to adversely affect Arctic Refuge management goals or objectives, nor is it anticipated the Revised Plan would affect the Resource Management Plan. It is possible that some commercial service providers could decide not to operate in Arctic Refuge in response to the Service's management policies, and they could be displaced to Eastern Interior lands managed by BLM. These effects would likely be negligible. Should mineral and/or oil and gas development activities be applied for and authorized by the BLM, construction activities could affect visitor experience and wilderness characteristics near the southeastern boundary of the Refuge; however, such development activities are not considered to be a reasonably foreseeable future action.

The Service and the BLM will continue to coordinate their respective planning efforts, specifically because: 1) the Resource Management Plan is still under development, 2) the range of management alternatives includes lands adjacent to Arctic Refuge, and 3) the two planning processes overlap in their analyses of cumulative effects across the Interior Yukon River Basin. The Eastern Interior Resource Management Plan is considered to be a reasonably foreseeable future action and is considered in our analysis of cumulative effects (see Chapter 5).

C.2.7 Dalton Highway Scenic Byway Corridor Partnership Plan

The Dalton Highway Scenic Byway Corridor Partnership Plan was completed in March 2010. It is a comprehensive evaluation of the byway's intrinsic qualities; it also serves as a guide for management, protection, and enhancement of present and future intrinsic qualities. The plan was developed by the Alaska Department of Natural Resources (ADNR) to designate the highway as a National Scenic Byway. Development of the plan included cooperation from local communities, organizations, businesses, and public agencies; they came together to fashion a local vision for the desired future of the byway. The Scenic Byway Corridor Partnership Plan provides information on stakeholder concerns and describes how these concerns influence management and planning. ADNR hopes the plan will be used as a tool to educate others about stakeholder concerns and provide suggestions on how to mitigate for them. The overall mission of the plan is "to act as a collective voice for all byway stakeholders in order to address concerns relating to current and future uses, management actions, and developments in the Dalton Highway corridor and to preserve, protect, and enhance the byway's intrinsic qualities...for the benefit of current and future travelers." It is not anticipated that the Arctic Refuge Revised Plan would be adversely affected by the Scenic Byway Corridor Partnership

Plan or that the Revised Plan would affect the Scenic Byway Corridor Partnership Plan. The Scenic Byway Corridor Partnership Plan is not considered to be a reasonably foreseeable future action.

C.2.8 Polar Bear Conservation Plan

The Service is in the early planning stage of developing the Polar Bear Conservation Plan. Polar bears were listed under the Endangered Species Act on May 15, 2008. The Endangered Species Act and the Marine mammal Protection Act (MMPA) require the Service to develop a recovery plan and a conservation plan, respectively, to identify and implement future conservation, management, and research activities. The Service has determined that the plan will identify threats to polar bears, identify action items to address those threats and involve partners in the process of development and implementation. The intent of the plan is to guide management and research activities now and into the future; it is scheduled to be completed in the fall/winter of 2013. It is not anticipated that the Polar Bear Conservation Plan will affect Arctic Refuge's Revised Plan; it may actually help supplement conservation efforts of the polar bear on Arctic Refuge. In addition, the Refuge Revised Plan is not anticipated to affect the Polar Bear Conservation Plan. The Polar Bear Conservation Plan was considered to be a reasonably foreseeable future action and is considered in our analysis of cumulative effects (see Chapter 5).

C.2.9 Alaska Clean Seas North Slope Spill Response

Alaska Clean Seas was established in 1979 under the original name, Alaskan Beaufort Sea Oil Spill Response Body. Alaska Clean Seas is a nonprofit corporation that provides oil spill response efforts to its members; however, it can respond to non-member spills if authorization is given. Membership is voluntary and includes individuals from oil and pipeline companies that currently engage in or plan to engage in exploration, development, production, or pipeline transport activities. Originally, Alaska Clean Seas only provided offshore oil and gas exploration support; however, today the corporation provides support to onshore and offshore exploration, the northern section of the Trans-Alaska Pipeline System, as well as onshore production for the North Slope. Other areas of operation outside of the North Slope include the outer continental shelf of the State of Alaska, lands beneath Alaska navigable waters, adjacent beaches, harbors, inland waterways, and natural and artificial islands.

Alaska Clean Seas will not adversely affect the Arctic Refuge Revised Plan's management goals and objectives. It may actually benefit the Refuge by providing oil spill response to Alaska Clean Seas members (e.g., ExxonMobil) that propose developments near Refuge boundaries. In addition, it is not expected that the Revised Plan will adversely affect Alaska Clean Seas. There is no action associated with Alaska Clean Seas and it is not considered to be a reasonably foreseeable future action.

C.3 List of Actions

C.3.1 *Alaska Pipeline Project*

The Alaska Pipeline Project began in 2008. This proposal is for a natural gas pipeline development project. The two partnering companies overseeing the project are TransCanada and ExxonMobil. The scope of the project would include a gas treatment plant near Prudhoe Bay, Alaska; a gas transmission pipeline that would connect the Point Thomson field (gas extraction location) to the gas treatment plant; and a transmission pipeline that would deliver the gas to market. This final transmission pipeline has two proposed routes. The first route would extend from Prudhoe Bay on the North Slope of Alaska along the Trans-Alaska Pipeline System route to Delta Junction. From there, it would continue southeast into Canada. The second route would extend from Prudhoe Bay south to Valdez, Alaska, following the Trans-Alaska Pipeline System route in its entirety. In July 2010, the project completed its first open season to determine if a market exists for production and delivery of the gas resource. Approvals for the project are expected in 2014, and the first gas extraction is expected to commence in 2020.

At this time, the project is not anticipated to adversely affect Arctic Refuge management goals or objectives, nor do we anticipate the Revised Plan would affect the Alaska Pipeline Project. Should the pipeline be developed, construction activities in the Dalton Highway corridor near the Refuge's westernmost boundary (i.e., near the Atigun River) could affect visitor experience and wilderness characteristics during the construction phase of the project. The Alaska Pipeline Project is considered to be a reasonably foreseeable future action and is considered in our analysis of cumulative effects (see Chapter 5).

C.3.2 *Point Thomson Project Environmental Impact Statement*

In July 2012, the U.S. Army Corps of Engineers (Corps) released a Final EIS for the proposed Point Thomson Oil and Gas Development Project. The project would be located on the North Slope of Alaska west of Arctic Refuge. The purpose of the project is to develop the Thomson Sand Reservoir to extract gas condensate and oil for the purpose of commercial production. The site would include three drilling pads, wells, infield roads, pipelines, a landing area, and a gravel mine. The drilling pads would be located two and five miles from the western boundary of the Refuge: the central pad would be located five miles from the Refuge boundary and eight miles from the Canning River; the east pad would be located two miles from the Refuge boundary and five miles from the Canning River. The Corps is withholding the preferred alternative for their ROD, which will be issued after public notice of a Clean Water Act Section 404 permit application by ExxonMobil.

The Refuge has some concerns relative to the proximity of the drilling pads to the Refuge, especially the Canning River. The Refuge recently completed a wild and scenic river review for selected rivers or river segments within the Refuge and the Canning River was determined to have river-related fish, wildlife, recreational, and cultural values. Development associated with the Point Thomson Project could adversely affect visitor experience, wilderness characteristics, disturb or displace wildlife in the lower Canning River corridor, or alter habitat quality in the northwest corner of the Refuge. Additionally, the development would occur in a known caribou subsistence area used by the people of Kaktovik.

The public raised several concerns during the scoping period for the Point Thomson Project in 2010. Some of the comments focused on visual and noise impacts, while others specifically referenced impacts to Arctic Refuge. Air and water quality concerns were also raised. To address these concerns, the Corps conducted detailed data collection and analysis, such as for a visual resource assessment and noise technical report, to determine anticipated pre- and post-development impacts of the project. The Point Thomson Project is considered in Chapter 5 of the Revised Plan as a reasonably foreseeable future action that may have an impact on the goals and objectives of the Revised Plan. The Revised Plan is not expected to impact the Point Thomson Project. The Service and the U.S. Army Corps of Engineers will continue to coordinate our respective planning efforts.

C.3.3 Poker Flat Research Range Environmental Impact Statement

The National Aeronautics and Space Administration (NASA) is currently preparing an EIS of its Sounding Rockets Program at the Poker Flat Research Range, which is owned and managed by the University of Alaska Fairbanks. NASA hopes to continue use of the Poker Flat Research Range and must seek authorization to do so from the Service and BLM because lands managed by those agencies are impacted by the Sounding Rockets Program. The Service is a cooperating agency for this EIS.

Since the late 1960s, NASA has been using the Poker Flat Research Range to launch suborbital rockets in part to conduct atmospheric research on the aurora, ozone layer, solar protons, Earth's electric and magnetic fields, and ultraviolet radiation.

Since the program began, approximately 219 NASA and 116 non-NASA rocket launches have occurred at the Poker Flat Research Range; 34 of these launches have been conducted by NASA in the past 10 years. Downrange flight zones are located to the north of the range. These zones are the areas over which rockets are launched and within which spent stages and payloads impact the ground. Lands owned or managed by the Service, BLM, State of Alaska, Native Village of Venetie Tribal Government, Native organizations, and individuals are in these flight zones; portions of Arctic Refuge are in these zones.

NASA's EIS will assess the impacts of the Sounding Rockets Program, including the effects of recovery versus abandonment of spent rocket parts, payloads, and other equipment. It will also discuss a variety of recovery initiatives. Once the EIS is completed, NASA is hoping the Service will issue limited authorizations for the Poker Flat Research Range Sounding Rockets Program so that it may continue. Additionally, in January 2012, NASA became a cooperating agency on the Revised Plan, providing specialized expertise on the Sounding Rockets Program and the alternatives under consideration in the Plan. The Poker Flat Research Range EIS was considered in Chapter 5 of the Revised Plan as a reasonably foreseeable future action that may have an impact on the goals and objectives of the Revised Plan. The wilderness issue in the Revised Plan could have major effects on the Poker Flat Sounding Rockets Program. Effects vary across alternatives and are fully described in Chapter 5.

C.3.4 Foothills West Transportation Access

The Foothills West Transportation Access Project (commonly referred to as the Foothills Project or Umiat Road Project) proposes to construct an all season gravel road from the Dalton Highway to Umiat, Alaska. The purpose of the Foothills Project is to provide access to

oil and gas resources both along the northwestern foothills of the Brooks Range, and in the NPR-A. The road would provide exploration and development opportunities for the area, as well as facilitate more economically feasible NPR-A development. The U.S. Army Corps of Engineers is currently developing an EIS for the proposed road to Umiat. The Corps published the final scoping report in February 2012, and expects to release the draft EIS in the fall of 2013; the ROD is expected to be published in winter 2014. The Umiat Road Project is a reasonably foreseeable action and is considered in our analysis of cumulative effects (see Chapter 5). The Service does not expect the project to impact the Revised Plan's goals, objectives, management policies, or guidelines. Additionally, we do not expect the Revised Plan to impact the Foothills Project.

C.3.5 Barter Island Airport Improvements

The existing Barter Island Airport is in Arctic Refuge and is located on a gravel spit extending from the northeast corner of Barter Island. The airport provides the only year-round access to the community of Kaktovik, Alaska. The runway is exposed to the Beaufort Sea and Kaktovik Lagoon on three sides, and is periodically submerged by floods from sea storms. Flooding has damaged airport infrastructure and interrupted air service and the delivery of supplies.

The Federal Aviation Administration (FAA) and North Slope Borough plan to relocate the airport to the south side of Barter Island, about one mile southwest of Kaktovik, onto lands owned by the Kaktovik Iñupiat Corporation (KIC). The site is at the island's highest elevation and is therefore less susceptible to flooding. The new airport would be designed to meet the safety standards and aviation needs of Kaktovik for the next 20 years, while minimizing operational and maintenance costs. An environmental impact assessment was completed for this project in January 2009. Construction will begin late in 2012 after freeze-up; the project is expected to take three years to complete with most work occurring during winter months (K. Tabisola, FAA, project manager, pers.comm.).

Arctic Slope Regional Corporation owns the gravel that would be used to build the airport, and associated infrastructure. However, under the terms of a land exchange that granted Arctic Slope Regional Corporation the subsurface estate under KIC lands, the Refuge has input over the design and reclamation of the material sites to ensure development does not frustrate the purposes of the Refuge (see Chapter 4, Section 4.1.2.1). The Refuge will coordinate with FAA and the North Slope Borough as needed during the project construction phase.

The Barter Island Airport Improvement project is considered to be a reasonably foreseeable future action and is considered in our analysis of cumulative effects (see Chapter 5). The Barter Island Airport Improvement project will not adversely affect management goals or objectives presented in the Revised Plan, nor would the project affect the conclusions drawn in the Plan's wilderness review (Appendix H). Similarly, the Revised Plan is not expected to affect the Barter Island Airport Improvement project.

C.3.6 Beaufort Sea Oil and Gas Leases

The Bureau of Ocean Energy Management released a Final Programmatic EIS and Proposed Final Program decision document on June 26, 2012. The Final Programmatic EIS analyzes six oil and gas lease planning areas for the leasing period of 2012-2017. The proposed action alternative involves a lease sale in 2017 for the Beaufort Sea Planning Area with proposed

subsistence deferment areas near Kaktovik and at the far western border of the planning area. Any sale that takes place in 2017 will require an EIS be provided to the Bureau of Ocean Energy Management prior to any exploration activities in the lease area.

The Proposed Final Program would require the Bureau of Ocean Energy Management to publish an annual progress report that includes an opportunity for stakeholders and the public to comment on the program's implementation. The progress reports would provide the public with an overview of activities occurring in the previous year, and the findings in each report could lead the Secretary of the Interior to revise the program by delaying, cancelling, or reducing the size of scheduled lease sales. Revisions, such as including new areas or adding more sales, could result in the preparation of a new program.

It is important to note that the sale of oil and gas leases in the Beaufort Sea does not mean that exploration and drilling activities are imminent. The sale authorizes the right to apply for certain activities, such as exploration and drilling. The National Environmental Protection Act (NEPA) requires an EIS be completed prior to the execution and approval of the sale.

The Beaufort Sea is outside the purview of the Revised Plan. While the lease sale is considered to be a reasonably foreseeable future action, the sale would have no impact on the goals, objectives, management policies, or guidelines in the Revised Plan. Similarly, the Revised Plan would have no impact on the lease sale. We do not anticipate the Revised Plan affecting any future oil and gas exploration and development activities stemming from the leases. However, the Service will coordinate with the Bureau of Ocean Energy Management on any future NEPA analyses associated with proposed oil and gas exploration or development activities in the Beaufort Sea Planning Area, especially for any activity for which Arctic Refuge is included in the cumulative effects portion of the associated NEPA analysis.

C.3.7 State Notice of Sale of North Slope Leases

On December 7, 2011, ADNOR issued a Notice of Sale for 3,145 tracts of State land ranging in size from 640 to 5,760 acres in the Beaufort Sea, the North Slope, and the North Slope Foothills areas. These leases allow for the possibility of oil and gas exploration and development in the areas adjacent to Arctic Refuge. The sale resulted in a preliminary sale of 178 Tracts (334,969 total acres). Of those tracts sold, 34 (or 109,440 acres) were between the Refuge boundary and the existing Trans Alaska pipeline. Three tracts (734, 740, and 743) are adjacent to the Refuge boundary, and the Canning River constitutes the easternmost boundary of tract 743.

Before proceeding with any federally regulated activity resulting from lease sales on State or Federal lands, the lessee must meet the various requirements of NEPA. The Service will participate as a cooperating agency on any activities for which Arctic Refuge is included in the cumulative effects portion of the associated EIS.

For the purposes of the Revised Plan, the Notice of Sale issued by ADNOR is considered to be a reasonably foreseeable future action; however, the sale of leases is not expected to have an impact on the Revised Plan. Additionally, the Revised Plan should not have an impact on lease sales. We do not anticipate the Revised Plan affecting any future oil and gas exploration and development activities stemming from the leases. However, the Service will coordinate with the State and any Federal regulatory agencies involved in any oil and gas exploration or development activities stemming from the lease sales to ensure these activities do not impact resources within Arctic Refuge.

C.3.8 Predator Control near Arctic Refuge

The Alaska Department of Fish and Game (ADFG) accepted amended proposal 130 of the intensive management section authorizing intensive management of brown bear in Game Management Unit (GMU) 26B in an attempt to lessen predatory pressure on the GMU's muskox population. The muskox population has stabilized at a population level lower than ADFG's target. GMU 26B contains both State owned land and a portion of Arctic Refuge. With the exception of Refuge lands, the proposal accepted by ADFG will allow 20 brown bears to be taken annually.

Proposal 130 identifies that intensive predator management is not authorized on Federal land, unless changes in Service policy occur. The impact of harvesting predators outside the Refuge was examined by Refuge staff during development of the Revised Plan. Because bears may wander widely, this action may impact wildlife populations on Arctic Refuge and could run contrary to the goals, objectives, management policies, and guidelines for the Refuge. Conversely, the Refuge's management approach of letting ecological systems prevail and generally avoiding responses to climate change could adversely affect the State's efforts to achieve target wildlife population levels.

Proposal 130 is considered to be a reasonably foreseeable future action, and is included in Chapter 5 of the Revised Plan. The State of Alaska is our closest partner in wildlife management, and we will seek to work with them on any impacts, positive or negative, that might occur as a result of proposal 130 or the Revised Plan.

Appendix D

Issues Considered but Eliminated from Detailed Study

D. Issues Considered but Eliminated from Detailed Study

The National Environmental Policy Act (NEPA) requires agencies to disclose the alternatives and issues considered for inclusion in an environmental analysis but eliminated from detailed study, and briefly discuss the reasons for their elimination. This appendix provides details about 33 issues considered for inclusion in the alternatives of the revised Comprehensive Conservation Plan (Plan, Revised Plan) for Arctic National Wildlife Refuge (Arctic Refuge, Refuge) but dropped from detailed study in the Plan. Table D-1 summarizes the following discussion and is included at the end of this appendix.

D.1 Development Issues

D.1.1 Oil and Gas Development

The public identified oil and gas development on the Refuge's coastal plain (also known as the "1002 Area") as a major planning issue. However, none of the alternatives carried forward in this Plan address oil and gas leasing or development scenarios. NEPA requires alternatives considered in an environmental impact statement (EIS) meet the purpose and need for the proposed action. The purpose and need for the Revised Plan is to ensure activities, actions, and management fulfill the legal purposes for which the Refuge was established, fulfill the statutory mission of the National Wildlife Refuge System (Refuge System), and provide direction on how the U.S. Fish and Wildlife Service (Service) will meet these purposes (Chapter 1, Section 1.1).

It is outside the Refuge's and Service's administrative authority to consider or propose oil and gas development alternatives. Section 1003 of the Alaska National Interest Lands Conservation Act (ANILCA) specifically prohibits oil and gas leasing, development, and production anywhere on Arctic Refuge. Until Congress takes action to change this provision, the Service will not permit oil and gas leasing in the Refuge under any of the alternatives in the Plan. Additionally, ANILCA Section 1002(h) directed the Department of the Interior (DOI) to provide Congress with a report on the future management of the 1002 Area of the Refuge. The report was provided to Congress on June 1, 1987, where it has remained ever since. Congress has reserved the authority to make final decisions on oil and gas development in Arctic Refuge.

The Council of Environmental Quality (CEQ) implementing regulations for NEPA require us to consider a reasonable range of alternatives in the EIS. While CEQ regulations allow us to consider alternatives that would require legislation, we are not required to do so. We determined that an oil and gas alternative is not a reasonable alternative under NEPA in light of the planning requirements of Section 304 of ANILCA and the purpose and need of the Plan.

D.1.2 Updating Seismic Data on the Coastal Plain

Several commenters requested the Plan allow for the update of the two-dimensional seismic data gathered from the 1002 Area with newer three-dimensional (3-D) seismic technology. The data would provide more accurate information on oil and gas reserves in the Refuge's coastal plain. As with the oil and gas development issue (Section D.1.1), developing alternatives that would or would not allow 3-D seismic surveys does not meet the purpose and need for the Plan and is outside the Refuge's and the Service's administrative authority.



Service regulations (50 CFR 37) presently do not provide for further oil and gas studies, including seismic surveys, in the 1002 Area (see Chapter 2, Section 2.4.18.2). Under Section 1002(h) of ANILCA, Congress required DOI to submit a report on the oil and gas potential of the Refuge's coastal plain along with a baseline study of the area's fish, wildlife, and habitats (Clough et al. 1987). The report was submitted to Congress on June 1, 1987, and with that submittal, the statutory authority to permit exploratory activity on the Refuge's coastal plain expired. Congress made no provisions for any further reports or for any additional exploratory activities. The oil and gas resource estimates from the 1987 report have been periodically reviewed and updated by the Bureau of Land Management in 1991 (Banet 1991) and the U.S. Geological Survey (USGS) in 1998, 2001, and 2005 (USGS 2001, Attanasi 2005) in light of new technologies and scientific understanding of the seismic data obtained from 1983-1986.

This issue was not considered in detail and was not carried forward into the alternatives.

D.2 Policy Issues

D.2.1 *Alaska National Interest Lands Conservation Act “No More” Clauses*

ANILCA contains several provisions that are collectively referred to by some as “no more” clauses. These provisions include sections 101(d), 1326(a), and 1326(b).

ANILCA Section 101(d) states the designation and disposition of public lands in Alaska represent a proper balance between national conservation system units and those public lands necessary and appropriate for more intensive use. Section 101(d) goes on to say that Congress believes there should be no future legislation designating new conservation system units, national conservation areas, or national recreation areas.

ANILCA Section 1326(a) limits new withdrawals of public lands in Alaska to 5,000 acres in aggregate. If a withdrawal(s) exceeds 5,000 acres, it would not become effective unless approved by Congress within one year. Section 1326(b) disallows further studies of Federal lands in the State of Alaska for the single purpose of establishing a conservation system unit, national recreation area, national conservation area, or other similar purpose unless authorized by Congress.

ANILCA defines “conservation system units” as national parks, refuges, national forest monuments, and trails in Alaska, and Alaska units in the National Wild and Scenic Rivers System and National Wilderness Preservation System. Included are units in existence prior to ANILCA; units established, designated, or expanded by or under the provisions of ANILCA; additions to existing and ANILCA-established units; and any unit established, designated, or expanded after ANILCA.

Several commenters stated that these “no more” clauses effectively prohibit the Service from conducting a wilderness review and a wild and scenic river review. People commented that these reviews constitute studies and should not be conducted per ANILCA.

Service policy (601 FW 3 and 610 FW 4) and a recent director’s memorandum (Hamilton 2010) directs refuges to conduct wilderness reviews during comprehensive conservation planning, including refuges in Alaska. Section 5(d) of the Wild and Scenic Rivers Act and Service planning policy (602 FW 3.4 C(1)) require the Service to conduct a review of rivers for their potential inclusion in the National Wild and Scenic Rivers System as part of their comprehensive conservation plans. These wilderness and wild and scenic river reviews are administrative actions and a means by which the Refuge can assess the efficacy of its management in meeting Refuge purposes and other legal requirements. These reviews do not violate the “no more” clauses of ANILCA because they do not constitute a withdrawal, and they are not being conducted for the sole purpose of establishing a conservation system unit. The reviews are part of the periodic comprehensive conservation planning process required by ANILCA 304(g)(1), and they are consistent with the requirement in ANILCA 304(g)(2)(B) to consider “the special values of the refuge as well as any other archeological, cultural, ecological, geological, historical, paleontological, scenic, or wilderness value....”

D.3 Ecological Issues

D.3.1 Introduction of Disease, Organisms, and Invasive Species

Disease, organisms, and invasive species could be introduced onto the Refuge and into wild populations by a variety of means, including pack animals, ships, tires, dogs, shoes, human waste, food sources, helicopter bucket, water scooper planes (used during firefighting), and float planes. One action considered for addressing this issue was to expand monitoring efforts into possible source areas, such as the western edge of the Refuge near the Dalton Highway, and at important entry points into the Refuge, such as Arctic Village and Kaktovik. Other actions that could be taken include education and outreach about invasive species, encouraging or requiring the use of weed-free straw and hay, restricting the type of pack animals allowed on the Refuge and/or the geographic area in which pack animals would be authorized, and conducting weed pulls.

The Refuge manager can condition or restrict commercial activities that might inadvertently introduce invasive species and organisms into the Refuge via our special use permit program. Education and outreach is another tool that can be used to reach out to commercial and non-commercial users. These tools are available now without the Revised Plan. Therefore, the staff decided not to carry this issue forward into the alternatives. Additionally, the issue is further addressed through the Refuge's management goals and objectives, especially those pertaining to biological resources, climate change, fire management, and outreach and education.

D.3.2 Hunting Effects on Population Structures and Genetics

Some members of the public expressed concern that trophy hunting could be affecting the genetics and population structure of certain wildlife species, such as Dall's sheep. The staff decided not to carry this issue forward into the alternatives but rather to consider studying the issue through the Refuge Inventory and Monitoring (I&M) Plan, which would include a Research Plan (Chapter 2, Section 2.1.1, Objectives 1.2 and 1.3). This plan would receive peer review and input from key partners such as the Alaska Department of Fish and Game (ADFG), USGS, academic institutions, and science-based non-governmental organizations.

D.3.3 Climate Change

Climate change is expected to continue to affect Refuge resources and the associated human environment for the foreseeable future. There are few actions the Refuge can take to manage the effects of climate change. Climate change is not in the range of control of the Refuge and cannot be handled differently in the different alternatives. For these reasons, climate change was not carried forward into the alternatives. However, in recognition of the importance of climate change to Arctic Refuge and the people who live there or visit there, Refuge Goal 6 and its associated objectives, 6.1 through 6.4, related directly to climate change (Chapter 2, Section 2.1.6).

D.3.4 Fire Activity

Some members of the public, especially rural residents, brought up fire management as a potential issue for the Plan. Fire behavior appears to be changing in response to climate change (see Chapter 2, Section 2.1.1, Objective 1.5). The Arctic Refuge Fire Management Plan

(Service 2008) provides the Service with flexibility on how to respond to fires, and fire response behavior can be adjusted on an annual basis. The Fire Management Plan needs to be updated to ensure it is consistent with current policy and the goals, objectives, and management framework outlined in the Revised Plan. The issue of fire behavior is best addressed through revision of the existing Fire Management Plan (a step-down plan) and was not carried forward into the alternatives for the Plan. The Refuge is committed to working with local communities about smoke impacts and the protection of inholdings and adjacent properties, while minimizing unintended consequences to the Refuge's natural fire regime (see Chapter 2, Section 2.1.1, Objective 1.5).

D.3.5 Adequate Water Quality and Quantity

Maintaining adequate water quality and quantity is a Refuge purpose imposed by ANILCA. Goal 3 and its associated objectives (see Chapter 2, Section 2.1.3) would be adopted and implemented should the record of decision select any one of Alternatives B through F. Additionally, the monitoring of water quality and quantity would be addressed through the I&M Plan that the Refuge is committed to developing (Chapter 2, Section 2.1.1, Objective 1.2 and Chapter 6, Section 6.3). This issue was not considered in further detail.

D.3.6 Air Quality and Pollution

Maintaining air quality and minimizing air pollution are priorities for the Refuge. The Plan is not putting forward management alternatives that would have a measurable effect on air quality. Therefore, this issue was not considered in more detail. Air quality monitoring would be incorporated into the I&M Plan (Chapter 2, Section 2.1.1, Objective 1.2 and Chapter 6, Section 6.3).



D.4 Management Issues

D.4.1 *Conflict Between Wilderness Values and Science-Related Technologies*

Arctic Refuge is known as a vast, intact, diverse, and wild place with outstanding wilderness characteristics. It is also valued as a natural laboratory for scientific research and study (Chapter 1, Section 1.5.6). This can create conflicts. Should temporary or permanent scientific research installations be allowed, or should the Refuge have no evidence of human constructs? Is it appropriate for radio-collared animals to be seen? How does the choice to use helicopters and fix-winged aircraft for research and monitoring, and where and when to land, affect the wilderness experience of users on the ground?

Current Regional policy requires staff to conduct a Minimum Requirement Analysis (MRA)¹ for any Refuge management activity (including scientific studies) occurring in designated Wilderness (Region 7 Policy Manual RW-29). The MRA is intended to protect Wilderness character in designated Wilderness. While an MRA is not required for areas of the Refuge outside of designated Wilderness, how and where to conduct scientific studies can be addressed through management objectives and step-down plans. The Refuge is committed to developing an I&M Plan (Chapter 2, Section 2.1.1, Objective 1.2 and Chapter 6, Section 6.3) in which appropriate research techniques can be identified, especially for areas of the Refuge not designated as Wilderness. The I&M Plan would allow this issue to be explored in more detail than if it were an issue in the Revised Plan. Thus, this issue was not carried forward into the alternatives.

D.4.2 *Management of the Refuge's Three Wild Rivers*

With ANILCA, Congress designated the Ivishak, Wind, and Sheenjek rivers as wild rivers and included them in the National Wild and Scenic Rivers System. To date, no river-specific management guidelines have been developed for these rivers. The rivers are currently managed according to the Wild River Management category identified in the 1988 Plan. Alternatives B through F in the Revised Plan would update the Wild River Management category (Chapter 2, Section 2.3.5), but none of the proposed alternatives would provide river-specific management guidance. The staff decided that the Revised Plan would not allow for the level of detail necessary to fully describe the conditions, issues, and management direction for these rivers. Rather, this should be accomplished through a detailed step-down planning process that would include public involvement. Objective 3.5 (in Chapter 2, Section 2.1.3) commits to completing Comprehensive River Management Plans for each of the three designated wild rivers on Arctic Refuge (see also Chapter 6, Section 6.3).

¹ An MRA is a written decision making process to determine if an administrative activity proposed for designated Wilderness is necessary to administer the area as Wilderness and is necessary to accomplish the purposes of the Refuge, including Wilderness Act purposes. If the MRA finds the activity permissible, then tools or techniques are selected to minimize impacts.

D.4.3 Management of the Refuge's Research and Public Use Natural Areas

The Refuge has two Research Natural Areas (RNAs) and one Public Use Natural Area (PUNA) (Chapter 4, Section 4.1.3). To date, no area-specific management guidelines have been developed for these natural areas, and they are managed according to the Wilderness Management category identified in the 1988 Plan. Alternatives B through F in the Revised Plan would update the Wilderness Management category (Chapter 2, Section 2.3.4), but none of the proposed alternatives would provide area-specific management guidance. The staff determined that Wilderness Management, in combination with Refuge purposes, afford a high degree of protection for the features and values for which these lands were designated as RNAs and PUNAs, and no additional management guidance is needed. This issue was not considered in further detail.

D.4.4 Management of the Refuge's Marine Protected Area

The Refuge's Marine Protected Area (MPA) was established in 2005 (Chapter 4, Section 4.1.3). MPA designation does not come with any special conditions or management restrictions. Thus, this issue presents an opportunity to provide management direction to the Refuge's complex coastal marine environment. Currently, the MPA is managed according to the Wilderness and Minimal Management categories defined in the 1988 Plan. Alternatives B through F in the Revised Plan would update both these management categories (Chapter 2, Sections 2.3.3 and 2.3.4), but none of the proposed alternatives would provide MPA-specific management guidance. Refuge staff believe the underlying management categories, in combination with Refuge purposes, afford a high degree of protection for the features and values for which the MPA was designated. However, we also recognize that through the Revised Plan, we have an opportunity to learn more about the features and ecology of the MPA, work collaboratively with others on conservation issues associated with the MPA, and foster greater public and international recognition of the marine resources of the Refuge. To this end, we added an objective (Chapter 2, Section 2.1.3, Objective 3.1) specifically focused on MPA management. This issue was most appropriately addressed through the goals and objectives and was not considered in further detail.

D.4.5 An Area Free of Commercial Activity and Mechanization

Some commenters asked the Service to establish one or more zones in the Refuge free from commercial activities. The Firth-Mancha RNA (approximately 520,000 acres of designated Wilderness; 2.7 percent of the Refuge) was mentioned most often. Other commenters expressed concerns related to mechanization and protection of solitude and natural quiet. These concerns relate to the protection of experiential and natural conditions and the concept that some area(s) in the Refuge should be free of mechanized activity.

In response, Refuge staff considered an issue that would establish a zone where commercial recreation and hunting operations, including landings by commercial air operators, private aircraft, and Refuge aircraft, would not be allowed. Exceptions would be made for emergencies, such as human health and safety, and subsistence uses would not be restricted. The purpose of the zone would be to provide a destination for those seeking the most independent and self-reliant type of trip to an area representing the wilderness ideal and with the least likelihood of encountering other groups.

Several geographic areas were considered for this issue: Shublik Springs RNA, Neruokpuk Lakes PUNA, the Wind River wild river corridor, the Ivishak River wild river corridor, Guide Area 12,



and the Salmon Trout drainage. These areas were dropped from consideration because either there is no practical way to access them (e.g., the Salmon Trout drainage) or there is enough existing commercial use in the area that imposing a restriction to such use would create conflict.

The Firth-Mancha RNA was considered the most viable option for a commercial and mechanized-free zone because of its exceptional remoteness and Wilderness character and because it is visited by only about three guided or commercially transported visitors annually, on average. Access to the area would be by aircraft landing outside the zone, primarily along the Coleen and Kongakut Rivers and Joe Creek. Visitors could also hike or dogsled through the area from other points.

The issue was drafted to include the following options across the alternatives: no areas of natural quiet; the Firth-Mancha RNA does not allow commercially-supported visitation; and the Firth-Mancha RNA does not allow commercially-supported or mechanized visitation with the exception of subsistence users. Additionally, the staff considered an option that would allow air-taxis but not guides or air transporters. This option was dropped from consideration because many air transporters also hold air-taxi licenses. Restricting one industry and not the other would be confusing for these dual license-holders and challenging for the Refuge to manage.

Ultimately, the entire issue was dropped from consideration in this Plan due in part to a lack of information about access opportunities and the potential effects of the issue on private aircraft use, big-game hunting, and scientific research. Additionally, there were unresolved questions about ANILCA requirements for establishing such an area.

The Refuge manager decided to defer consideration of this issue to the Wilderness Stewardship and Visitor Use Management plans (Chapter 2, Sections 2.1.2 and 2.1.5, Objectives 2.4 and 5.4), when these questions can be more fully examined in the context of a full range of wilderness and visitor experiences in designated Wilderness and the management framework established by the Revised Plan.

D.5 Visitor Use Issues

The public identified numerous visitor use concerns as potential issues for the Revised Plan. The Refuge decided visitor use issues would be best addressed in a separate, focused planning effort called a Visitor Use Management Plan (VUMP), which will begin immediately following implementation of the Revised Plan. The management strategies prescribed in the Revised Plan will be used as interim measures to manage visitor use pending development of the VUMP. During the VUMP planning effort, Refuge managers will consider levels of use, timing and distribution of use, and activities and behaviors of visitors to evaluate a range of management prescriptions appropriate to sustain, and restore where necessary, desired resource conditions and visitor experiences, consistent with the values for which the area was established. Managers may develop new management strategies, including education, site management, regulation, enforcement, and/or rationing or allocation to better manage visitor use at Arctic Refuge. For more information, see Chapter 2, Section 2.1.2, Objective 2.4 and Section 2.1.5, Objective 5.4.

D.5.1 Dispersed or Concentrated Visitor Use

To address concerns about the levels, timing, and distribution of visitor use, managers may need to consider different strategies and educational messages at different times or in different locations across the Refuge to minimize visitor impacts. Do we want to have a dispersed use model for the entire Refuge, or do we want to intentionally concentrate use in some areas so that dispersed use can occur in other areas? The concentrated use model could result in some areas of the Refuge having hardened surfaces from heavy use, such as landing areas, camping areas, or trails, while other areas of the Refuge would have natural surfaces and little to no evidence of recreational use. If we want to apply the dispersed use model for the entire Refuge, then we might have to propose additional restrictions on certain uses and remediate areas that are already impacted.

The staff recognized that this is an important issue but decided it would be best addressed in step-down planning with public involvement. This issue was not carried forward into the alternatives. Objectives 2.4 and 5.4 (in Chapter 2, Sections 2.1.2 and 2.1.5, respectively) commit to developing a Wilderness Stewardship Plan and a Visitor Use Management Plan, (see also Chapter 6, Section 6.3). Dispersed versus concentrated use is best addressed through these step-down plans.

D.5.2 Increasing Permits and Recreational Uses

Non-competitively awarded special use permits are increasing in number year to year. It appears that the number of visitors is about the same, but the number of operators servicing these visitors has increased substantially. Additionally, recreational uses, whether commercially supported or not, are trending upwards in some areas of the Refuge, such as areas near the Dalton Highway at the Refuge's western boundary. The staff decided this is not a stand-alone issue, but rather it relates to concerns about crowding and dispersed versus concentrated use. It is an important concern best addressed through a Wilderness Stewardship Plan and/or a Visitor Use Management Plan, and Objectives 2.4 and 5.4 (Chapter 2, Sections 2.1.2 and 2.1.5, respectively) commit to developing these step-down plans (see also Chapter 6, Section 6.3). The issue was not carried forward into the alternatives of the Revised Plan.

D.5.3 Standards for Different Users

Visitors enjoy different primary activities while on the Refuge, and visitors have different experiential preferences from one another. There are also a variety of ways visitors choose to access and explore the Refuge. Some prefer using commercial air operators but visit without the services of a guide; others enjoy the services of commercial air operators as well as guides; and still others prefer a strictly independent opportunity to experience the Refuge without the conveniences of air access or guide services. These various personal choices and preferences can result in visitors being in conflict with other user groups.

During scoping, some commercial operators stated they want us to do more to regulate non-guided users. Other people commented that they would like us to do more to regulate guided recreationists. Together, these comments suggest that the public would like us to better address uses and activities contributing to resource damage and/or impaired visitor experience.

Refuge managers must weigh, consider, and balance varied visitor preferences while also stewarding wildlife-dependent and wilderness-related visitor opportunities and mitigating impacts resulting from visitor use. Service policy requires the Refuge to regulate commercial operators through special use permit conditions (based on best practices) and compliance. Non-commercially supported recreational users are not subject to special use permits. Contact with these visitors is through occasional law enforcement or staff interactions during which visitors may be reminded of laws and Service policies. Should visitors voluntarily contact Refuge staff or visit the Refuge website, they can receive a wealth of information for visitor best practices; however, many visitors do not contact us or visit our website, so they might not know that these resources and recommendations exist.

Refuge staff recognized “standards for different users” as an important issue, but the issue was not carried forward into the alternatives. The staff decided the issue would best be explored through a Wilderness Stewardship Plan and/or a Visitor Use Management Plan, both of which would be developed with public involvement. Objectives 2.4 and 5.4 (in Chapter 2, Sections 2.1.2 and 2.1.5, respectively) commit to developing these step-down plans (see also Chapter 6, Section 6.3). This issue relates to the dispersed versus concentrated use issue (Section D.5.1) and how we interact with the public (Section D.5.4).

D.5.4 Public Interaction

Arctic Refuge seeks to offer visitor experiences that emphasize adventure, independence, self-reliance, exploration, solitude, freedom, and a sense of the unknown by minimizing on-site contacts and employing the least intrusive means of visitor use management (see Chapter 2, Section 2.1.5, Objectives 5.2 and 5.3). Currently, managers steward these experience conditions by keeping educational resources to a minimum. Based on the public comments we received during Plan scoping, it is apparent that some members of the public believe current educational strategies are allowing Refuge conditions to degrade because we are not effectively communicating best practices to visitors to meet resource protection stewardship goals. "For example, the public has asked us to instill minimum impact techniques, such as those promoted by the Leave No Trace Center for Outdoor Ethics, that are appropriate for and particular to arctic, subarctic, and coastal environments, such as clear guidance for dispersing foot traffic to minimize trail formation and strategies for human waste management.

Refuge staff recognizes the careful balance that needs to be taken between providing educational materials and opportunities that encourage visitor actions that protect wilderness qualities on the Refuge and preserving visitor experiences that emphasize adventure, independence, self-reliance, exploration, solitude, freedom, and a sense of the unknown. As visitor impacts on the ground increase over time, we may need to do more of the former at the expense of the latter.

Science can inform managers about which visitor interaction strategies (such as pre-visit education, on-Refuge personal contacts, site-specific temporary signage, or other deliveries) are most effective. Visitor Use Management and Wilderness Stewardship planning efforts will help managers determine which strategies are most appropriate based on levels of use, timing and distribution of use, activities and behaviors of visitors, and urgency of threats to desired conditions.

How we interact with the public before and after they step foot on the Refuge was recognized as an important issue. However, the staff decided the issue would be best addressed through management objectives pertaining to recreation, education, and outreach until Wilderness Stewardship and Visitor Use Management Plans (Objectives 2.4 and 5.4) are developed with public input. The issue was not carried forward into the alternatives.

D.5.5 Crowding

Public comments consistently raised concerns having to do with crowding—too many users in too concentrated an area and/or at the same time to provide the opportunities and experiences Refuge visitors seek. Hunters, non-hunting recreationists, subsistence users, and commercial operators have all identified crowding as a problem on Arctic Refuge. The Service agrees that this is a major issue that needs to be addressed, recognizing that use is not evenly distributed across the Refuge and that crowding is a concern in only a few areas of the Refuge. Crowding relates to the number of encounters users have with other groups, group sizes, and the number and distribution of access points. Impacts resulting from crowding or prolonged use include damage to soils, vegetation, and other resources; human waste accumulations; negative human-wildlife encounters; and erosion of visitor experience.

Crowding is a highly complex issue that merits detailed consideration and public input. The Revised Plan cannot go into the level of detail this issue requires. For this reason, the issue of crowding and all its associated sub-issues (e.g., group size) is being deferred to a Visitor Use Management Plan that would be developed in coordination with a Wilderness Stewardship Plan. The Refuge is committed to developing these plans (see Chapter 2, Section 2.1.2, Objective 2.4 and Section 2.1.5, Objective 5.4) and has given them a high priority (see also Chapter 6, Section 6.3).

D.5.6 Group Size

Group size was considered both as a component of crowding (Section D.5.5) and as a separate issue. This was in response to public comments recommending that limits be placed on the size of visitor groups and/or that changes be made to the current size limit for commercially guided groups. Concerns were related to the effect of encountering large groups on one's wilderness experience. Concerns were also expressed about adverse effects that large groups could have on wildlife and the physical impacts large groups could have at campsites and along hiking routes. In response, the Refuge considered several options for establishing group size limits. None would apply to qualified subsistence users.

Currently, guided groups are limited to 7 people hiking per group and to 10 people per river floating group. There are no size limits placed on non-guided groups, although the Refuge recommends the same group size limits as for guided groups. Among the actions considered were: 1) continue the current policy, 2) apply the 7 hikers and 10 floaters limit to both guided and non-guided groups, and 3) set limits of either 8, 9, or 10 people for both guided and non-guided groups.

Ultimately, the issue was not included in the alternatives for the Revised Plan. Rather, it was deferred to future step-down management plans. Visitor use data show non-guided groups rarely exceed recommended group size limits, except in areas accessible by the Dalton Highway. Data also show hunting groups, whether guided or not, rarely exceed recommended group size limits anywhere in the Refuge. Addressing the issue in coordinated Visitor Use Management and Wilderness Stewardship planning processes (Chapter 2, Section 2.1.2, Objective 2.4 and Section 2.1.5, Objective 5.4) will enable more comprehensive consideration of the expectations, concerns, and effects related to establishing group size limits. It would also allow the issue to be looked at in combination with other public use issues such as desired conditions, visitor expectations for encounters with other groups, economic effects, etc. Any group size limits that would affect the public, not just commercially-supported visitors, would require rule making (i.e., new Federal regulations).

D.5.7 Guided and Non-Guided Visitor Use Allocation

Recreational use in a few areas of the Refuge, and particularly along popular rivers, has increased to a point where limits on the number of visitors may be necessary to protect resources or experience qualities. If recreational use needs to be limited in particular areas or at certain times, some means of allocating use opportunities will need to be implemented.

Several allocation systems have been developed for recreational rivers and designated Wilderness areas. A primary difference between these systems is whether they allocate a portion of use to commercial operators, whether they provide a preference to private users, or whether they employ a “freedom of choice” approach providing equal opportunity for both commercially-guided and non-guided visitors.

The staff gave serious consideration to the following options: 1) no preference; 2) each group given a percentage of the opportunity; 3) non-guided users have the choice of accessing the Refuge with or without a guide; 4) non-guided groups get first choice and commercial guides get the remaining preference; and 5) the decision is not made in the Plan but deferred to a step-down plan.

The staff also considered, but rejected, the following options: commercial preference would be provided in heavily used areas because of the Refuge’s ability to condition, restrict, and provide oversight to commercial permit holders; give commercial users a higher preference over private users throughout the Refuge; place more restrictions or limits on commercial groups; and conduct outreach and interpretation with both guided and non-guided visitors.

Refuge staff recognized allocation as an important issue, but it was not carried forward into the alternatives. This issue warrants a more comprehensive, focused assessment than is possible in the Revised Plan. The staff decided the issue would best be explored through a Wilderness Stewardship Plan and/or a Visitor Use Management Plan, both of which would be developed with public involvement. Through the step-down planning process, the Refuge will be better able to discuss any proposed allocation methods or use limitations with the visitors

and commercial service providers that would be directly affected by such regulations. Objectives 2.4 and 5.4 (in Chapter 2, Sections 2.1.2 and 2.1.5, respectively) commit to developing these step-down plans (see also Chapter 6, Section 6.3). This issue ties in with how we interact with the public (Section D.5.4).

D.5.8 Human Waste

Certain sites in the Refuge have notable accumulations of human waste. Some of the actions the Refuge could take to address this issue are to increase outreach and education efforts, initiate clean-up efforts, provide visitors with equipment (on- or off-Refuge), haul out waste, require waste haul-out as a special use permit condition, and require haul-out for all users (which would require rule making).

This issue is important because of its powerful effect on visitor experience and its potential localized effect on public health and water quality. However, it is not a stand-alone issue. It relates to four previously discussed issues: 1) standards for different groups, 2) how we interact with the public, 3) whether the Refuge should be managed for dispersed or concentrated use, and 4) crowding. Further, it is important that any haul-out considerations prioritize practical solutions that accommodate every stage of the waste stream and identify critical partnerships for each stage so that solutions don't create new and different problems. All of these issues are best addressed in step-down plans that can focus on the complexity and inter-relationship of the issues. The Refuge is committed to developing a Wilderness Stewardship Plan and Visitor Use Management Plan (Chapter 2, Section 2.1.2 Objective 2.4, Section 2.1.5 Objective 5.4, and Objectives 2.4 and 5.4, and Chapter 6, Section 6.3).

D.5.9 Erosion of Hunt Quality

An issue identified by the public is the erosion of hunt quality due to visitor concentration. Numerous camps, airplanes, and people materialize on the Refuge at the start of the fall hunting season. Hunters come to Arctic Refuge because they seek a specific kind of hunting experience; however, that experience can be thwarted when too many people hunt in the same drainage or area. This issue was not carried forward into the alternatives because it is not a stand-alone issue. It not only relates to the issue of crowding (Section D.5.5), but also to State and Federal regulatory authorities and processes to manage and allocate fish, wildlife, and subsistence resources. Any unilateral attempts to minimize user conflicts, based solely on allocation concerns, would circumvent these existing regulatory processes.

D.5.10 Conflicts Among and Between Commercial and Private Users

There are ongoing conflicts among different commercial users (air-taxis, transporters, and hunting guides) and between private and commercial users on Arctic Refuge. One action considered would be to create a controlled use area by following the State's process for proposal and authorization of such an area. Because these areas are typically developed in the proximity of villages to protect subsistence hunting, Refuge staff decided not to consider this action in further detail; controlled use areas would not address commercial use conflicts identified by this issue. Additionally, the process is completely separate from this Plan and could be initiated without a Revised Plan.

Another action considered to minimize conflict would be to divide the Refuge into different “use areas” and limit the number of hunters by: 1) restricting the number of air-taxi and/or transporters allowed to operate in a given area, or 2) restrict the number of people an air-taxi and/or transporter could bring in. Ultimately Refuge staff decided not to carry the issue of commercial and private user conflicts into the alternatives because the issue overlaps with at least four other issues: 1) standards for different groups (Section D.5.3); 2) erosion of hunt quality (Section D.5.9); 3) monitoring commercial activities (Section D.5.13); and 4) conflicts with subsistence users (Section D.5.11).

D.5.11 Conflicts Between General Hunters and Subsistence Hunters

Local rural residents identified several concerns associated with general hunters, including trespass on private property, waste of meat, and trash. They have also repeatedly expressed concern that general hunters have changed animal population size and structure and altered animal behaviors, such as caribou migration routes.

The Service has no data to support or oppose these complaints. Some of the conflict may stem from a lack of understanding on the part of subsistence hunters about the rules and regulations under which general hunters operate. Similarly, general hunters might not fully understand and appreciate traditional Native practices and those of rural residents. There may also be a lack of knowledge about the locations of private lands, easements for accessing Refuge lands, and Refuge boundaries.

The staff considered this to be an important issue and considered incorporating the following actions into the alternatives: enhance education about such topics as hunting regulations, traditional ways, caribou biology, etc.; publish detailed land status maps that could be used for navigation while on the Refuge; hire village employees to work at Refuge visitor centers to



improve communication and user education; improve messaging and information presented at kiosks; increase enforcement and patrols; restrict commercial uses in areas with high subsistence use; streamline permitting processes; and conduct research on hunting effects on wildlife. The issue was not considered in further detail, however, because the majority of these actions can be implemented without a Revised Plan. They can also be addressed through the Refuge's management goals and objectives, especially those pertaining to subsistence, recreation, and education (see Chapter 2, Objectives 4.2, 4.3, 4.6, 5.1, 5.6, 5.7, 8.1, and 9.3).

D.5.12 Polar Bear Viewing in Kaktovik

In recent years, a commercial guided polar bear viewing industry has developed in and around Kaktovik, offering visitors the opportunity to view bears in the wild. Commercial guides operating motorized boats on Refuge waters to view polar bears are permitted through the special use permit program. Polar bears are listed as threatened under the Endangered Species Act and are a trust species managed by the Service under the Marine Mammal Protection Act (Appendix A). Refuge staff have worked in concert with the polar bear biologists in the Service's Marine Mammals Management office, endangered species specialists in the Service's Fairbanks Fish and Wildlife Field Office, and a wide array of Kaktovik community partners to address immediate concerns regarding commercial and private activities that promote effective cooperative management of polar bears on and off Refuge lands. Ongoing efforts include:

- promoting public safety
- improving awareness of minimizing attractants in the village(s)
- understanding local conditions that might contribute to polar bear concentrations and other polar bear distribution considerations
- avoiding harassment of polar bears
- serving as technical advisors for the local community's effort to develop a polar bear management plan infused with a spirit of stewardship

However, some community members and Refuge staff believe these efforts are not reaching users. Regularly scheduled commercial airplanes bring visitors to Kaktovik; these visitors make their own way to view polar bears, independent of permitted commercial guides or the preferences of the community. It has been suggested the Service needs to regulate independent polar bear viewers so as to comply with the Endangered Species Act and the Marine Mammal Protection Act, and to provide a measure of public safety. Polar bear viewing activity in Kaktovik is evolving rapidly and changing dynamically. Refuge staff believes it needs the responsiveness and flexibility of working on this issue independent of the Plan in order to have the maximum ability to address concerns as they emerge. This issue was not considered in further detail in the Revised Plan.

D.5.13 Monitoring Commercial Activities

Public comments mentioned the need to regulate and/or better regulate commercial activities. Refuge staff regulates and monitors commercial use activities; however, public comments suggest the Refuge needs to improve: 1) compliance checks on commercial operators, 2) information about existing rules and regulations, and/or 3) information about current enforcement levels and methods. This issue relates to how we interact with the public (Section

D.5.4) and how commercial activities fit into the larger context of visitor use management. The staff decided to defer many of these visitor use management decisions to a step-down planning effort, so this issue was not carried forward into the alternatives.

D.5.14 Air Transporters

Air transporters provide transportation services and accommodations to big-game hunters, but they cannot provide big-game hunting services without holding the appropriate State license. Unlike air-taxis, who provide services to all clients seeking air service, air transporters directly seek hunting clients through advertisements; therefore, hunters make up the majority of a transporter's clients. Over the past few years, the Refuge has issued an increasing number of air operator permits to transporters who only operate during the fall hunting season. As a result, by early August, commercial services double over those in place earlier in the summer. Because of limited access points, hunters concentrate at various landing areas, sometimes reducing the quality of hunting experience Refuge visitors seek. Changing air transporter trends and several years of complaints from hunters and commercial service providers suggest the Refuge should consider regulating the transporter industry.

Some of the actions considered were to limit the number of transporters and their authorized landing sites throughout the Refuge, limit air transporters only in heavily used areas, limit the number of air transporters but not where they go, and competitively award transporter use areas in a manner analogous to our competitive guide use areas. The issue of hunter concentrations is complex and would require regulating more than the transport industry. The concern is also related to the issue of crowding (Section D.5.5), and is not a stand-alone issue. Therefore, the staff decided to defer this issue to a step-down planning effort instead of considering it in further detail through the Revised Plan.

D.5.15 Fixed-wing Aircraft

Fixed-wing aircraft are a necessary means of accessing the Refuge, both for visitors and administrators. However, aircraft contribute to environmental degradation at landing areas by hardening surfaces and scarring tundra. Aircraft may also be perceived as eroding wilderness characteristics when heard or seen, or when visible evidence is left behind, such as fuel caches.

Service authority regarding aircraft operations is limited to their use on Refuge lands and waters. The Federal Aviation Administration has jurisdiction over aircraft and their use in the air. Additionally, fixed-wing aircraft are a protected form of public access under Section 1110(a) of ANILCA; restrictions cannot be imposed without following a specific public process identified in 43 CFR 36.11(f) and (h), which includes rule making.

Refuge staff considered incorporating some of the following actions into the draft alternatives:

- instituting a competitive selection process for commercial air operators so as to further increase stewardship standards and expectations
- limiting the number, location, and quantity of fuel caches
- educating the public and permittees about aircraft impacts and how to minimize them
- elevating priority of ongoing monitoring program of aircraft impacts at specific sites
- closing select landing areas to allow them to rehabilitate
- promulgating public use regulations

- revising special use permit conditions for commercial aircraft operators
- limiting the number of drop-offs allowed on landing areas
- working with the Refuge's air service providers and others to voluntarily lessen the visual and noise effects of aircraft in certain areas or at certain times

Refuge staff decided not to carry this issue forward into the alternatives. Some of the concerns associated with fixed-wing aircraft can be addressed through the revision of special use permit conditions and/or developing a competitive prospectus application process. Refuge staff can also work with visitors to improve conditions through education and outreach, and concerns about hardened and newly pioneered landing areas can be addressed through management objectives (see Chapter 2, Section 2.1.5, Objective 5.9). Issues related to aircraft landings and overflights will be addressed in the Visitor Use Management and Wilderness Stewardship plans (Chapter 2, Section 2.1.2 Objective 2.4 and Section 2.1.5 Objective 5.4), which would include public involvement. These plans may prescribe developing of a voluntary agreement between the Refuge and its commercial air service providers and others to lessen the visual and noise effects of aircraft in certain areas or at certain times. Recognizing that the Refuge's flight program is part of the concern, the Service would also be subject to the provisions of a voluntary agreement.

D.5.16 Competitive Events

The Refuge received public comments questioning whether competitive events, such as races, should be allowed on the Refuge. These commenters expressed concern that such activities are not compatible with the wilderness qualities of the Refuge. This issue was not carried forward into the alternatives. It can be addressed on a case-by-case basis using existing management tools such as compatibility determinations and appropriate use determinations.

D.6 Other Issues

D.6.1 *Administrative Buildings*

During scoping, some people asked the Refuge to remove the buildings on the east side of Lake Peters because they are perceived as eyesores and because they impair the area's Wilderness character. These are administrative buildings associated with the G. William Holmes Research Station, which was established in the late 1950s. Refuge staff decided to look at all the administrative buildings in the Refuge and drafted the following four options for the alternatives: 1) retain all the buildings at Lake Peters and Big Ram Lake; 2) remove the buildings at Big Ram Lake and reduce the number of buildings at Lake Peters; 3) retain all the buildings at Big Ram Lake and reduce the number of buildings at Lake Peters; and, 4) remove all buildings at both sites.

Refuge staff also considered whether the issue should be broadened to include cabins instead of just administrative buildings. The Refuge has no administrative or other authority over cabins on private lands. For those cabins on Refuge lands that were grandfathered post-ANILCA, all are used for trapping, each complies with regional cabin policy, and each user has an individual special use permit. Therefore, the staff decided not to include cabins in this issue.

Refuge staff considered whether the issue should be broadened to include installations, such as weather stations. If included, the options would be to remove them, build more, or retain existing installations but not allow any new ones. The staff decided not to include any of these actions in this issue. The staff thought it important to retain as much management flexibility as possible. Should one of these actions be adopted through the record of decision for the



Revised Plan, the Refuge would have little to no ability to address installations on a case-by-case basis. Ultimately, the staff decided not to include this issue in the alternatives. It can be addressed administratively through an environmental analysis and decision process separate from the Revised Plan (see Chapter 2, Section 2.1.2, Objective 2.5).

D.6.2 Archaeological Excavations

A few members of the public are concerned that excavations of archaeological sites not threatened by loss (one of several techniques that could be employed in a cultural resource survey) would not be compatible with the wilderness values of the Refuge or as an activity in designated Wilderness. This issue was not considered in detail. It can already be addressed on a case-by-case basis using existing management tools such as compatibility determinations and appropriate use determinations. It could also be addressed through an Integrated Cultural Resources Management Plan, a step-down plan the Refuge is committed to developing (Chapter 2, Section 2.1.8, Objective 8.3 and Chapter 6, Section 6.3).

D.6.3 Adjacent Land Uses and Inholdings

Activities on lands adjacent to Arctic Refuge, and on lands owned by others inside the Refuge boundary, can affect Refuge resources and wilderness characteristics. The Service has no authority over activities happening on private lands. However, we can partner with private landowners and other agencies to minimize impacts to the Refuge from activities happening on non-Refuge lands. Coordination and consultation would be the most effective action the Refuge could take to address this issue. Additionally, the Refuge can condition special use permits for commercial activities that occur on Refuge lands but that originate from private inholdings or other agency lands. For these reasons, this issue was not considered in further detail.

D.6.4 Naming of Features

The question of whether the Refuge should propose naming or support naming features (such as mountains) is an issue to some. The presence of nameless features contributes to their experience of the Refuge. The staff decided this is not an issue for the Revised Plan. It is a general approach the Refuge embraces, but it is not a policy or position that should be analyzed through the Plan's alternatives.

Appendix D: Issues Considered but Eliminated from Detailed Study

Table D-1. Summary of identified issues and how they were addressed in the planning process

Identified Issues	How Addressed				
	Through Management Guidelines	Included in Objectives ¹	Deferred to Step-Down Plans	Carried into Alternatives	Other ²
Development Issues					
Oil and gas development					X
Updating seismic data on the coastal plain					X
Policy Issues					
ANILCA “no more” clauses					X
Ecological Issues					
Introduction of disease, organisms, and invasive species	X	X			
Hunting effects on populations, structures, and genetics			X		
Climate change	X	X			
Fire activity			X		
Adequate water quality and quantity		X	X		
Air quality and pollution			X		
Management Issues					
Wilderness recommendation				X	
Wild and scenic river recommendation				X	
Conflict between wilderness values and science-related technologies			X		
Management of the Refuge’s three designated wild rivers			X		
Management of the Refuge’s research and public use natural areas	X				
Management of the Refuge’s Marine Protected Area	X				
An area free of commercial use and mechanization			X		
Visitor Use Issues					
Kongakut River overuse				X	
Dispersed or concentrated visitor use			X		
Increasing permits and recreational uses			X		
Standards for different users			X		
Public interaction			X		

Group size			X		
Guided and non-guided visitor use allocation			X		
Human waste			X		
Erosion of hunt quality			X		
Conflicts among and between commercial and private users					X
Conflicts between general hunters and subsistence hunters					X
Polar bear viewing in Kaktovik					X
Monitoring commercial activities			X		
Air transporters		X	X		X
Fixed-wing aircraft			X		
Competitive events					X
Other Issues					
Administrative buildings		X			
Archaeological excavations			X		X
Adjacent land uses and inholdings					X
Naming of features					X

¹ Not in Alternative A

² Issues addressed through existing Refuge administrative or management tools such as special use permits, through permit conditions, or through engaging with affected parties and interests; issue resolved on a case-by-case basis; issue is one of policy or law.

D.7 References

- Attanasi, E.D. 2005. Undiscovered oil resources in the federal portion of the 1002 area of the Arctic National Wildlife Refuge: an economic update. Open-File Report 2005-1217, U.S. Department of the Interior, U.S. Geological Survey, Reston, Virginia, USA.
- Banet, A.C., Jr. 1991. Oil and gas development on Alaska's North Slope: past results and future prospects. BLM-Alaska Open File Report 34, U.S. Department of the Interior, Bureau of Land Management, Alaska State Office, Anchorage, Alaska, USA.
- Clough, N.K., P.C. Patton, and A.C. Christiansen, editors. 1987. Arctic National Wildlife Refuge, Alaska, coastal plain resource assessment: Report and recommendation to the Congress of the United States and final legislative environmental impact statement. U.S. Fish and Wildlife Service, U.S. Geological Survey, and Bureau of Land Management, Washington, D.C., USA.
- Hamilton, S. 2010. Memorandum from Service Director Sam D. Hamilton to Regional Director, Region 7, January 28, 2010. Alaska national wildlife refuge wilderness reviews. U.S. Fish and Wildlife Service, Washington, D.C., USA.
- U.S. Fish and Wildlife Service. 2008. Fire Management Plan for Arctic National Wildlife Refuge. Arctic Refuge, Fairbanks, Alaska, USA.
- U.S. Geological Survey. 2001. Arctic National Wildlife Refuge, 1002 area, petroleum assessment, 1998, including economic analysis. USGS Fact Sheet FS-028-01, U.S. Department of the Interior, U.S. Geological Survey, Reston, Virginia, USA.

Appendix E

Easements, Rights-of-Way, and Withdrawals

E. Easements, Rights-of-Way, and Withdrawals

E.1 Easements

E.1.1 *Alaska Native Claims Settlement Section 17(b) Easements*

Section 17(b) of Alaska Native Claims Settlement (ANCSA) requires the Federal government to reserve easements for access to public lands or waters whenever land is conveyed to Native corporations. The U.S. Fish and Wildlife Service (Service) is responsible for administering these public easements, both inside and outside refuge boundaries, which provide access to refuge lands and other public lands and waters. Service authority for administering 17(b) easements is restricted to the lands in the easement. Maps filed with conveyance documents identify the size, route, and general location of 17(b) easements. Conveyance documents also specify the terms and conditions of use, including the acceptable periods and methods of public access. Any use not specified in the conveyance documents is not an allowable use. Currently, there are 9 campsites, 2 landing areas, 1 streamside, and 11 trail easements in Arctic National Wildlife Refuge (Arctic Refuge, Refuge). If necessary to protect access to public lands and waters, additional easements may be reserved whenever lands are conveyed to Native corporations.

Management of easements that access public lands in a conservation system unit, but which are located outside a conservation system unit boundary, lies with the agency that manages the unit. There are two ANCSA 17(b) easements located on Venetie tribal land in Arctic Village. Although these easements are outside the Refuge boundary, their purpose is to provide access across Native land to public land in the Refuge. Therefore, these two easements are managed by the Service.

ANCSA 17(b) easements are listed by easement identification number (EIN) below, and are depicted in Map E-1. Easements are reserved on and across the following Native village corporation and Native regional corporation land:

Kaktovik Iñupiat Corporation

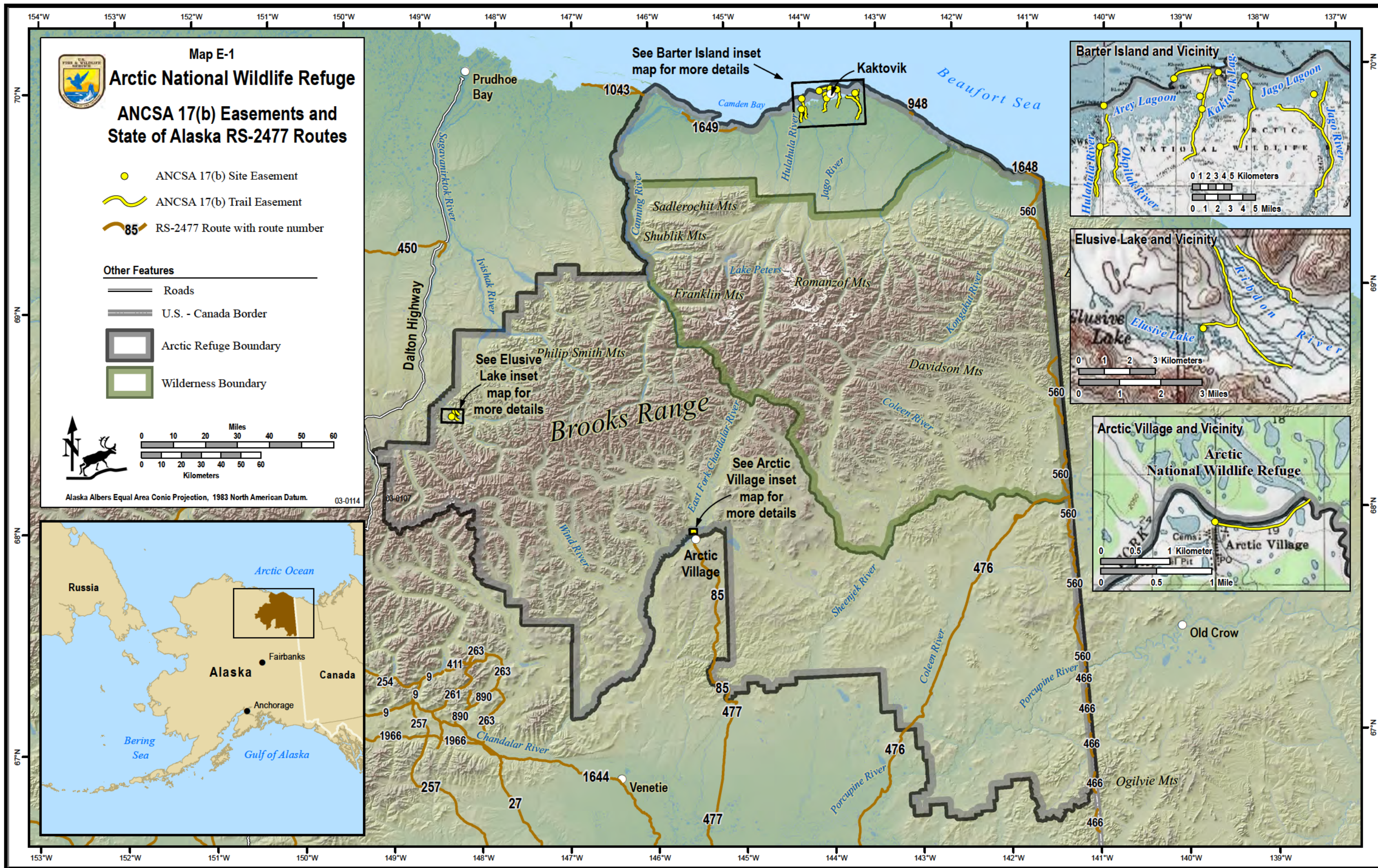
SITES

- EIN 1a C5 C6 A 1-acre site on the western shore of Barter Island in Section 26, Township 9 North, Range 33 East, Umiat Meridian. Reference: BLM Interim Conveyance 2296.
- EIN 2a C5 C6 A site easement 25 feet wide and 1,700 feet long upland of and parallel to the mean high tide line in Sections 33 and 34, Township 9 North, Range 32 East, Umiat Meridian. Reference: BLM Decision Document, July 14, 2009.
- EIN 2b C5 C6 A site easement 25 feet wide and 1,700 feet long upland of and parallel to the mean high tide line in Section 35, Township 9 North, Range 33 East, Umiat Meridian. Reference: BLM Decision Document, July 14, 2009.
- EIN 2d C5 C6 A 1-acre site easement upland of the ordinary high water mark in Section 21, Township 9 North, Range 33 East, Umiat Meridian. Reference: BLM Interim Conveyance 2296.

- EIN 8 C6.....A 1-acre site easement upland of the mean high tide line on the northwest point of Manning Point in Section 21, Township 9 North, Range 34 East, Umat Meridian. Reference: BLM Patent 50-77-0046.
- EIN 10 C6.....A 1-acre site on the left bank of the Jago River in Section 29, Township 9 North, Range 35 East, Umat Meridian. Reference: BLM Patent 50-77-0046.
- EIN 11 C6.....A 1-acre site on the right bank of the Hulahula River in Section 13, Township 8 North, Range 32 East, Umat Meridian. Reference: BLM Patent 50-77-0046.
- EIN 18 KAn 8.26-acre airspace easement, 400 feet wide and 900 feet long, located in Section 18, Township 9 North, Range 34 East, Umat Meridian. Reference: BLM Interim Conveyance 1250.

TRAILS

- EIN 1 C3 C5 D1.....A 25-foot-wide trail easement from the western boundary of Public Land Order (PLO) 715 in Section 24, Township 9 North, Range 33 East, Umat Meridian, to public land in Section 30, Township 8 North, Range 34 East, Umat Meridian. Reference: BLM Interim Conveyance 52.
- EIN 1a C5 C6.....A 25-foot-wide trail easement from site easement 1a C5 C6 in Section 26, Township 9 North, Range 33 East, Umat Meridian, easterly to trail easement 1 C3 C5 D1. Reference: BLM Interim Conveyance 2296.
- EIN 2c C5 C6.....A 25-foot-wide trail easement from site easement 2d C5 C6 in Section 21, Township 9 North, Range 33 East, Umat Meridian, easterly to the western boundary of PLO 715 in Section 13, Township 9 North, Range 33 East, Umat Meridian. Reference: BLM Interim Conveyance 2296.
- EIN 5 C3 C5 C6 D1A 25-foot-wide trail easement along the right (east) bank of the Jago River from Section 11, Township 7 North, Range 35 East, Umat Meridian, northerly to the mouth of the Jago River in Section 21, Township 9 North, Range 35 East, Umat Meridian. Reference: BLM Patent 50-77-0046.
- EIN 6 C3 C5 D1.....A 25-foot-wide trail easement along the right (east) bank of the Okpilak River from Section 5, Township 7 North, Range 33 East, Umat Meridian, northerly to the mouth of the Okpilak River in Section 6, Township 8 North, Range 33 East, Umat Meridian. An additional 25-foot-wide trail easement spur begins at site easement 11 C6 on the right bank of the Hulahula River in Section 13, Township 8 North, Range 32 East, Umat Meridian, and continues easterly to the left (west) bank of the Okpilak River in Section 18, Township 8 North, Range 33 East, Umat Meridian. Reference: BLM Patent 50-77-0046.
- EIN 8 C6.....A 25-foot-wide trail easement from Section 24, Township 8 North, Range 34 East, Umat Meridian, northerly to site easement 8 C6 on the northwest point of Manning Point in Section 21, Township 9 North, Range 34 East, Umat Meridian. Reference: BLM Patent 50-77-0046.



- EIN 9 C6 A 25-foot-wide trail easement from the mean high tide line in Section 35, Township 9 North, Range 34 East, Umiat Meridian, southeasterly to trail easement 5 C3 C5 C6 D1 in Section 12, Township 8 North, Range 35 East, Umiat Meridian. Reference: BLM Patent 50-77-0046.
- EIN 14a C3 C5 D1 A 25-foot-wide trail easement on the bed of the Hulahula River from public land in Section 12, Township 7 North, Range 32 East, Umiat Meridian, to the mouth of the river in Township 8 North, Range 32 East, Umiat Meridian. Reference: BLM Decision Document, April 3, 2008.
- EIN 14b C3 C5 D1 A 25-foot-wide trail easement on the right (east) bank of the Hulahula River from the mouth of the Hulahula River in Section 11, Township 8 North, Range 32 East, Umiat Meridian, to site easement 11 C6 in Section 13, Township 8 North, Range 32 East, Umiat Meridian, thence southerly to public land in Section 12, Township 7 North, Range 32 East, Umiat Meridian. Reference: BLM Decision Document, April 3, 2008.

Arctic Slope Regional Corporation

SITE

- EIN 1a C6 An airstrip easement 200 feet wide and 1,000 feet long on the eastern shore of Elusive Lake in Sections 18 and 19, Township 9 South, Range 16 East, Umiat Meridian. Reference: BLM Interim Conveyance 1472.

TRAILS

- EIN 2a C6 A 25-foot-wide trail easement on the left (west) bank of the Ribdon River from Section 28, Township 9 South, Range 16 East, Umiat Meridian, northwesterly to Section 6, Township 9 South, Range 16 East, Umiat Meridian. Reference: BLM Interim Conveyance 1472.
- EIN 4 C6 D1 A 25-foot-wide trail easement from site easement 1a C6 in Sections 18 and 19, Township 9 South, Range 16 East, Umiat Meridian, easterly to trail easement 2a C6 in Section 17, Township 9 South, Range 16 East, Umiat Meridian. Reference: BLM Interim Conveyance 1472.
- EIN 5 C6 D1 A 25-foot-wide trail easement on the right (east) bank of the Ribdon River from Section 15, Township 9 South, Range 16 East, Umiat Meridian, northwesterly to Section 5, Township 9 South, Range 16 East, Umiat Meridian. Reference: BLM Interim Conveyance 1472.

Venetie Tribal Corporation and Neets'ai Corporation

SITE

- EIN 3 C5 L A 1-acre site easement on the left (south) bank of the East Fork Chandalar River in Section 24, Township 15 South, Range 28 East, Umiat Meridian. Reference: BLM Patent 50-80-0027.

TRAIL

EIN 4 C5.....A 25-foot-wide trail easement from site easement 3 C5 L in Section 24, Township 15 South, Range 28 East, Umiat Meridian, easterly to the Refuge boundary and public land in Section 19, Township 15 South, Range 29 East, Umiat Meridian. Reference: BLM Patent 50-80-0027.

E.2 Rights-of-Way***E.2.1 Revised Statute 2477 Right-of-Way Claims***

The State of Alaska identifies numerous claims to roads, trails, and paths across Federal lands under Revised Statute 2477 (RS 2477), a section of the Mining Act of 1866 that states, “The rights-of-way for construction of highways over public lands, not reserved for public uses, is hereby granted.” RS 2477 was repealed by Section 706(a) of the Federal Land Policy and Management Act of 1976, subject to valid existing claims.

Assertion and identification of RS 2477 rights-of-way neither establishes the validity of these claims nor the public’s right to use them. The validity of all RS 2477 rights-of-way may be determined either via demonstration that these rights were perfected prior to the enactment of the Federal Land Policy and Management Act of 1976, or through appropriate judicial proceedings. In Alaska Statute 19.30.400, the State of Alaska identifies the following six routes on Arctic Refuge (Table E-1). The State’s claims may be asserted as RS 2477 rights-of-way (Map E-1).

Table E-1. RS 2477 rights-of-way on Arctic Refuge

Trail Number	Name
476	Circle-Chalkyitsik-Yukon Border
560	Rampart House-Demarcation Point
1648	Gordon-US Border (coastal)
1649	Simpson Cove-Tamayariak
466	Nation River-Rampart House Trail
85	Christian-Arctic Village Trail

E.2.2 Alaska National Interest Lands Conservation Act Title XI, Sections 1110(a) and (b) Access Requirements

Under Sections 1110(a) and 1110(b) of the Alaska National Interest Lands Conservation Act (ANILCA), the Service must provide certain types of access across Refuge lands, subject to reasonable regulations. Section 1110(a) permits transportation access across Refuge lands for traditional activities and for travel to and from villages and home sites. Under Section 1110(b), when the State or a private party owns surface or subsurface land interests that are effectively surrounded by Refuge lands, the Service must provide “adequate and feasible access for economic and other purposes” to the property but may impose reasonable regulations to protect Refuge resources.

E.3 Withdrawals

There are several Federal withdrawals in Arctic Refuge boundaries, including the following. Chapter 4, Section 4.1 discusses additional withdrawals.

E.3.1 Public Land Order 399 – Hot and Medicinal Springs

In 1947, PLO 399 made up to 160 acres of public land surrounding hot or medicinal springs open to settlement and other forms of appropriation. In 1947, the opportunity to file an application under the Homestead Act and other public land laws opened for limited time periods to accommodate World War II veterans, and from January 1–January 21, 1948, opened for the general public. Then in 1977, PLO 5563 made these lands available for certain types of selections under ANCSA. Although the application period for these appropriations and selections has long closed, the withdrawals themselves were never formally relinquished. In Arctic Refuge, there are 20 hot springs withdrawals totaling nearly 3,000 acres.

E.3.2 Public Land Order 715 – Barter Island Distance Early Warning Line Station

In 1951, PLO 715 reserved about 4,500 acres of public land in the Barter Island area for the use of the U.S. Air Force. During the Cold War, the Air Force operated the Barter Island Distant Early Warning Line Station, part of a system of radar stations designed to detect incoming Soviet bombers. All but about 620 acres of the original withdrawal have been relinquished (Map E-2¹).

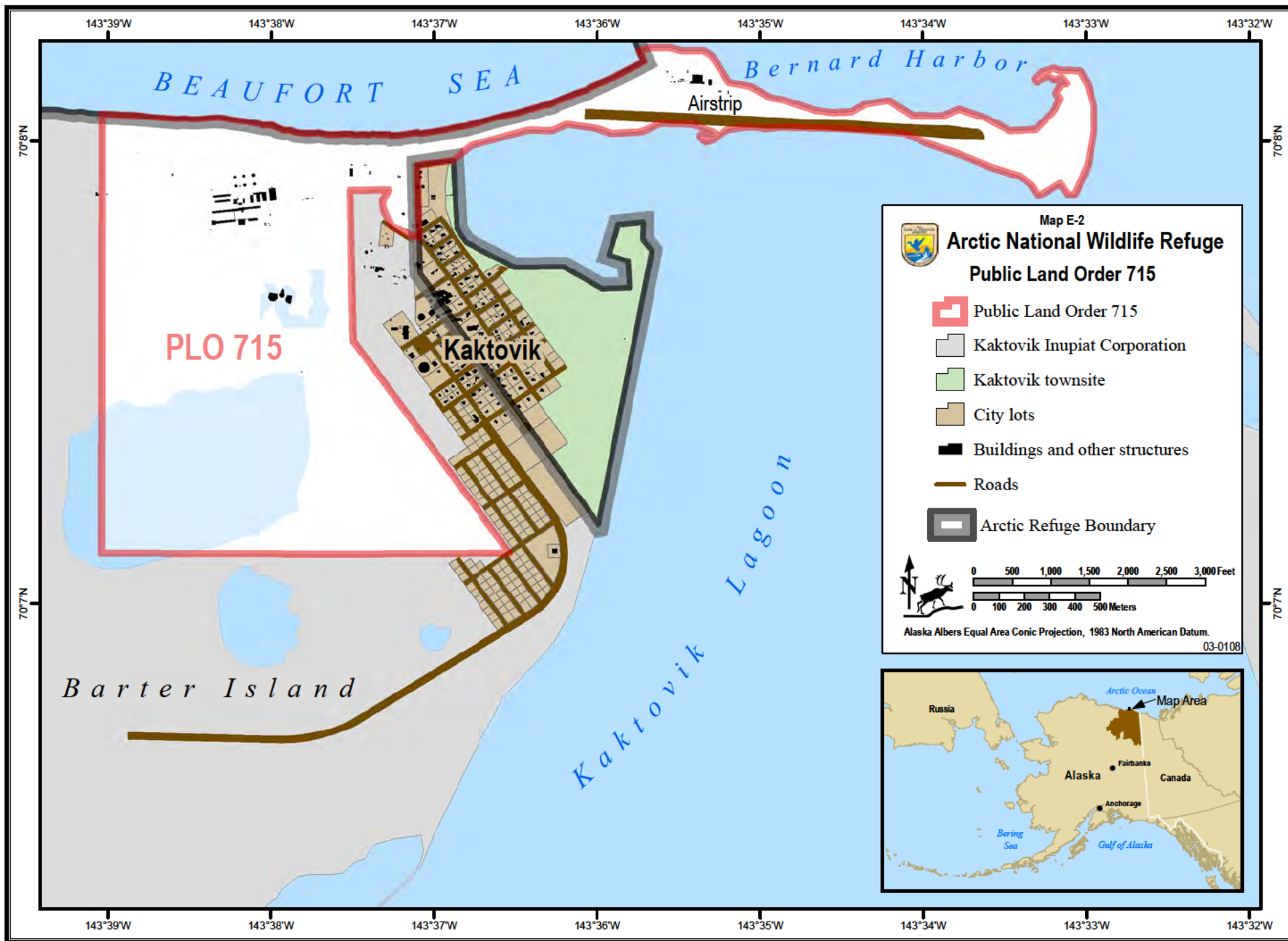
E.3.3 Public Land Order 5164 – Burnt Mountain Research Site

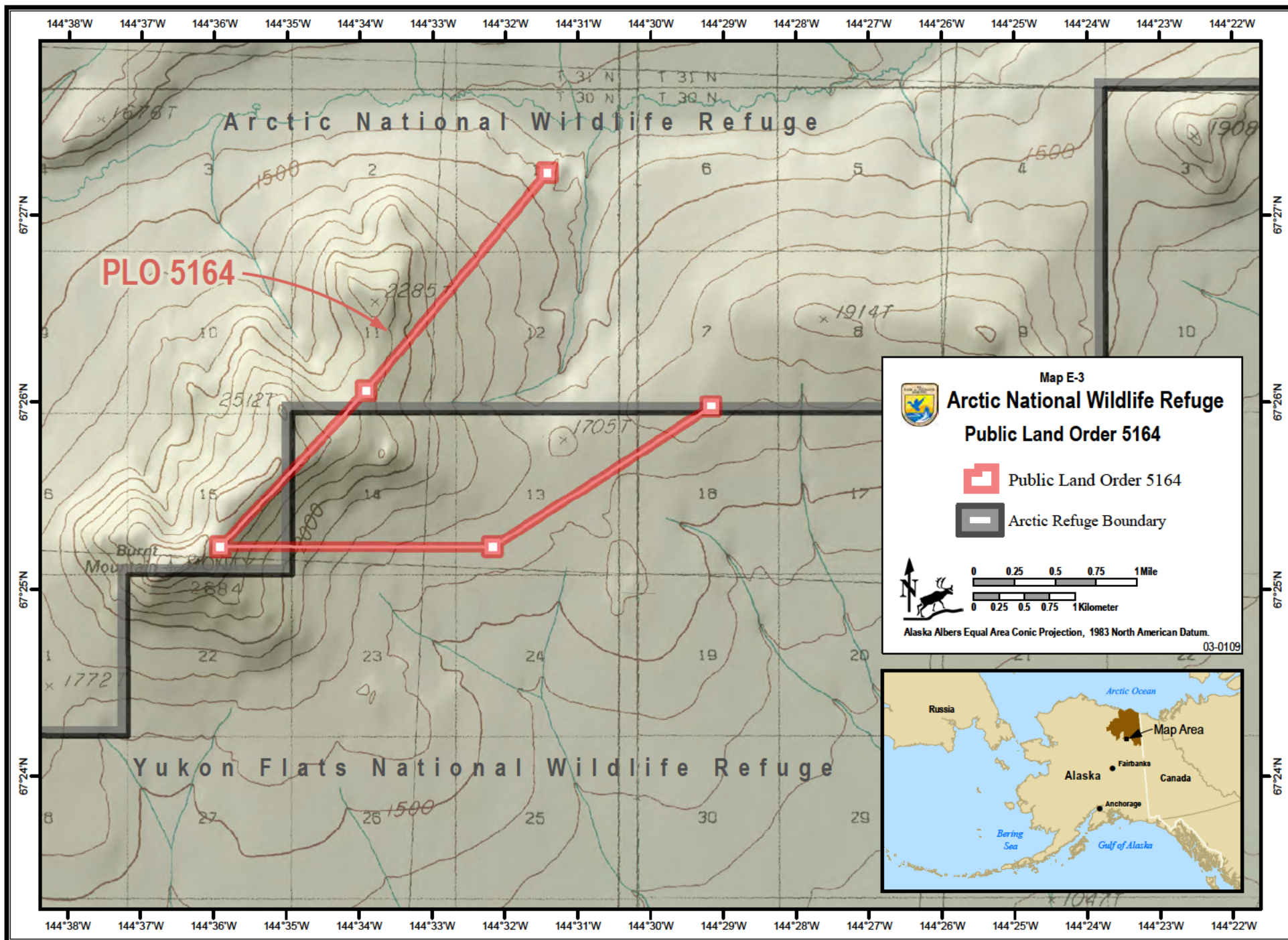
In 1972, PLO 5164 withdrew approximately 100 acres in the Burnt Mountain area on the boundary between the Arctic and Yukon Flats refuges for the U.S. Air Force Burnt Mountain Research Site or Seismic Observatory. Approximately 56 acres of the PLO withdrawal are on Arctic Refuge, and 44 acres are in the adjacent Yukon Flats National Wildlife Refuge (Map E-3).

The withdrawal consists of five seismic monitoring sites situated on 500-foot square parcels, spaced one to four miles apart, and interconnected with ground-laid cable in the center of 100-foot-wide interconnecting access ways. Each monitoring site contains a seismic sensor (geophone) located in a bore hole and a small frame building containing electronics, which are enclosed in a chain link fenced area. Each site utilizes a solar-diesel power source and batteries to power the seismic sensors and electronics. One of the monitoring sites also contains a central radio facility, an antenna, a cabin (for personnel use when servicing the site), and an equipment shed. The site is operated remotely and is manned only for periodic servicing.

¹ As can be seen on Map E-2, Kaktovik is not part of Arctic Refuge even though the town site is physically inside the boundaries of the Refuge. The Refuge boundary surrounds the town site, creating a “doughnut-hole” in the Refuge.

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Appendix F

Species List

F. Species List

F.1 Lists

The following list and three tables denote the bird, mammal, fish, and plant species known to occur in Arctic National Wildlife Refuge (Arctic Refuge, Refuge).

F.1.1 Birds of Arctic Refuge

A total of 201 bird species have been recorded on Arctic Refuge. This list describes their status and abundance. Many birds migrate outside of the Refuge in the winter, so unless otherwise noted, the information is for spring, summer, or fall. Bird names and taxonomic classification follow American Ornithologists' Union (1998).

F.1.1.1 Definitions of classifications used

Regions of the Refuge

- Coastal Plain – The area between the coast and the Brooks Range. This area is sometimes split into coastal areas (lagoons, barrier islands, and Beaufort Sea) and inland areas (uplands near the foothills of the Brooks Range).
- Brooks Range – The mountains, valleys, and foothills north and south of the Continental Divide.
- South Side – The foothills, taiga, and boreal forest south of the Brooks Range.

Status

- Permanent Resident – Present throughout the year and breeds in the area.
- Summer Resident – Only present from May to September.
- Migrant – Travels through on the way to wintering or breeding areas.
- Breeder – Documented as a breeding species.
- Visitor – Present as a non-breeding species.
- * – Not documented.

Abundance

- Abundant – Very numerous in suitable habitats.
- Common – Very likely to be seen or heard in suitable habitats.
- Fairly Common – Numerous but not always present in suitable habitats.
- Uncommon – Occurs regularly but not always observed because of lower abundance or secretive behaviors.
- Rare – Occurs regularly but in very small numbers so not commonly observed.
- Casual – Beyond its normal range but irregularly observed.
- Accidental – Far from its normal range. Further observations unlikely.

F.1.1.2 List of Birds

GEESE, SWANS, DUCKS (ORDER: Anseriformes FAMILY: Anatidae)

Greater white-fronted goose (*Anser albifrons*) – Common spring/fall migrant and uncommon breeder on coastal plain. Rare migrant in Brooks Range. Common spring migrant on south side.

Snow goose (*Chen caerulescens*) – Common spring migrant, rare summer visitor, and abundant fall migrant on coastal plain. Uncommon spring migrant on south side.

Ross's goose (*Chen rossii*) – Casual spring migrant on coastal plain. Hypothetical fall migrant (*).

Brant (*Branta bernicla*) – Uncommon breeder and common migrant to coast.

Cackling goose (*Branta hutchinsii*; formerly a subspecies of Canada goose) – Common breeder and migrant on coastal plain.

Canada goose (*Branta canadensis*) – Uncommon breeder on south side. Rare migrant in Brooks Range.

Trumpeter swan (*Cygnus buccinators*) – Casual breeder and visitor on coastal plain. Uncommon on south side, where it may breed (*).

Tundra swan (*Cygnus columbianus*) – Common breeder on coastal plain. Uncommon migrant on south side.

Gadwall (*Anas strepera*) – Casual visitor on coastal plain.

Eurasian wigeon (*Anas penelope*) – Casual visitor on coastal plain.

American wigeon (*Anas americana*) – Uncommon migrant on coastal plain. Uncommon in Brooks Range, where it may breed (*). Common breeder on south side.

Mallard (*Anas platyrhynchos*) – Rare breeder on inland coastal plain. Uncommon elsewhere on coastal plain, in Brooks Range, and on south side.

Northern shoveler (*Anas clypeata*) – Uncommon visitor on coastal plain and south side. May breed in these areas (*). Rare visitor in Brooks Range.

Northern pintail (*Anas acuta*) – Common breeder and migrant on coastal plain and on south side. Rare visitor in Brooks Range.

Green-winged teal (*Anas crecca*) – Uncommon breeder on inland coastal plain. Rare breeder and migrant along coast. Common in Brooks Range, where it may breed (*). Uncommon breeder on south side.

Canvasback (*Aythya valisineria*) – Casual visitor on coastal plain and south side.

Redhead (*Aythya americana*) – Casual visitor on south side.

Ring-necked duck (*Aythya collaris*) – Casual visitor in Brooks Range. Likely rare visitor on south side (*).

Greater scaup (*Aythya marila*) – Uncommon migrant and visitor along coast. Rare breeder on inland coastal plain and in Brooks Range. Common visitor on south side.

Lesser scaup (*Aythya affinis*) – Rare breeder and visitor on inland areas of coastal plain. Uncommon breeder in Brooks Range. Common summer resident on south side, where it likely breeds (*).

Steller's eider (*Polysticta stelleri*) – Rare visitor along coast.

Spectacled eider (*Somateria fischeri*) – Rare breeder and uncommon visitor along coast.

King eider (*Somateria spectabilis*) – Fairly common breeder and uncommon migrant along coast.

Common eider (*Somateria mollissima*) – Common breeder on coastal islands. Common migrant along coast.

Harlequin duck (*Histrionicus histrionicus*) – Rare breeder on inland coastal plain. Uncommon breeder in Brooks Range. Rare visitor on south side.

Surf scoter (*Melanitta perspicillata*) – Uncommon migrant along coast. Uncommon on the inland coastal plain and south side. May breed in both areas (*).

White-winged scoter (*Melanitta fusca*) – Rare on inland lakes of coastal plain. Common migrant along coast. Rare visitor in Brooks Range. Common visitor on south side. May breed in all areas (*).

Black scoter (*Melanitta americana*) – Uncommon migrant along coast.

Long-tailed duck (*Clangula hyemalis*) – Common breeder on coastal plain. Abundant fall migrant along coast. Uncommon in Brooks Range, where it may breed (*). Common visitor and uncommon breeder on south side.

Bufflehead (*Bucephala albeola*) – Rare visitor to Brooks Range and south side.

Common goldeneye (*Bucephala clangula*) – Rare visitor to all areas. May breed on south side (*).

Barrow's goldeneye (*Bucephala islandica*) – Casual visitor on south side.

Smew (*Mergellus albellus*) – Accidental visitor on coastal plain.

Common merganser (*Mergus merganser*) – Casual visitor on inland coastal plain and in Brooks Range. Uncommon visitor on south side.

Red-breasted merganser (*Mergus serrator*) – Rare breeder and fairly common migrant on coast. Fairly common breeder on inland coastal plain. Fairly common breeder in Brooks Range. Common on south side, where it may breed (*).

GROUSE, PTARMIGAN (ORDER: Galliformes FAMILY: Phasianidae)

Ruffed grouse (*Bonasa umbellus*) – Rare permanent resident on south side, where it may breed (*).

Spruce grouse (*Falcapennis Canadensis*) – Uncommon permanent resident on south side.

Willow ptarmigan (*Lagopus lagopus*) – Uncommon permanent resident along coast. Common to abundant permanent resident elsewhere on Refuge.

Rock ptarmigan (*Lagopus muta*) – Common permanent resident in all areas of Refuge.

Sharp-tailed grouse (*Tympanuchus phasianellus*) – Annual populations vary. Uncommon permanent resident on south side, where it may breed (*).

LOONS (ORDER: Gaviiformes FAMILY: Gaviidae)

Red-throated loon (*Gavia stellata*) – Fairly common breeder and migrant along coast. Rare breeder in Brooks Range and on south side.

Pacific loon (*Gavia pacifica*) – Common breeder on coastal plain and south side. Common migrant along coast. Uncommon breeder in Brooks Range.

Common loon (*Gavia immer*) – Rare visitor along coast. Rare on south side, where it may breed (*).

Yellow-billed loon (*Gavia adamsii*) – Uncommon migrant to coast. Rare migrant on inland coastal plain. Rare visitor in Brooks Range and rare breeder on larger lakes in this area.

GREBES (ORDER: Podicipediformes FAMILY: Podicipedidae)

Horned grebe (*Podiceps auritus*) – Casual visitor on coastal plain and in Brooks Range. Uncommon on inland coastal plain and south side. May breed in both areas (*).

Red-necked grebe (*Podiceps grisegena*) – Casual visitor on coastal plain and in Brooks Range. Rare on south side, where it may breed (*).

FULMARS, SHEARWATERS (ORDER: Procellariiformes FAMILY: Procellariidae)

Northern fulmar (*Fulmarus glacialis*) – Rare offshore visitor.

Short-tailed shearwater (*Puffinus tenuirostris*) – Rare visitor to coast, mostly offshore.

OSPREY (ORDER: Accipitriformes FAMILY: Pandionidae)

Osprey (*Pandion haliaetus*) – Accidental visitor on coastal plain. Rare visitor in Brooks Range and on south side.

HAWKS, EAGLES, RELATIVES (ORDER: Accipitriformes FAMILY: Accipitridae)

Bald eagle (*Haliaeetus leucocephalus*) – Casual visitor on coastal plain and in Brooks Range. Uncommon breeder on south side.

Northern harrier (*Circus cyaneus*) – Uncommon summer resident on coastal plain. May breed on inland coastal plain (*). Uncommon breeder in Brooks Range. Uncommon visitor on south side.

Sharp-shinned hawk (*Accipiter striatus*) – Casual visitor on coastal plain and in Brooks Range. Uncommon on south side, where it may breed (*).

Northern goshawk (*Accipiter gentilis*) – Casual visitor on inland coastal plain. Uncommon breeder on south side.

Swainson's hawk (*Buteo swainsoni*) – Casual breeder on south side.

Red-tailed hawk (*Buteo jamaicensis*) – Rare visitor on south side, where it may breed (*).

Rough-legged hawk (*Buteo lagopus*) – Rare visitor along coast. Uncommon breeder on inland areas of coastal plain. Uncommon breeder in Brooks Range. Rare breeder on south side.

Golden eagle (*Aquila chrysaetos*) – Fairly common visitor on coastal plain. Rare breeder on inland coastal plain. Fairly common breeder in Brooks Range. Uncommon breeder on south side.

FALCONS (ORDER: Falconiformes FAMILY: Falconidae)

American kestrel (*Falco sparverius*) – Casual visitor on coastal plain. Uncommon breeder in Brooks Range. Common breeder on south side.

Merlin (*Falco columbarius*) – Rare visitor on coastal plain. Uncommon in Brooks Range and on south side. May breed in all areas (*).

Gyr falcon (*Falco rusticolus*) – Uncommon permanent resident on inland coastal plain, in Brooks Range, and on south side. Rare visitor to coast.

Peregrine falcon (*Falco peregrines*) – Rare breeder and uncommon visitor on coastal plain. Fairly common breeder in Brooks Range and on south side.

COOTS, RAILS (ORDER: Gruiformes FAMILY: Rallidae)

American coot (*Fulica americana*) – Rare visitor on south side.

CRANES (ORDER: Gruiformes FAMILY: Gruidae)

Sandhill crane (*Grus Canadensis*) – Rare breeder and uncommon summer resident on coastal plain. Rare visitor in Brooks Range. Uncommon on south side, where it may breed (*).

PLOVERS, LAPWINGS (ORDER: Charadriiformes FAMILY: Charadriidae)

Black-bellied plover (*Pluvialis squatarola*) – Rare breeder and migrant on coastal plain. Fairly common fall migrant along coast. Rare visitor in Brooks Range.

American golden-plover (*Pluvialis dominica*) – Common breeder on coastal plain and in Brooks Range. Rare visitor on south side.

Semipalmated plover (*Charadrius semipalmatus*) – Uncommon breeder on coastal islands. Fairly common breeder on inland coastal plain. Rare visitor elsewhere on coastal plain. Common breeder in Brooks Range and on south side.

Killdeer (*Charadrius vociferous*) – Casual visitor on coastal plain.

Eurasian dotterel (*Charadrius morinellus*) – Casual visitor on coastal plain.

SHOREBIRDS (ORDER: Charadriiformes FAMILY: Scolopacidae)

Spotted sandpiper (*Actitis macularius*) – Uncommon breeder on inland coastal plain. Common breeder in Brooks Range and on south side.

Solitary sandpiper (*Tringa solitaria*) – Rare in Brooks Range, where it may breed (*). Uncommon breeder on south side.

Wandering tattler (*Tringa incana*) – Uncommon breeder on inland coastal plain. Common breeder in Brooks Range. Fairly common breeder on south side.

Lesser yellowlegs (*Tringa flavipes*) – Casual visitor along coast. Uncommon in Brooks Range, where it may breed (*). Common breeder on south side.

Upland sandpiper (*Bartramia longicauda*) – Fairly common breeder on inland coastal plain, in Brooks Range, and on south side.

Whimbrel (*Numenius phaeopus*) – Uncommon visitor to coast and in Brooks Range. Rare breeder on inland coastal plain. Rare visitor and breeder on south side.

Black-tailed godwit (*Limosa limosa*) – Accidental visitor to coast.

Hudsonian godwit (*Limosa haemastica*) – Casual visitor on coastal plain.

Bar-tailed godwit (*Limosa lapponica*) – Uncommon on coastal plain, where it may breed (*).

Ruddy turnstone (*Arenaria interpres*) – Fairly common breeder on coast and uncommon breeder on inland coastal plain. Rare visitor in Brooks Range.

Surfbird (*Aphriza virgata*) – Rare breeder in Brooks Range.

Red knot (*Calidris canutus*) – Rare migrant along coast.

Sanderling (*Calidris alba*) – Rare breeder on coastal plain. Rare spring and uncommon fall migrant along coast. Casual visitor on south side.

Semipalmated sandpiper (*Calidris pusilla*) – Abundant breeder in coastal areas and common breeder on inland coastal plain. Common fall migrant along coast. Rare visitor in Brooks Range and on south side.

Western sandpiper (*Calidris mauri*) – Rare on coastal plain, where it may breed (*). Uncommon fall migrant along coast.

Red-necked stint (*Calidris ruficollis*) – Casual visitor on coast.

Least sandpiper (*Calidris minutilla*) – Rare visitor on coastal plain. Uncommon breeder in Brooks Range. Common breeder on south side.

White-rumped sandpiper (*Calidris fuscicollis*) – Rare breeder and spring migrant, and uncommon fall migrant, on coastal plain. Casual visitor on south side.

Baird's sandpiper (*Calidris bairdii*) – Uncommon breeder on coastal plain and in Brooks Range. Common migrant on south side.

Pectoral sandpiper (*Calidris melanotos*) – Abundant breeder on coastal plain. Abundant fall migrant along coast. Fairly common migrant in Brooks Range and on south side.

Sharp-tailed sandpiper (*Calidris acuminata*) – Casual migrant on coast.

Dunlin (*Calidris alpina*) – Uncommon breeder and fall migrant along coast. Rare migrant on south side.

Stilt sandpiper (*Calidris himantopus*) – Uncommon breeder and fall migrant on coastal plain.

Buff-breasted sandpiper (*Tryngites subruficollis*) – Uncommon breeder and migrant on coastal plain.

Ruff (*Philomachus pugnax*) – Casual visitor on coastal plain.

Long-billed dowitcher (*Limnodromus scolopaceus*) – Uncommon breeder and fairly common summer visitor on coastal plain. Common fall migrant along coast. Uncommon migrant on south side.

Wilson's snipe (*Gallinago delicata*) – Rare visitor on coastal plain. Fairly common in Brooks Range. May breed in both these areas (*). Common breeder on south side.

Wilson's phalarope (*Phalaropus tricolor*) – Accidental visitor on coastal plain and in Brooks Range.

Red-necked phalarope (*Phalaropus lobatus*) – Common breeder on coastal plain and south side. Common to abundant fall migrant along coast. Uncommon breeder in Brooks Range.

Red phalarope (*Phalaropus fulicarius*) – Fairly common breeder in coastal areas, east to Jago delta. Uncommon elsewhere on coastal plain. Uncommon fall migrant along coast.

GULLS, TERNS (ORDER: Charadriiformes FAMILY: Laridae)

Black-legged kittiwake (*Rissa tridactyla*) – Rare visitor along coast, mostly offshore.

Ivory gull (*Pagophila eburnean*) – Rare migrant along coast.

Sabine's gull (*Xema sabini*) – Uncommon breeder and migrant along coast.

Bonaparte's gull (*Chroicocephalus philadelphia*) – Casual visitor on coastal plain and in Brooks Range. Uncommon visitor on south side, where it may breed (*).

Ross' gull (*Rhodostethia rosea*) – Rare migrant along coast.

Mew gull (*Larus canus*) – Rare visitor and breeder on coastal plain. Common breeder in Brooks Range and on south side.

Herring gull (*Larus argentatus*) – Rare migrant and visitor on coastal plain and in Brooks Range. Uncommon breeder on south side.

Thayer's gull (*Larus thayeri*) – Rare visitor on coastal plain.

Slaty-backed gull (*Larus schistisagus*) – Casual visitor along coast.

Glaucous-winged gull (*Larus glaucescens*) – Casual visitor in Brooks Range and on the coast.

Glaucous gull (*Larus hyperboreus*) – Common breeder and abundant summer resident along coast. Uncommon breeder on inland coastal plain. Common breeder in Brooks Range.

Caspian tern (*Hydroprogne caspia*) – Accidental visitor on the coast.

Arctic tern (*Sterna paradisaea*) – Uncommon breeder on coast. Rare breeder on inland coastal plain. Common summer resident on coastal plain and Brooks Range (breeding not documented). Uncommon visitor on south side.

JAEGERS (ORDER: Charadriiformes FAMILY: Stercorariidae)

Pomarine jaeger (*Stercorarius pomarinus*) – Common spring migrant, summer visitor, and occasional common breeder on coast. Breeding occurs in years of high lemming populations. Common migrant in Brooks Range.

Parasitic jaeger (*Stercorarius parasiticus*) – Common summer resident and uncommon breeder on coastal plain and in Brooks Range. Uncommon migrant on south side, where it may breed (*).

Long-tailed jaeger (*Stercorarius longicaudus*) – Fairly common breeder on inland coastal plain. Common summer resident and rare breeder along coast. Uncommon breeder in Brooks Range. Rare visitor to south side.

ALCIDS (ORDER: Charadriiformes FAMILY: Alcidae)

Thick-billed murre (*Uria lomvia*) – Rare migrant along coast.

Black guillemot (*Cephus grylle*) – Uncommon summer resident and rare breeder along coast.

Least auklet (*Aethia pusilla*) – Casual visitor along coast.

Horned puffin (*Fratercula corniculata*) – Rare visitor along coast.

Tufted puffin (*Fratercula cirrhata*) – Casual visitor along coast.

OWLS (ORDER: Strigiformes FAMILY: Strigidae)

Great horned owl (*Bubo virginianus*) – Uncommon permanent resident on south side, where it may breed (*).

Snowy owl (*Bubo scandiacus*) – Annual populations vary. Common to occasional rare breeder on coastal plain. Breeding occurs in years of high lemming populations. Rare visitor in Brooks Range.

Northern hawk-owl (*Surnia ulula*) – Uncommon permanent resident on south side.

Great grey owl (*Strix nebulosa*) – Rare permanent resident on south side, where it may breed (*).

Short-eared owl (*Asio flammeus*) – Uncommon to common breeder on coastal plain. Breeding occurs in years of high lemming populations. Fairly common in Brooks Range. Rare summer visitor on south side, where it may breed (*).

Boreal owl (*Aegolius funereus*) – Uncommon permanent resident on south side, where it may breed (*).

GOATSUCKERS (ORDER: Caprimulgiformes FAMILY: Caprimulgidae)

Common nighthawk (*Chordeiles minor*) – Casual visitor on coastal plain.

HUMMINGBIRDS (ORDER: Apodiformes FAMILY: Trochilidae)

Ruby-throated hummingbird (*Archilochus colubris*) – Accidental visitor in Brooks Range.

Rufous hummingbird (*Selasphorus rufus*) – Accidental visitor on coastal plain.

KINGFISHERS (ORDER: Coraciiformes FAMILY: Alcedinidae)

Belted kingfisher (*Megaceryle alcyon*) – Casual visitor on coastal plain. Uncommon summer resident on south side, where it may breed (*).

WOODPECKERS (ORDER: Piciformes FAMILY: Picidae)

Downy woodpecker (*Picoides pubescens*) – Rare permanent resident on south side, where it may breed (*).

Hairy woodpecker (*Picoides villosus*) – Rare permanent resident on south side, where it may breed (*).

American three-toed woodpecker (*Picoides dorsalis*) – Uncommon breeder on south side.

Black-backed woodpecker (*Picoides arcticus*) – Rare permanent resident on south side, where it may breed (*).

Northern flicker (*Colaptes auratus*) – Uncommon breeder in Brooks Range and on south side.

TYRANT FLYCATCHERS (ORDER: Passeriformes FAMILY: Tyrannidae)

Olive-sided flycatcher (*Contopus cooperi*) – Uncommon on south side, where it may breed (*).

Western wood-peewee (*Contopus sordidulus*) – Rare on the south side, where it may breed (*).

Yellow-bellied flycatcher (*Empidonax flaviventris*) – Casual visitor on the south side.

Alder flycatcher (*Empidonax alnorum*) – Common breeder on south side.

Hammond's flycatcher (*Empidonax hammondi*) – Accidental visitor on coastal plain. Uncommon on south side, where it may breed (*).

Eastern phoebe (*Sayornis phoebe*) – Accidental visitor on coastal plain.

Say's phoebe (*Sayornis saya*) – Rare visitor on coastal plain. Fairly common breeder in Brooks Range.

Eastern kingbird (*Tyrannus tyrannus*) – Accidental visitor on coastal plain and in Brooks Range.

SHRIKES (ORDER: Passeriformes FAMILY: Laniidae)

Northern shrike (*Lanius excubitor*) – Rare visitor on inland coastal plain, where it may breed (*). Fairly common breeder in Brooks Range and on south side.

CORVIDS (ORDER: Passeriformes FAMILY: Corvidae)

Gray jay (*Perisoreus canadensis*) – Casual visitor on coastal plain. Uncommon breeder in Brooks Range. Common permanent resident on south side.

Common raven (*Corvus corax*) – Uncommon permanent resident and possible rare breeder (*) on coastal plain. Uncommon permanent resident in Brooks Range and on south side, where it may breed (*).

LARKS (ORDER: Passeriformes FAMILY: Alaudidae)

Horned lark (*Eremophila alpestris*) – Rare breeder inland and visitor elsewhere on coastal plain. Fairly common breeder in Brooks Range. Rare visitor on south side.

SWALLOWS (ORDER: Passeriformes FAMILY: Hirundinidae)

Tree swallow (*Tachycineta bicolor*) – Casual visitor on coastal plain. Uncommon on south side, where it may breed (*).

Violet-green swallow (*Tachycineta thalassina*) – Casual visitor on coastal plain. Uncommon breeder in Brooks Range and on south side.

Bank swallow (*Riparia riparia*) – Casual visitor on coastal plain. Uncommon in Brooks Range and on south side, where it may breed (*).

Cliff swallow (*Petrochelidon pyrrhonota*) – Rare visitor on coastal plain, where it may breed (*). Fairly common breeder in Brooks Range and on south side.

Barn swallow (*Hirundo rustica*) – Casual visitor on coastal plain.

CHICKADEES (ORDER: Passeriformes FAMILY: Paridae)

Black-capped chickadee (*Poecile atricapillus*) – Uncommon permanent resident on south side.

Boreal chickadee (*Poecile hudsonicus*) – Rare visitor in Brooks Range. Uncommon permanent resident on south side.

Gray-headed chickadee (*Poecile cinctus*) – Uncommon permanent resident in Brooks Range and on south side.

NUTHATCHES (ORDER: Passeriformes FAMILY: Sittidae)

Red-breasted nuthatch (*Sitta canadensis*) – Casual visitor on south side.

DIPPERS (ORDER: Passeriformes FAMILY: Cinclidae)

American dipper (*Cinclus mexicanus*) – Uncommon permanent resident throughout Refuge, except along coast.

KINGLETS (ORDER: Passeriformes FAMILY: Regulidae)

Ruby-crowned kinglet (*Regulus calendula*) – Uncommon visitor in Brooks Range. Common breeder on south side.

OLD WORLD WARBLERS (ORDER: Passeriformes FAMILY: Phylloscopidae)

Arctic warbler (*Phylloscopus borealis*) – Rare in Brooks Range, where it may breed (*). Uncommon breeder on south side.

THRUSHES, ALLIES (ORDER: Passeriformes FAMILY: Turdidae)

Bluethroat (*Luscinia svecica*) – Rare breeder on inland coastal plain. Rare visitor in Brooks Range.

Northern wheatear (*Oenanthe oenanthe*) – Rare visitor on coastal plain. Uncommon breeder in Brooks Range.

Mountain bluebird (*Sialia currucoides*) – Rare breeder in recent burns on south side.

Townsend's solitaire (*Myadestes townsendi*) – Uncommon visitor in Brooks Range. Uncommon on south side, where it may breed (*).

Gray-cheeked thrush (*Catharus minimus*) – Rare visitor on coastal plain and in Brooks Range. Common breeder on south side.

Swainson's thrush (*Catharus ustulatus*) – Common breeder on south side.

Hermit thrush (*Catharus guttatus*) – Accidental visitor on coastal plain. Uncommon on south side, where it may breed (*).

American robin (*Turdus migratorius*) – Rare visitor to coast. Uncommon breeder on inland coastal plain. Common breeder in Brooks Range. Abundant breeder on south side.

Varied thrush (*Ixoreus naevius*) – Casual visitor on coastal plain and in Brooks Range. Common breeder on south side.

WAGTALIS, PIPITS (ORDER: Passeriformes FAMILY: Motacillidae)

Eastern yellow wagtail (*Motacilla tschutschensis*) – Fairly common breeder on coastal plain. Rare visitor on south side.

American pipit (*Anthus rubescens*) – Rare breeder and uncommon fall migrant on coastal plain. Abundant breeder in Brooks Range.

WAXWINGS (ORDER: Passeriformes FAMILY: Bombycillidae)

Bohemian waxwing (*Bombycilla garrulus*) – Casual visitor in Brooks Range. Fairly common summer resident on south side, where it may breed (*).

Cedar waxwing (*Bombycilla cedrorum*) – Accidental visitor on Coastal Plain.

LONGSPURS, SNOW BUNTINGS (ORDER: Passeriformes FAMILY: Calcariidae)

Lapland longspur (*Calcarius lapponicus*) – Abundant breeder on coastal plain and in Brooks Range. Uncommon migrant on south side.

Smith's longspur (*Calcarius pictus*) – Rare visitor on coastal plain. Fairly common breeder in Brooks Range and on south side.

Snow bunting (*Plectrophenax nivalis*) – Common breeder along coast and in Brooks Range.

WOOD WARBLERS (ORDER: Passeriformes FAMILY: Parulidae)

Tennessee warbler (*Oreothlypis peregrina*) – Casual visitor on the south side.

Orange-crowned warbler (*Oreothlypis celata*) – Casual visitor on coastal plain. Fairly common breeder on south side.

Yellow warbler (*Dendroica petechia*) – Rare visitor to coast. Rare breeder on inland coastal plain. Uncommon breeder in Brooks Range. Fairly common breeder on south side.

Yellow-rumped warbler (*Dendroica coronata*) – Casual visitor on coastal plain. Uncommon in Brooks Range. Common breeder on south side.

Blackpoll warbler (*Dendroica striata*) – Uncommon on south side, where it may breed (*).

Northern waterthrush (*Parkesia noveboracensis*) – Casual visitor on coastal plain. Uncommon on south side, where it may breed (*).

Wilson's warbler (*Wilsonia pusilla*) – Rare visitor on coastal plain and in Brooks Range. Uncommon breeder on south side.

SPARROWS, BUNTINGS (ORDER: Passeriformes FAMILY: Emberizidae)

American tree sparrow (*Spizella arborea*) – Rare visitor to coast. Common breeder on inland coastal plain. Abundant breeder in Brooks Range and on south side.

Chipping sparrow (*Spizella passerina*) – Casual visitor on coastal plain. Rare on south side, where it may breed (*).

Clay-colored sparrow (*Spizella pallida*) – Accidental visitor on coastal plain.

Savannah sparrow (*Passerculus sandwichensis*) – Common breeder on coastal plain, in Brooks Range, and on south side.

Fox sparrow (*Passerella iliaca*) – Rare visitor to coast. Rare breeder on inland coastal plain. Common breeder in Brooks Range and on south side.

Lincoln's sparrow (*Melospiza lincolnii*) – Rare visitor on south side.

White-throated sparrow (*Zonotrichia albicollis*) – Casual visitor on coastal plain.

White-crowned sparrow (*Zonotrichia leucophrys*) – Rare visitor along coast. Uncommon breeder on inland coastal plain. Common breeder in Brooks Range. Abundant breeder on south side.

Golden-crowned sparrow (*Zonotrichia atricapilla*) – Rare in Brooks Range, where it may breed (*). Uncommon breeder on south side.

Dark-eyed junco (*Junco hyemalis*) – Rare visitor on coastal plain. Uncommon breeder in Brooks Range. Abundant breeder on south side.

CARDINALS (ORDER: Passeriformes FAMILY: Cardinalidae)

Western tanager (*Piranga ludoviciana*) – Accidental visitor in Brooks Range.

BLACKBIRDS (ORDER: Passeriformes FAMILY: Icteridae)

Red-winged blackbird (*Agelaius phoeniceus*) – Casual visitor on coastal plain and in Brooks Range.

Rusty blackbird (*Euphagus carolinus*) – Casual visitor on coastal plain. Rare visitor in Brooks Range. Uncommon breeder on south side

Brown-headed cowbird (*Molothrus ater*) – Casual visitor on coastal plain.

FINCHES (ORDER: Passeriformes FAMILY: Fringillidae)

Gray-crowned rosy-finch (*Leucosticte tephrocotis*) – Fairly common breeder in Brooks Range. Uncommon summer resident on south side, where it may breed (*).

Pine grosbeak (*Pinicola enucleator*) – Uncommon permanent resident on south side, where it may breed (*).

White-winged crossbill (*Loxia leucoptera*) – Common permanent resident on south side.

Common redpoll (*Acanthis flammea*) – Common breeder on coastal plain, in Brooks Range, and on south side. Permanent resident on south side.

Hoary redpoll (*Acanthis hornemanni*) – Common breeder on coastal plain, in Brooks Range, and on south side. Permanent resident on south side.

Pine siskin (*Spinus pinus*) – Casual visitor on coastal plain. Rare visitor on south side.

F.1.2 Mammals in Arctic Refuge and Adjacent Waters

Data sources: Bee and Hall 1956, Wilson and Ruff 1999, and MacDonald and Cook 2009.
Scientific and common names follow MacDonald and Cook 2009.

Table F-1. Mammals in Arctic Refuge and Adjacent Waters

COMMON NAME	SCIENTIFIC CLASSIFICATION	DISTRIBUTION		STATUS
		Arctic Refuge	World	
SHREWS AND MOLES	Order SORICOMORPHA			
Shrews	Family Soricidae			
Cinereus shrew	<i>Sorex cinereus</i>	Unclear	Arctic America	Common
Pygmy shrew	<i>Sorex hoyi</i>	Unclear	Arctic America	Common
Dusky shrew	<i>Sorex monticolus</i>	Unclear	North America	Common
Tundra shrew	<i>Sorex tundrensis</i>	Unclear	Circumpolar	Common
Barren ground shrew	<i>Sorex ugyunak</i>	Local	Arctic America	Common
Alaska tiny shrew	<i>Sorex yukonicus</i>	Unclear	Alaska	Rare
RODENTS	Order RODENTIA			
Mice, Rats, Voles, and Lemmings	Family Cricetidae (Muridae)			
Collared lemming	<i>Dicrostonyx groenlandicus</i>	Local	Arctic America	Variable
Brown lemming	<i>Lemmus trimucronatus</i>	Wide	North America	Variable
Long-tailed vole	<i>Microtus longicaudus</i>	Unclear	North America	Variable
Singing vole	<i>Microtus miurus</i>	Wide	North America	Variable
Root (tundra) vole	<i>Microtus oeconomus</i>	Wide	Circumpolar	Variable
Meadow vole	<i>Microtus pennsylvanicus</i>	Unclear	North America	Variable
Taiga vole	<i>Microtus xanthognathus</i>	Limited	North America	Variable
Northern red-backed vole	<i>Myodes rutilus</i>	Wide	Circumpolar	Variable
Common muskrat	<i>Ondatra zibethicus</i>	Wide	North America	Common
Northern bog lemming	<i>Synaptomys borealis</i>	Unclear	North America	Variable
Squirrels	Family Sciuridae			
Alaska marmot	<i>Marmota broweri</i>	Limited	North Alaska	Uncommon
Arctic ground squirrel	<i>Spermophilus parryi</i>	Wide	North America	Common
Red squirrel	<i>Tamiasciurus hudsonicus</i>	Local	North America	Uncommon
Porcupines	Family Erethizontidae			
North American porcupine	<i>Erethizon dorsatum</i>	Wide	North America	Common

COMMON NAME	SCIENTIFIC CLASSIFICATION	DISTRIBUTION		STATUS
		Arctic Refuge	World	
Beavers	Family Castoridae			
American beaver	<i>Castor canadensis</i>	Wide	North America	Common
HARES, RABBITS, PIKA	Order LAGOMORPHA			
Hares and Rabbits	Family Leporidae			
Snowshoe hare	<i>Lepus americanus</i>	Wide	North America	Variable
CARNIVORES	Order CARNIVORA			
Weasels	Family Mustelidae			
Wolverine	<i>Gulo gulo</i>	Wide	Circumpolar	Uncommon
North American river otter	<i>Lontra canadensis</i>	Wide	North America	Common
American marten	<i>Martes americana</i>	Wide	North America	Uncommon
Ermine	<i>Mustela erminea</i>	Wide	Circumpolar	Common
Least weasel	<i>Mustela nivalis</i>	Wide	Circumpolar	Uncommon
American mink	<i>Neovison vison</i>	Local	North America	Variable
Cats	Family Felidae			
Canadian lynx	<i>Lynx canadensis</i>	Wide	North America	Variable
Dogs	Family Canidae			
Wolf	<i>Canis lupus</i>	Wide	Circumpolar	Common
Coyote	<i>Canis latrans</i>	Limited	North America	Common
Arctic fox	<i>Vulpes lagopus</i>	Local	Circumpolar	Uncommon
Red Fox	<i>Vulpes vulpes</i>	Wide	Circumpolar	Common
Bears	Family Ursidae			
American black bear	<i>Ursus americanus</i>	Wide	North America	Common
Brown (grizzly) bear	<i>Ursus arctos</i>	Wide	Circumpolar	Common
Polar Bear	<i>Ursus maritimus</i>	Local	Circumpolar	Threatened
Walrus	Family Odobenidae			
Walrus	<i>Odobenus rosmarus</i>	Limited	Circumpolar	Special Concern
Hair seals	Family Phocidae			
Bearded seal	<i>Erignathus barbatus</i>	Limited	Circumpolar	Comon
Spotted seal	<i>Phoca largha</i>	Limited	North America	Common
Ringed seal	<i>Pusa hispida</i>	Limited	Circumpolar	Common

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COMMON NAME	SCIENTIFIC CLASSIFICATION	DISTRIBUTION		STATUS
		Arctic Refuge	World	
WHALES	Order CETACEA			
Right whales	Family Balaenidae			
Bowhead whale	<i>Balaena mysticetus</i>	Limited	North America	Endangered
Gray whales	Family Eschrichtiidae			
Gray whale	<i>Eschrichtius robustus</i>	Limited	North Pacific	Special Concern
Beluga and Narwhal	Family Monodontidae			
Beluga whale	<i>Delphinapterus leucas</i>	Limited	Circumpolar	Common
EVEN-TOED UNGULATES	Order ARTIODACTYLA			
Deer	Family Cervidae			
Moose	<i>Alces americanus</i>	Wide	North America	Common
Caribou	<i>Rangifer tarandus</i>	Wide	Circumpolar	Common
Cows, Sheep, and Goats	Family Bovidae			
Dall's sheep	<i>Ovis dalli</i>	Local	North America	Common
Muskox	<i>Ovibos moschatus</i>	Local	North America	Uncommon
PRIMATES	Order PRIMATES			
Apes and Humans	Family Hominidae			
Humans	<i>Homo sapiens</i>	Limited	Worldwide	Common



F.1.3 Fish of Arctic Refuge

This table includes only those species commonly found in coastal and inland areas. For data sources, refer to the species descriptions in Chapter 4, Section 4.3.5. Life history column contains information on whether a species is found north (N) or south (S) of the Brooks Range, and is freshwater resident (F), anadromous (A), or marine (M).

Table F-2. Fish of Arctic Refuge

ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME	LIFE HISTORY
Cypriniformes	Catostomidae	Longnose sucker	<i>Catostomus catostomus</i>	S, F
	Cyprinidae	Lake chub	<i>Couesius plumbeus</i>	S, F
Clupeiformes	Clupeidae	Pacific herring	<i>Clupea harengus Pallas</i>	N, M
Esociformes	Esocidae	Northern pike	<i>Esox lucius</i>	S, F
Gadiformes	Gadidae	Arctic cod	<i>Boreogadus saida</i>	N, M
		Saffron cod	<i>Eleginus gracilis</i>	N, M
	Lotidae	Burbot	<i>Lota lota</i>	N and S, F
Gasterosteiformes	Gasterosteidae	Ninespine stickleback	<i>Pungitius pungitius</i>	N, F and A
		Threespine stickleback	<i>Gasterosteus aculeatus</i>	N, M
Osmeriformes	Osmeridae	Capelin	<i>Mallotus villosus</i>	N, M
		Rainbow smelt	<i>Osmerus mordax</i>	N, A
Perciformes	Ammodytidae	Pacific sand lance	<i>Ammodytes hexapterus</i>	N, M
	Stichaeidae	Slender eelblenny	<i>Lumpenus fabricii</i>	N, M
		Stout eelblenny	<i>Lumpenus medius</i>	N, M
	Zoarcidae	Canadian eelpout	<i>Lycodes polaris</i>	N, M
		Pale eelpout	<i>Lycodes pallidus</i>	N, M
		Threespot eelpout	<i>Lycodes rossi</i>	N, M
Percopsiformes	Percopsidae	Trout-perch	<i>Percopsis omiscomaycus</i>	S, F
Petromyzontiformes	Petromyzontidae	Arctic lamprey	<i>Lethenteron camtschaticum</i>	S, A

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ORDER	FAMILY	COMMON NAME	SCIENTIFIC NAME	LIFE HISTORY
Pleuronectiformes	Pleuronectidae	Arctic flounder	<i>Liopsetta glacialis</i>	N, M
Salmoniformes	Salmonidae	Arctic char	<i>Salvelinus alpinus</i>	N and S, F
		Arctic cisco	<i>Coregonus autumnalis</i>	N, A
		Arctic grayling	<i>Thymallus arcticus</i>	N and S, F
		Broad whitefish	<i>Coregonus nasus</i>	N, A and S, F
		Chinook salmon	<i>Oncorhynchus tshawytscha</i>	N and S, A
		Chum salmon	<i>Oncorhynchus keta</i>	N and S, A
		Coho salmon	<i>Oncorhynchus kisutch</i>	N and S, A
		Dolly Varden	<i>Salvelinus malma</i>	N, A
		Humpback whitefish	<i>Coregonus pidschian</i>	N, A and S, F
		Lake trout	<i>Salvelinus namaycush</i>	N and S, F
		Least cisco	<i>Coregonus sardinella</i>	N, A and S, F
		Pink salmon	<i>Oncorhynchus gorbuscha</i>	N, A
		Round whitefish	<i>Prosopium cylindraceum</i>	N and S, F
		Inconnu (sheefish)	<i>Stenodus leucichthys</i>	S, F
		Sockeye Salmon	<i>Oncorhynchus nerka</i>	N, A
Scorpaeniformes	Cottidae	Arctic sculpin	<i>Myoxocephalus scorpioides</i>	N, M
		Arctic staghorn sculpin	<i>Gymnocanthus tricuspis</i>	N, M
		Fourhorn sculpin	<i>Myoxocephalus quadricornis</i>	N, M
		Hamecon	<i>Artediellus scaber</i>	N, M
		Slimy sculpin	<i>Cottus cognatus</i>	N and S, F
		Twohorn sculpin	<i>Icelus bicornis</i>	N, M
	Liparidae	Gelatinous snailfish	<i>Liparis fabricii</i>	N, M
		Kelp snailfish	<i>Liparis tunicatus</i>	N, M

F.1.4 Vascular Plants of Arctic Refuge

List of vascular plants compiled from specimens stored at University of Alaska Fairbanks herbarium, New York Botanical Garden, and Arctic Refuge herbarium. Scientific names follow Integrated Taxonomic Information System (www.itis.gov). A list of nonvascular plant species (mosses, liverworts, lichens) is available from the Arctic Refuge office.

Table F-3. Vascular Plants of Arctic Refuge

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
Apiaceae (Umbelliferae)	Parsley Family	<i>Bupleurum triradiatum</i>
		<i>Cicuta virosa</i>
		<i>Cnidium cnidiifolium</i>
		<i>Heracleum lanatum</i>
Apocynaceae	Dogbane Family	<i>Apocynum androsaemifolium</i>
Aspleniaceae	Spleenwort Family	<i>Asplenium trichomanes-ramosum</i>
Asteraceae (Compositae)	Sunflower Family	<i>Achillea borealis</i>
		<i>Antennaria densifolia</i>
		<i>Antennaria friesiana ssp alaskana</i>
		<i>Antennaria friesiana ssp friesiana</i>
		<i>Antennaria microphylla</i>
		<i>Antennaria monocephala ssp angustata</i>
		<i>Antennaria pulcherrima</i>
		<i>Antennaria rosea</i>
		<i>Arctanthemum arcticum ssp polare</i>
		<i>Arnica alpina</i>
		<i>Arnica angustifolia</i>
		<i>Arnica angustifolia ssp angustifolia</i>
		<i>Arnica griscomii ssp frigida</i>
		<i>Arnica lessingii</i>
		<i>Arnica lessingii ssp lessingii</i>
		<i>Artemisia alaskana</i>
		<i>Artemisia arctica</i>
		<i>Artemisia arctica ssp arctica</i>
		<i>Artemisia borealis</i>
		<i>Artemisia comata</i>
		<i>Artemisia frigida</i>

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Artemisia furcata</i>
		<i>Artemisia glomerata</i>
		<i>Artemisia laciniata</i>
		<i>Artemisia tilesii</i>
		<i>Aster alpinus ssp vierhapperi</i>
		<i>Aster junciformis</i>
		<i>Aster sibiricus</i>
		<i>Bidens cernua</i>
		<i>Chrysanthemum integrifolium</i>
		<i>Crepis elegans</i>
		<i>Crepis nana</i>
		<i>Erigeron acris</i>
		<i>Erigeron arcticus</i>
		<i>Erigeron caespitosus</i>
		<i>Erigeron compositus</i>
		<i>Erigeron elatus</i>
		<i>Erigeron eriocephalus</i>
		<i>Erigeron glabellus</i>
		<i>Erigeron grandiflorus</i>
		<i>Erigeron humilis</i>
		<i>Erigeron mexicae</i>
		<i>Erigeron muirii</i>
		<i>Erigeron ochroleucus</i>
		<i>Erigeron porsildii</i>
		<i>Erigeron purpuratus</i>
		<i>Eurybia merita</i>
		<i>Eurybia pygmaea</i>
		<i>Packera cymbalaria</i>
		<i>Packera hyperborealis</i>
		<i>Packera indecora</i>
		<i>Packera ogotorukensis</i>
		<i>Packera paupercula</i>
		<i>Petasites frigidus</i>
		<i>Petasites frigidus var frigidus</i>

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Petasites sagittatus</i> <i>Saussurea angustifolia</i> <i>Senecio congestus</i> <i>Senecio cymbalaria</i> <i>Senecio lugens</i> <i>Solidago canadensis</i> <i>Solidago decumbens</i> <i>Solidago multiradiata</i> <i>Symphiotrichum pygmaeum</i> <i>Tanacetum bipinnatum ssp huronense</i> <i>Taraxacum alaskanum (T. lyratum)</i> <i>Taraxacum arctica</i> <i>Taraxacum ceratophorum</i> <i>Taraxacum hyparcticum</i> <i>Tephroseris frigida (Senecio atropurpureus ssp frigidus)</i> <i>Tephroseris kjellmanii (Senecio kjellmanii)</i> <i>Tephroseris palustris ssp congesta (Senecio congestus)</i> <i>Tephroseris tundricola (Senecio tundricola)</i> <i>Tephroseris yukonensis (Senecio yukonensis)</i> <i>Townsendia hookeri</i> <i>Tripleurospermum phaeocephalum</i>
Betulaceae	Birch Family	<i>Alnus viridis ssp crispa</i> <i>Betula glandulosa</i> <i>Betula nana</i> <i>Betula nana ssp exilis</i> <i>Betula neoalaskana (B. papyrifera)</i>
Boraginaceae	Borage Family	<i>Eritrichium aretioides</i> <i>Eritrichium chamissonis</i> <i>Eritrichium splendens</i> <i>Lappula myosotis</i> <i>Mertensia maritima</i> <i>Mertensia paniculata</i>

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PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Mertensia paniculata var alaskana</i> <i>Mertensia paniculata var paniculata</i> <i>Myosotis alpestris</i> <i>Myosotis alpestris ssp asiatica</i>
Brassicaceae (Cruciferae)	Mustard Family	<i>Alyssum americanum</i> <i>Arabidopsis mollis</i> <i>Arabis holboellii</i> <i>Arabis lyrata</i> <i>Arabis lyrata ssp kamchatica</i> <i>Barbarea orthoceras</i> <i>Braya bartlettiana</i> <i>Braya glabella</i> <i>Braya purpurascens</i> <i>Cardamine bellidifolia</i> <i>Cardamine digitata</i> <i>Cardamine microphylla</i> <i>Cardamine pratensis</i> <i>Cochlearia officinalis</i> <i>Descurainia sophia</i> <i>Descurainia sophioides</i> <i>Draba alpina</i> <i>Draba arctica</i> <i>Draba cana</i> <i>Draba cinerea</i> <i>Draba corymbosa</i> <i>Draba crassifolia</i> <i>Draba fladnizensis</i> <i>Draba glabella</i> <i>Draba juvenilis</i> <i>Draba lactea</i> <i>Draba lonchocarpa</i> <i>Draba lonchocarpa var lonchocarpa</i> <i>Draba longipes</i> <i>Draba macounii</i>

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Draba nemorosa</i> <i>Draba nivalis</i> <i>Draba palanderiana</i> <i>Draba pilosa</i> <i>Draba ruaxes</i> <i>Draba subcapitata</i> <i>Erysimum asperum</i> var <i>angustatum</i> <i>Erysimum cheiranthoides</i> <i>Erysimum inconspicuum</i> <i>Erysimum pallasii</i> <i>Eutrema edwardsii</i> <i>Halimolobos mollis</i> <i>Lesquerella arctica</i> <i>Lesquerella calderi</i> <i>Parrya nudicaulis</i> ssp <i>interior</i> <i>Parrya nudicaulis</i> ssp <i>nudicaulis</i> <i>Parrya nudicaulis</i> ssp <i>septentrionalis</i> <i>Rorippa barbareaifolia</i> <i>Rorippa palustris</i> <i>Smelowskia borealis</i> <i>Smelowskia calycina</i> <i>Smelowskia calycina</i> var <i>porsildii</i> <i>Thlaspi arcticum</i> <i>Torularia humilis</i>
Campanulaceae	Bluebell Family	<i>Campanula aurita</i> <i>Campanula lasiocarpa</i> <i>Campanula uniflora</i>
Chenopodiaceae	Goosefoot Family	<i>Chenopodium capitatum</i> <i>Chenopodium rubrum</i> <i>Corispermum ochotense</i> <i>Monolepis nuttalliana</i>
Callitrichaceae	Water Starwort Family	<i>Callitriche hermaphroditica</i>
Cornaceae	Dogwood Family	<i>Cornus canadensis</i>

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PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Swida stolonifera</i> (<i>Cornus stolonifera</i>)
Caprifoliaceae	Honeysuckle Family	<i>Linnaea borealis</i> <i>Viburnum edule</i>
Crassulaceae	Stonecrop Family	<i>Rhodiola integrifolia</i> (<i>Sedum rosea</i>)
Caryophyllaceae	Pink Family	<i>Arenaria capillaris</i> <i>Arenaria longipedunculata</i> <i>Cerastium beeringianum</i> <i>Cerastium jenisejense</i> <i>Cerastium maximum</i> <i>Dianthus repens</i> <i>Gastrolychnis affinis</i> <i>Gastrolychnis apetala</i> <i>Gastrolychnis macrosperma</i> <i>Honckenya peploides</i> <i>Minuartia arctica</i> <i>Minuartia biflora</i> <i>Minuartia elegans</i> <i>Minuartia macrocarpa</i> <i>Minuartia obtusiloba</i> <i>Minuartia rossii</i> <i>Minuartia rubella</i> <i>Minuartia yukonensis</i> <i>Moehringia lateriflora</i> <i>Sagina nivalis</i> <i>Silene acaulis</i> <i>Silene repens</i> <i>Stellaria alaskana</i> <i>Stellaria borealis</i> <i>Stellaria borealis ssp borealis</i> <i>Stellaria calycantha</i> <i>Stellaria crassifolia</i> <i>Stellaria edwardsii</i> <i>Stellaria humifusa</i>

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Stellaria laeta</i> <i>Stellaria laxmannii</i> <i>Stellaria longipes</i> <i>Stellaria monantha</i> <i>Stellaria umbellata</i> <i>Wilhelmsia physodes</i>
Cupressaceae	Cypress Family	<i>Juniperus communis</i>
Cyperaceae	Sedge Family	<i>Carex albonigra</i> <i>Carex aquatilis</i> <i>Carex atherodes</i> <i>Carex atratiformis</i> <i>Carex atrofusca</i> <i>Carex atosquama</i> <i>Carex aurea</i> <i>Carex bicolor</i> <i>Carex bigelowii</i> <i>Carex bonanzensis</i> <i>Carex capillaris</i> <i>Carex capitata</i> <i>Carex chordorrhiza</i> <i>Carex concinna</i> <i>Carex diandra</i> <i>Carex dioica</i> <i>Carex disperma</i> <i>Carex duriuscula</i> <i>Carex eburnea</i> <i>Carex filifolia</i> <i>Carex fuliginosa</i> <i>Carex garberi</i> <i>Carex glacialis</i> <i>Carex glareosa var amphigena</i> <i>Carex heleonastes</i> <i>Carex holostoma</i> <i>Carex krausei</i>

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Carex lachenalii</i>
		<i>Carex leptalea</i>
		<i>Carex limosa</i>
		<i>Carex livida</i>
		<i>Carex macloviana</i>
		<i>Carex marina</i>
		<i>Carex maritima</i>
		<i>Carex media</i>
		<i>Carex membranacea</i>
		<i>Carex microchaeta ssp microchaeta</i>
		<i>Carex microglochin</i>
		<i>Carex misandra</i>
		<i>Carex nardina</i>
		<i>Carex obtusata</i>
		<i>Carex petricosa</i>
		<i>Carex petricosa var petricosa</i>
		<i>Carex podocarpa</i>
		<i>Carex praticola</i>
		<i>Carex ramenskii</i>
		<i>Carex rariflora</i>
		<i>Carex rotundata</i>
		<i>Carex rupestris</i>
		<i>Carex saxatilis</i>
		<i>Carex scirpoidea</i>
		<i>Carex stenophylla ssp eleocharis</i>
		<i>Carex subspathacea</i>
		<i>Carex supina</i>
		<i>Carex tenuiflora</i>
		<i>Carex ursina</i>
		<i>Carex utriculata</i>
		<i>Carex vaginata</i>
		<i>Carex williamsii</i>
		<i>Carex xerantica</i>
		<i>Eleocharis acicularis</i>

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Eleocharis palustris</i> <i>Eriophorum angustifolium</i> <i>Eriophorum angustifolium ssp subarcticum</i> <i>Eriophorum brachyantherum</i> <i>Eriophorum callitrix</i> <i>Eriophorum callitrix var pallidus</i> <i>Eriophorum russeolum</i> <i>Eriophorum scheuchzeri</i> <i>Eriophorum triste</i> <i>Eriophorum vaginatum</i> <i>Kobresia myosuroides</i> <i>Kobresia sibirica</i> <i>Kobresia simpliciuscula</i> <i>Trichophorum cespitosum</i>
Diapensiaceae	Diapensia Family	<i>Diapensia lapponica</i> <i>Diapensia lapponica ssp obovata</i>
Dryopteridaceae	Wood Fern Family	<i>Cystopteris fragilis</i> <i>Cystopteris fragilis ssp fragilis</i> <i>Cystopteris montana</i> <i>Dryopteris dilatata</i> <i>Dryopteris fragrans</i> <i>Woodsia alpina</i> <i>Woodsia glabella</i>
Equisetaceae	Horsetail Family	<i>Equisetum arvense</i> <i>Equisetum fluviatile</i> <i>Equisetum palustre</i> <i>Equisetum pratense</i> <i>Equisetum scirpoides</i> <i>Equisetum silvaticum</i> <i>Equisetum variegatum</i>
Ericaceae	Heath Family	<i>Andromeda polifolia</i> <i>Arctostaphylos uva-ursi</i> <i>Arctostaphylos alpina</i>

Appendix F: Species List

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Arctostaphylos rubra</i> <i>Cassiope tetragona</i> <i>Cassiope tetragona ssp tetragona</i> <i>Chamaedaphne calyculata</i> <i>Ledum groenlandicum</i> <i>Ledum palustre ssp decumbens</i> <i>Loiseleuria procumbens</i> <i>Oxycoccus microcarpus</i> <i>Rhododendron lapponicum</i> <i>Vaccinium uliginosum</i> <i>Vaccinium vitis-idaea</i>
Fabaceae (Leguminosae)	Pea Family	<i>Astragalus aboriginum</i> <i>Astragalus adsurgens</i> <i>Astragalus alpinus</i> <i>Astragalus eucosmus</i> <i>Astragalus nutzotinensis</i> <i>Astragalus polaris</i> <i>Astragalus richardsonii</i> <i>Astragalus sealei</i> <i>Astragalus umbellatus</i> <i>Hedysarum alpinum</i> <i>Hedysarum alpinum ssp americanum</i> <i>Hedysarum mackenzii</i> <i>Lupinus arcticus</i> <i>Oxytropis arctica var arctica</i> <i>Oxytropis arctica var koyukukensis</i> <i>Oxytropis borealis</i> <i>Oxytropis bryophila</i> <i>Oxytropis campestris</i> <i>Oxytropis deflexa</i> <i>Oxytropis deflexa var foliolosa</i> <i>Oxytropis gorodkovii</i> <i>Oxytropis jordalii</i> <i>Oxytropis maydelliana</i>

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Oxytropis mertensiana</i> <i>Oxytropis nigrescens</i> <i>Oxytropis nigrescens ssp pygmaea</i> <i>Oxytropis roaldii</i> <i>Oxytropis scammaniana</i> <i>Oxytropis sordida</i> <i>Oxytropis splendens</i> <i>Oxytropis tananensis</i> <i>Oxytropis varians</i> <i>Oxytropis viscida</i>
Fumariaceae	Earth Smoke Family	<i>Corydalis pauciflora</i> <i>Corydalis sempervirens</i>
Gentianaceae	Gentian Family	<i>Gentiana glauca</i> <i>Gentiana prostrata</i> <i>Gentianella propinqua</i> <i>Lomatogonium rotatum</i> <i>Menyanthes trifoliata</i>
Haloragaceae	Water Milfoil Family	<i>Hippuris tetraphylla</i> <i>Hippuris vulgaris</i> <i>Myriophyllum sibiricum</i> <i>Myriophyllum verticillatum</i>
Hydrophyllaceae	Waterleaf Family	<i>Phacelia sericea</i>
Juncaginaceae	Arrow Grass Family	<i>Triglochin maritimum</i> <i>Triglochin palustris</i>
Juncaceae	Rush Family	<i>Juncus alpinus</i> <i>Juncus arcticus</i> <i>Juncus biglumis</i> <i>Juncus castaneus</i> <i>Juncus triglumis</i> <i>Luzula arctica</i> <i>Luzula arcuata</i> <i>Luzula confusa</i> <i>Luzula kjellmaniana</i>

Appendix F: Species List

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Luzula multiflora</i> <i>Luzula parviflora</i> <i>Luzula spicata</i> <i>Luzula wahlenbergii</i>
Labiatae	Mint family	<i>Mentha arvensis</i>
Liliaceae	Lily Family	<i>Allium schoenoprasum</i> <i>Lloydia serotina</i> <i>Tofieldia coccinea</i> <i>Tofieldia pusilla</i> <i>Zygadenus elegans</i>
Linaceae	Flax Family	<i>Linum lewisii</i> <i>Linum perenne</i>
Lentibulariaceae	Bladderwort Family	<i>Pinguicula villosa</i> <i>Pinguicula vulgaris</i> <i>Utricularia intermedia</i> <i>Utricularia minor</i> <i>Utricularia vulgaris</i>
Lycopodiaceae	Club Moss Family	<i>Huperzia (Lycopodium selago)</i> <i>Lycopodium annotinum</i> <i>Lycopodium annotinum ssp pungens</i>
Nymphaeaceae	Water Lily Family	<i>Nuphar polysepala</i>
Onagraceae	Evening Primrose Family	<i>Epilobium anagallidifolium</i> <i>Epilobium angustifolium</i> <i>Epilobium arcticum</i> <i>Epilobium davuricum</i> <i>Epilobium hornemannii</i> <i>Epilobium latifolium</i> <i>Epilobium palustre</i>
Ophioglossaceae	Adder's-tongue Family	<i>Botrychium lunaria</i>
Orchidaceae	Orchid Family	<i>Amerorchis rotundifolia</i> <i>Corallorrhiza trifida</i> <i>Cypripedium parviflorum</i> <i>Cypripedium passerinum</i>

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Listera borealis</i>
		<i>Platanthera obtusata</i>
Orobanchaceae	Broomrape Family	<i>Boschniakia rossica</i>
Papaveraceae	Poppy Family	<i>Papaver gorodkovii</i>
		<i>Papaver keelei</i>
		<i>Papaver lapponicum</i>
		<i>Papaver lapponicum ssp occidentale</i>
		<i>Papaver macounii</i>
		<i>Papaver macounii ssp discolor</i>
		<i>Papaver mcconnellii</i>
		<i>Papaver nudicaule</i>
		<i>Papaver nudicaule ssp americanum</i>
		<i>Papaver radiculatum</i>
		<i>Papaver walpolei</i>
Pinaceae	Pine Family	<i>Picea glauca</i>
		<i>Picea mariana</i>
Plumbaginaceae	Leadwort Family	<i>Armeria maritima</i>
Polygonaceae	Buckwheat Family	<i>Bistorta plumosa</i>
		<i>Bistorta vivipara</i>
		<i>Eriogonum flavum</i>
		<i>Eriogonum flavum var aquilinum</i>
		<i>Koenigia islandica</i>
		<i>Oxyria digyna</i>
		<i>Polygonum alaskanum</i>
		<i>Polygonum amphibium</i>
		<i>Polygonum aviculare</i>
		<i>Polygonum cauricum</i>
		<i>Polygonum lapathifolium</i>
		<i>Rumex acetosa</i>
		<i>Rumex arcticus</i>
		<i>Rumex salicifolius ssp triangulivalvis</i>
		<i>Rumex sibiricus</i>
Polemoniaceae	Polemonium Family	<i>Collomia linearis</i>

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Phlox alaskensis</i> <i>Phlox hoodii</i> <i>Phlox richardsonii</i> <i>Phlox sibirica</i> <i>Polemonium acutiflorum</i> <i>Polemonium boreale</i> <i>Polemonium boreale ssp boreale</i> <i>Polemonium pulcherrimum</i> <i>Polemonium pulcherrimum ssp lindleyi</i>
Poaceae	Grass Family	<i>Agrostis exarata</i> <i>Agrostis scabra</i> <i>Agrostis stolonifera</i> <i>Alopecurus aequalis</i> <i>Alopecurus alpinus</i> <i>Alopecurus alpinus ssp alpinus</i> <i>Alopecurus pratensis</i> <i>Arctagrostis latifolia</i> <i>Arctagrostis latifolia var arundinacea</i> <i>Arctophila fulva</i> <i>Bromopsis pumpelliana</i> <i>Bromopsis pumpelliana ssp arctica</i> <i>Bromopsis pumpelliana ssp pumpelliana</i> <i>Calamagrostis canadensis</i> <i>Calamagrostis canadensis ssp langsdorffii</i> <i>Calamagrostis deschampsoides</i> <i>Calamagrostis inexpansa</i> <i>Calamagrostis purpurascens</i> <i>Calamagrostis purpurascens ssp purpurascens</i> <i>Colpodium vahlianum</i> <i>Deschampsia brevifolia</i> <i>Deschampsia cespitosa</i> <i>Dupontia fisheri</i> <i>Dupontia fisheri ssp fisheri</i> <i>Dupontia fisheri ssp psilosantha</i>

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Elymus alaskanus ssp alaskanus</i>
		<i>Elymus alaskanus ssp hyperarcticus</i>
		<i>Elymus alaskanus ssp latiglumis</i>
		<i>Elymus macrourus</i>
		<i>Elymus trachycaulus ssp trachycaulus</i>
		<i>Elytrigia spicata</i>
		<i>Festuca altaica</i>
		<i>Festuca baffinensis</i>
		<i>Festuca brachyphylla</i>
		<i>Festuca brevissima</i>
		<i>Festuca lenensis</i>
		<i>Festuca rubra</i>
		<i>Festuca vivipara ssp glabra</i>
		<i>Glyceria maxima ssp grandis</i>
		<i>Hierochloe alpina</i>
		<i>Hierochloe odorata</i>
		<i>Hierochloe pauciflora</i>
		<i>Hordeum jubatum</i>
		<i>Leymus innovatus</i>
		<i>Leymus mollis</i>
		<i>Leymus mollis ssp villosissimus</i>
		<i>Phippsia algida</i>
		<i>Pleuropogon sabinei</i>
		<i>Poa abbreviata ssp pattersonii</i>
		<i>Poa alpina</i>
		<i>Poa arctica</i>
		<i>Poa arctica ssp arctica</i>
		<i>Poa arctica ssp lanata</i>
		<i>Poa glauca</i>
		<i>Poa hartzii</i>
		<i>Poa interior</i>
		<i>Poa paucispicula</i>
		<i>Poa porsildii</i>
		<i>Poa pratensis</i>

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PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Poa pratensis ssp alpigena</i> <i>Poa pratensis var colpodea</i> <i>Poa pseudoabbreviata</i> <i>Puccinellia andersonii</i> <i>Puccinellia borealis</i> <i>Puccinellia langeana</i> <i>Puccinellia phryganodes</i> <i>Puccinellia vahliana</i> <i>Puccinellia wrightii</i> <i>Trisetum sibiricum ssp litorale</i> <i>Trisetum spicatum</i> <i>Trisetum spicatum ssp spicatum</i>
Portulacaceae	Purslane Family	<i>Claytonia sarmentosa</i> <i>Claytonia tuberosa</i>
Potamogetonaceae	Pondweed Family	<i>Potamogeton alpinus</i> <i>Potamogeton alpinus ssp tenuifolius</i> <i>Potamogeton gramineus</i> <i>Potamogeton praelongus</i> <i>Potamogeton pusillus ssp tenuissimus</i> <i>Potamogeton subsibiricus</i> <i>Stuckenia filiformis</i> <i>Stuckenia filiformis ssp alpina</i> <i>Stuckenia filiformis ssp occidentalis</i> <i>Stuckenia vaginata</i>
Primulaceae	Primrose Family	<i>Androsace chamaejasme</i> <i>Androsace chamaejasme ssp lehmanniana</i> <i>Androsace septentrionalis</i> <i>Dodecatheon frigidum</i> <i>Douglasia arctica</i> <i>Douglasia ochotensis</i> <i>Primula borealis</i> <i>Primula egaliksensis</i> <i>Primula eximia</i>

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
Plantaginaceae	Plantain Family	<i>Plantago canescens</i> <i>Plantago major</i>
Pyrolaceae	Wintergreen Family	<i>Moneses uniflora</i> <i>Orthilia secunda</i> (<i>Pyrola secunda</i>) <i>Pyrola asarifolia</i> <i>Pyrola chlorantha</i> <i>Pyrola grandiflora</i>
Ranunculaceae	Buttercup Family	<i>Aconitum delphinifolium</i> <i>Aconitum delphinifolium</i> ssp <i>paradoxum</i> <i>Anemone drummondii</i> <i>Anemone multifida</i> <i>Anemone parviflora</i> <i>Anemone richardsonii</i> <i>Caltha palustris</i> <i>Caltha palustris</i> ssp <i>arctica</i> <i>Delphinium chamissonis</i> <i>Delphinium glaucum</i> <i>Pulsatilla patens</i> <i>Pulsatilla patens</i> ssp <i>multifida</i> <i>Ranunculus cymbalaria</i> <i>Ranunculus eschscholtzii</i> <i>Ranunculus gelidus</i> <i>Ranunculus gmelinii</i> <i>Ranunculus hyperboreus</i> <i>Ranunculus hyperboreus</i> ssp <i>hyperboreus</i> <i>Ranunculus nivalis</i> <i>Ranunculus pallasii</i> <i>Ranunculus pedatifidus</i> <i>Ranunculus pedatifidus</i> ssp <i>affinis</i> <i>Ranunculus pygmaeus</i> <i>Ranunculus pygmaeus</i> ssp <i>pygmaeus</i> <i>Ranunculus reptans</i> <i>Ranunculus sulphureus</i> <i>Ranunculus trichophyllus</i>

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PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Ranunculus turneri</i>
		<i>Thalictrum alpinum</i>
Rosaceae	Rose Family	<i>Acomastylis rossii</i> <i>Amelanchier alnifolia</i> <i>Chamaerhodos erecta</i> <i>Comarum palustre (Potentilla palustre)</i> <i>Dryas alaskensis</i> <i>Dryas drummondii</i> <i>Dryas integrifolia</i> <i>Dryas octopetala</i> <i>Geum perincisum</i> <i>Novosieversia glacialis</i> <i>Pentaphylloides floribunda (Potentilla fruticosa)</i> <i>Potentilla anserina</i> <i>Potentilla arenosa</i> <i>Potentilla biflora</i> <i>Potentilla bipinnatifida</i> <i>Potentilla brooksensis</i> <i>Potentilla egedii</i> <i>Potentilla elegans</i> <i>Potentilla hookeriana</i> <i>Potentilla hookeriana ssp chamissonis</i> <i>Potentilla hyparctica</i> <i>Potentilla murrayi</i> <i>Potentilla nivea</i> <i>Potentilla norvegica</i> <i>Potentilla ovina</i> <i>Potentilla pensylvanica</i> <i>Potentilla pulchella</i> <i>Potentilla rubricaulis</i> <i>Potentilla subgorodkovii</i> <i>Potentilla uniflora</i> <i>Potentilla virgulata</i>

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Rosa acicularis</i> <i>Rosa acicularis ssp sayi</i> <i>Rosa woodsii</i> <i>Rubus arcticus</i> <i>Rubus chamaemorus</i> <i>Rubus idaeus</i> <i>Sanguisorba officinalis</i> <i>Spiraea stevenii</i>
Rubiaceae	Madder Family	<i>Galium boreale</i> <i>Galium trifidum</i>
Salicaceae	Willow Family	<i>Populus balsamifera</i> <i>Populus tremuloides</i> <i>Salix alaxensis</i> <i>Salix alaxensis var alaxensis</i> <i>Salix alaxensis var longistylis</i> <i>Salix arbusculoides</i> <i>Salix arctica</i> <i>Salix arctophila</i> <i>Salix barrattiana</i> <i>Salix bebbiana</i> <i>Salix brachycarpa ssp niphoclada</i> <i>Salix candida</i> <i>Salix chamissonis</i> <i>Salix exigua ssp interior</i> <i>Salix fuscescens</i> <i>Salix glauca</i> <i>Salix glauca var acutifolia</i> <i>Salix glauca var glauca</i> <i>Salix hastata</i> <i>Salix lanata</i> <i>Salix niphoclada</i> <i>Salix ovalifolia</i> <i>Salix ovalifolia var glacialis</i> <i>Salix ovalifolia var ovalifolia</i>

Appendix F: Species List

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Salix phlebophylla</i> <i>Salix planifolia</i> <i>Salix planifolia ssp pulchra</i> <i>Salix polaris</i> <i>Salix pseudomonticola</i> <i>Salix pseudomyrsinites</i> <i>Salix pulchra</i> <i>Salix reticulata</i> <i>Salix richardsonii</i> <i>Salix rotundifolia</i> <i>Salix rotundifolia ssp rotundifolia</i> <i>Salix scouleriana</i> <i>Salix sphenophylla</i>
Santalaceae	Sandalwood Family	<i>Geocaulon lividum</i>
Saxifragaceae	Saxifrage Family	<i>Boykinia richardsonii</i> <i>Chrysosplenium rosendahlia</i> <i>Chrysosplenium tetrandrum</i> <i>Chrysosplenium wrightii</i> <i>Parnassia kotzebuei</i> <i>Parnassia palustris</i> <i>Ribes hudsonianum</i> <i>Ribes triste</i> <i>Saxifraga arctolitoralis</i> <i>Saxifraga bronchialis</i> <i>Saxifraga bronchialis ssp funstonii</i> <i>Saxifraga caespitosa</i> <i>Saxifraga calycina</i> <i>Saxifraga cernua</i> <i>Saxifraga codyana</i> <i>Saxifraga eschscholtzii</i> <i>Saxifraga flagellaris</i> <i>Saxifraga flagellaris ssp setigera</i> <i>Saxifraga flexuosa</i> <i>Saxifraga foliolosa</i>

PLANT FAMILY – Scientific Name	PLANT FAMILY – Common Name	SPECIES – Scientific Name
		<i>Saxifraga hieraciifolia</i> <i>Saxifraga hirculus</i> <i>Saxifraga hyperborea</i> <i>Saxifraga nelsoniana</i> <i>Saxifraga nivalis</i> <i>Saxifraga oppositifolia</i> <i>Saxifraga razshivinii</i> <i>Saxifraga reflexa</i> <i>Saxifraga rivularis ssp. arctolitoralis</i> <i>Saxifraga serpyllifolia</i> <i>Saxifraga tricuspidata</i>
Scrophulariaceae	Figwort Family	<i>Castilleja annua</i> <i>Castilleja elegans</i> <i>Castilleja hyperborea</i> <i>Castilleja pallida var caudata</i> <i>Lagotis glauca</i> <i>Pedicularis albolabiata</i> <i>Pedicularis capitata</i> <i>Pedicularis labradorica</i> <i>Pedicularis lanata</i> <i>Pedicularis langsdoeffii</i> <i>Pedicularis lapponica</i> <i>Pedicularis oederi</i> <i>Pedicularis parviflora</i> <i>Pedicularis sudetica</i> <i>Pedicularis verticillata</i> <i>Penstemon gormanii</i>
Selaginellaceae	Spikemoss Family	<i>Selaginella sibirica</i>
Sparganiaceae	Bur Reed Family	<i>Sparganium hyperboreum</i>
Typhaceae	Cattail Family	<i>Typha latifolia</i>
Urticaceae	Nettle Family	<i>Urtica dioica</i>
Valerianaceae	Valerian Family	<i>Valeriana capitata</i>
Violaceae	Violet Family	<i>Viola epipsila ssp repens</i>

F.2 References

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Appendix G

Appropriate Use and Compatibility Determinations

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G. Appropriate Use and Compatibility Determinations

G.1 Introduction to Appropriate Refuge Uses

The National Wildlife Refuge System Improvement Act of 1997 identified six priority wildlife-dependent recreation uses: hunting, fishing, wildlife observation and photography, environmental education, and interpretation. With the exception of these six uses, and with the exception of the taking of fish and wildlife under State regulations, the Refuge manager follows the U.S. Fish and Wildlife Service (Service) Appropriate Refuge Uses policy (603 FW 1) to decide if a new or existing use is an appropriate refuge use. If an existing use is not appropriate, the Refuge manager will eliminate or modify the use as soon as possible. If a new use is not appropriate, the Refuge manager will deny the use without determining compatibility.

A proposed or existing use on a refuge must meet at least one of the following four conditions to be considered appropriate:

1. the use is a wildlife-dependent recreational use identified in the act;
2. the use contributes to fulfilling the refuge purpose(s), the National Wildlife Refuge System (Refuge System) mission, or goals or objectives described in a refuge management plan approved after October 9, 1997, the date the act was signed into law;
3. the use involves the take of fish and wildlife under State regulations; or
4. the Refuge manager has evaluated the use following the guidelines in the Service manual and found that it is appropriate.

The comprehensive conservation plan process includes a review of the appropriateness of existing refuge uses and of any planned future public uses. An evaluation of all previously approved uses indicates that those uses are still considered appropriate. Appropriateness findings for those uses reviewed during the Arctic National Wildlife Refuge (Arctic Refuge, Refuge) Comprehensive Conservation Plan (Plan, Revised Plan) process have been documented and included in the Plan's administrative record.

G.2 Introduction to Compatibility Determinations

A compatible use is a proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the Refuge System mission or the purposes of the national wildlife refuge. The Refuge manager must find a use is appropriate before undertaking a compatibility review of the use. According to the Service's Compatibility policy (603 FW 2), the Refuge manager cannot initiate or permit a new use of a national wildlife refuge or expand, renew, or extend an existing use unless the manager has determined that the use is a compatible use.

Compatibility determinations are based on a refuge-specific analysis of the reasonably anticipated impacts of a particular use on refuge resources. Refuge managers do not independently generate data to make determinations, but rather work with available information, such as field experience and familiarity with refuge resources; information made available to the Refuge manager by the State, tribes, proponent(s) or opponent(s) of the use;

or through the public review and comment period. Refuge-specific analysis need not rely on refuge-specific biological impact data but may be based on information derived from other areas or species that are similarly situated and therefore relevant to the refuge-specific analysis. Refuge managers may work at their discretion with the proponent(s) of the use or other interested parties to gather additional information before making the determination. If information available to the Refuge manager is insufficient to document that a proposed use is compatible, then the Refuge manager would be unable to make an affirmative finding of compatibility and must not authorize or permit the use.

A compatibility determination is not an action under the National Environmental Policy Act (NEPA). Deciding whether or not to allow the use is the action, not the compatibility determination. Compatibility determinations are completed as part of a planning process such as a comprehensive conservation plan or step-down management plan. These plans address whether or not we will allow refuge uses, and therefore the plans require NEPA compliance. Compatibility determinations cover individual uses, specific use programs, or groups of related uses described in the planning document. The compatibility determinations prepared concurrently with the revised Arctic Refuge Plan are hereby incorporated as an appendix to this Plan. The determinations summarize and incorporate by reference the information considered in detail in the Plan and associated environmental impact statement.

COMPATIBILITY DETERMINATION

Use: State of Alaska Routine Wildlife Management Activities

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

The Wilderness Act of 1964 (Public Law 88-577) creates the following additional purposes for the designated Wilderness area in the Refuge’s boundaries; these purposes are within and

supplemental to the Refuge's ANILCA and Range purposes: secure an enduring resource of Wilderness; protect and preserve the Wilderness character of areas in the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): This compatibility determination addresses the routine wildlife management activities conducted by the Alaska Department of Fish and Game (ADFG) and law enforcement activities conducted by Alaska wildlife enforcement officers of the Alaska Department of Public Safety, Division of Alaska State Troopers, that are not cooperative projects with the U.S. Fish and Wildlife Service (Service). These projects might not be included in the Master Memorandum of Understanding (or other specific cooperative agreements) between the ADFG (Juneau, Alaska) and the Service (Department of the Interior, Anchorage, Alaska) signed March 13, 1982. Routine management activities may include the following: fish and wildlife surveys conducted by boat, foot, or other means not restricted by regulation or policy; aircraft landings in support of fish and wildlife surveys; vegetation and habitat classification and surveys; and law enforcement activities.

This compatibility determination does not address predator management, fish and wildlife control (with the exception of animals taken in defense of life or property), reintroduction of species, native fish introductions, non-native species introductions, non-native species management, pest management, disease prevention and control, fishery restoration, fishery enhancement, construction of facilities, or any other unpermitted activity that could alter ecosystems in the Refuge. Separate compatibility determinations addressing specific proposals will be required for those activities. All management and research activities conducted by ADFG under a specific cooperative agreement with the Service to fulfill one or more purposes of the Refuge or the Refuge System mission are not subject to a compatibility determination.

Potential means of access include fixed-wing aircraft, motorboats, snowmobiles, non-motorized boats, foot, snowshoes, and cross-country skis. Helicopters may also be used when specifically authorized through a permit issued by the Refuge manager. Potential lodging and facilities include tents and other temporary structures, existing permitted cabins, and caches.

Availability of Resources: Adequate Refuge personnel and base operational funds are available to manage activities at existing and projected levels. Staff time of managers and biologists (as many as 10 staff days per year) primarily involves phone conversations, written correspondence, and personal interaction with State personnel regarding ongoing activities.

Field work associated with administering the program primarily involves monitoring (when applicable) the State's activities to ensure all activities remain compatible.

Anticipated Impacts of Use(s): Because ADFG and public safety personnel are trained wildlife professionals, the Service anticipates that routine law enforcement and fish and wildlife monitoring and management activities would have positive overall impacts on wildlife resources, other resources in the Refuge (such as water quality, soil, and vegetation), and visitors. These positive impacts would support Refuge purposes and goals and the Service mission.

Public Review and Comment: Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge's Revised Comprehensive Conservation Plan (Plan, Revised Plan) and environmental impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan, which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on the Refuge's web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. We received eight specific comments from individuals and organizations on this compatibility determination.

One individual, the Northern Alaska Environmental Center, the Alaska Wilderness League, the Alaska Chapter of Wilderness Watch, and the Sierra Club were all concerned about the State's wildlife management activities and whether or not the Service had done an adequate job in fully describing the use and finding it compatible. They were concerned that the Service did not require a compatibility determination for State wildlife management activities, and they specifically mentioned predator control. The Service does not require a compatibility determination for those activities conducted in cooperation with the Refuge (considered a Refuge management activity and not a Refuge use). The current compatibility determination addresses "routine management activities" conducted by the State of Alaska that are not carried out cooperatively with the Refuge, and it includes such actions as surveys and associated activities and routine law enforcement. These activities, as currently carried out, have been found to be compatible. Other activities by the State wildlife department require a separate compatibility determination, and these include predator management and fish and wildlife control.

The individual commenter requested that the compatibility determination address ADFG's fish and wildlife regulations and the associated fish and wildlife harvests on the Refuge, including bag limits; the person questioned if ADFG goals and objectives were consistent with sound wildlife management and Arctic Refuge purposes. As for ADFG regulations and the harvest of fish and wildlife, the promulgation of regulations is not a Refuge use and therefore is not subject to compatibility. The "take of fish and wildlife" under State regulations, including all equipment, facilities, and services needed to support hunting, was evaluated in two compatibility determinations: "Commercial Big-game Hunting Services" and "General Hunting." These uses were found to "not materially interfere with or detract from the fulfillment of the Refuge purposes and the System mission." Therefore, these uses are compatible. The same individual recommended that we not allow food and gear caches in

Wilderness. Refuge regulations currently allow for the temporary storage of food and gear, and we believe this is reasonable as caches are often necessary for visitors who make long or expeditionary type trips across the Refuge. Food storage is a concern, however, and during the visitor use management planning process, we will consider a requirement that all cached food be stored in bear-resistant containers.

The Alaska Chapter of Wilderness Watch was concerned that the purposes of the Wilderness Act be considered when determining whether the State's management activities are compatible on the Refuge. This is already done, regardless of whether the Wilderness purposes are mentioned in the Master Memorandum of Understanding. All purposes, including Wilderness purposes, are considered in the evaluation of compatibility of a proposed use.

The Sierra Club commented that the Service need not and should not initiate a compatibility determination or National Environmental Policy Act (NEPA) process to evaluate State-sponsored predator control in Arctic Refuge. Instead, the Service should incorporate language into the Plan and the draft compatibility determination clearly stating that any regulation or use—including the use of predator control—that conflicts with Federal law or policy and the purposes of Arctic Refuge will be preempted in the Refuge. The Service would not allow a use that was in conflict with a Federal law or Service or Department of the Interior policies. Nor would the Service find that a State-proposed predator management program on the Refuge that did not conform to the Refuge's purposes, goals, objectives, management policies, or guidelines is compatible; we would not authorize such a program on the Refuge. Chapter 1 Section 1.3.3, Chapter 2 Section 2.4.9.1, and Appendix B Section B.1.1 of the Plan have been revised to clarify that both the Service and the State recognize the Refuge's mandate to conserve wildlife populations in their natural diversity, and that the Service has the final responsibility and authority for ensuring all wildlife management activities are consistent with the Refuge's purposes, goals, objectives, management policies, and guidelines as described in this Plan.

We also received many general comments about State "game" management versus Refuge management. All commenters recognized the need for the Service to coordinate with the ADFG. However, they felt that the State's goals for managing wildlife (e.g., predator control, intensive management) sometimes conflict with the Refuge's purposes for maintaining natural and wild wildlife populations, and when this occurs, Refuge purposes must prevail. Most of the comments we received on this topic were against predator control on the Refuge. An additional seven commenters wanted predator control of wolves but wanted it done by local people rather than the State of Alaska.

Refuge Determination (check one below):

☐ Use is not compatible

☒ Use is compatible

Stipulations Necessary to Ensure Compatibility: A compatibility determination is not required for State activities on lands in the Refuge where a pre-established agreement or Memorandum of Understanding is in place. Refuge staff will monitor State activities in the Refuge. Findings from these monitoring efforts will be used to determine what additional management actions, if any, would be needed to ensure State activities remain compatible with Refuge purposes and in compliance with established agreements. State administrative

activities conducted in designated Wilderness areas require completion of a Minimum Requirement Analysis in accordance with national and regional policy.

Justification: ADFG, the Alaska Department of Public Safety, and the Service are partners in the management of fish and wildlife resources on the Refuge. Natural science information is necessary for the proper management of the Refuge System. It is the policy of the Service to encourage and support research and management studies to provide scientific data upon which decisions regarding management of units of the Refuge System may be based. The State research, monitoring, and law enforcement activities addressed in the compatibility determination support achieving Refuge purposes and goals, and the System mission, and would have favorable impacts on resources in the Refuge and wildlife-dependent priority public uses. After fully considering the impacts of these activities, as described previously in the “Anticipated Impacts of Use(s)” section of this document, it is my determination that State of Alaska wildlife management activities in the Refuge do not materially interfere with or detract from the purposes of the Refuge or the mission of the Refuge System.

Supporting Documents:

Master Memorandum of Understanding between the Alaska Department of Fish and Game, Juneau, Alaska, and the U.S. Fish and Wildlife Service, Department of the Interior, Anchorage, Alaska, signed March 13, 1982.

U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.

U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.

U.S. Fish and Wildlife Service. 2011. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.

Refuge Determination:

Refuge Manager/ Project Leader Approval	<u>/signed/ Richard Voss</u>	<u>July 30, 2012</u>
		Date

Concurrence:

Regional Chief National Wildlife Refuge System	<u>/signed/ Mike Boylan (acting)</u>	<u>August 15, 2012</u>
		Date

Mandatory 10-year Re-Evaluation Date: 2022

Mandatory 15-year Re-Evaluation Date (for priority public uses): 2027

NEPA Compliance for Refuge Use Decision:

☐ Categorical Exclusion without Environmental Action Memorandum

☐ Categorical Exclusion and Environmental Action Memorandum

☐ Environmental Assessment and Finding of No Significant Impact

☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Commercial Air Transportation Services

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

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supplemental to the Refuge's ANILCA and Range purposes: secure an enduring resource of Wilderness; protect and preserve the Wilderness character of areas within the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): This is a re-evaluation of the compatibility of commercial aircraft operations as a use of Federal lands in Arctic Refuge. This activity was originally found to be compatible in 1988 during the development of the original Arctic Refuge Comprehensive Conservation Plan and again determined to be compatible in 1994, subject to reasonable regulation and special conditions provided with a special use permit.

Commercial aircraft operations support wildlife-dependent priority public uses, and other compatible Refuge uses. The Refuge covers a vast area, providing visitors with seemingly unlimited opportunities to find solitude and experience wilderness characteristics. The primary means of access into and out of the Refuge is by aircraft, which can only land where ground topography or lake size are appropriate. Wheeled aircraft are predominantly used throughout the Refuge, particularly on the North Slope, though float planes are occasionally used for access. Access to the Refuge during summer months is by landing aircraft primarily on gravel bars. The number of useable access sites is therefore limited. Winter access is by "ski-equipped" aircraft. Modes of transport often occur in particular river corridors, based on the water volume of the river and the topography of the river valley. Commercial aircraft operations considered here include activities occurring throughout the year.

There is currently no limit to the number of trips or clients permittees can take to the Refuge, nor is there a limit to the number of commercial air operators permitted to operate on the Refuge. There is an application period for all commercial aircraft operators requesting a permit. For billing purposes, the operator must report the number of clients dropped off, picked up, and/or shuttled on the Refuge.

The first permit for commercial aircraft operations was issued in 1987. Since that time, the Refuge has issued 4-10 special use permits annually to commercial air transport businesses desiring to provide transportation services in the Refuge. In most recent years, however, Refuge staff have issued 10-17 air transporter permits annually. These transporters have provided services to an average of 35-45 parties per year, primarily for hunting, fishing, hiking, or river floating. The lengths of these trips were typically 7-10 days, although shorter trips sometimes occur.

Refuge visitation has generally remained steady since the late 1980s, averaging around 1,000 visitors per year, yet there has been a steady increase in the number of commercial permits

issued. On average, where locations are known, about 77 percent of overall commercially-supported visitation occurs north of the Brooks Range, while about 23 percent occurs on the south side. Nearly one-quarter (21 percent) of the commercially-supported visitors to the Refuge visit the Kongakut River drainage on the north side of the Brooks Range. Commercially guided or transported recreational visitors spend, on average, about nine days in the Refuge, in groups that average around five individuals. On average, it appears that hunters make up 28 percent, and recreational visitors make 72 percent, of the total number of commercially-supported visitors. Most general hunters use commercial air operators to access the Refuge, yet an unknown number of general hunters use their personal airplanes.

Availability of Resources: Adequate Refuge personnel and base operational funds are available to manage commercial aircraft operations activities at existing and projected levels. Administrative staff time primarily involves issuing permits, ensuring that licenses and certifications are current, collecting client use-day fees, and recording activity data. Field work associated with administering the program primarily involves monitoring permittees' compliance with the terms of their permits. Estimated staff time to annually administer and monitor these permits is one person for 30-45 days per year.

Anticipated Impacts of Use(s): Landing aircraft on non-durable surfaces can cause minor to moderate site-specific and long-term effects to Refuge habitats and vegetation. In several areas, soil compaction, scarring, and occasionally rutting have been documented. This is not a problem where aircraft land on durable surfaces such as gravel and sand bars, water, ice and snow, and certain other durable or resistant surfaces. These effects can be minimized or prevented by limitations, including temporal limits, on where aircraft can land or under what conditions, including aircraft weight or tire configuration. Although not known to occur on the Refuge, landing aircraft could introduce invasive species that could impact resources in the Refuge. We will continue to monitor for such occurrences. Low overflights, and sometimes landings and take-offs, can disturb or displace wildlife and bother visitors, although the effects are brief and usually minor.

Landings on vegetated lowland tundra and disturbance to vegetation outside established landing areas have been limited in the Kongakut drainage under the stipulations of the special use permit. During peak visitation, limited landing areas in some drainages may contribute to perceived crowding and user conflicts. Additionally, some localized vegetation damage caused by landing on non-durable surfaces has been reported. These are emerging issues that need to be monitored. Future stipulations may be developed to address these concerns.

The Refuge's administrative oversight of the activity and comprehensive State and Federal regulations continually evolve to respond to management needs. Compliance with regulations and permit conditions will be checked by Refuge staff. Refuge law enforcement personnel will also help minimize direct impacts from commercial air transportation services by enforcing compliance with special use conditions.

Public Review and Comment:

Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge's Revised Comprehensive Conservation Plan (Revised Plan, Plan) and environmental

impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan, which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on the Refuge's web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. We received three specific comments on this compatibility determination.

The State of Alaska commented that they fully support responsible use of commercial recreation services and requested that if the Service were to propose to restrict commercial operators in the future, the Plan clarify the Service will commit to an open public process.

One individual commented that we should require all aircraft to have 12-inch identification numbers in contrasting colors that are readily visible while flying and on the ground. This is already a Federal Aviation Administration (FAA) requirement, and all of our permitted air operators must comply with all State and Federal laws as a condition of their special use permits. The Refuge has no authority to require the type of identification numbers on private aircraft.

The Alaska Chapter of Wilderness Watch commented that current use levels may be exceeding what might be compatible, that stipulations on use are not adequate in all circumstances, and that this may be impacting Wilderness character. For example, vegetated surfaces are, and have been, damaged from existing levels of use in some areas. While we have found that the Refuge's current public use programs do not materially interfere with or detract from the Refuge's purposes or the mission of the National Wildlife Refuge System, and are therefore compatible, we acknowledge that the Refuge's public use management program has not fully protected Refuge values, including wilderness characteristics. The Visitor Use Management and Wilderness Stewardship step-down plans will address these issues, and it is likely that one or more uses will need to be re-evaluated as part of that planning process. It should be realized, however, that the Refuge has many mandates, including the requirement to provide for reasonable aircraft access to facilitate public use. In some areas, management must balance this access provision with uncompromised protection of natural conditions.

One individual was concerned that there is currently no limit to the number of trips or clients permittees can take to the Refuge, nor is there a limit on the number of commercial air operators permitted to operate on the Refuge. The commenter suggested this should be addressed in a step-down management plan in order to ensure compatibility. The Service plans to address use levels throughout the Refuge in the visitor use and wilderness step-down plans. If the use changes significantly due to restrictions in the future plans, a new compatibility determination will be drafted to reflect the changes.

We modified the description of the use to reflect that most access is by wheeled aircraft and that on the North Slope, pilots mainly land on gravel bars when they are available. We also corrected the effects section to reflect that, indeed, some impacts to habitats and vegetation are already occurring when landings are on non-durable surfaces. Additionally, we recognize that aircraft could be vectors for invasive species, although we have no information or documentation that this is occurring.

During the public review period for the Plan, we noticed that the title and description of one of our compatibility determinations was "State of Alaska Management Activities," when in fact it

described only those management activities specific to fish and wildlife management and enforcement performed by the Alaska Department of Fish and Game (ADFG) and the Alaska State Troopers. In addition, the compatibility determination referenced the Master Memorandum of Understanding, which is between ADFG and the Service. The title of the compatibility determination was changed to “State of Alaska Routine Wildlife Management Activities” to better reflect the content and context of the compatibility determination, and State of Alaska agencies are now listed as the Alaska Department of Fish and Game and the Alaska Department of Public Safety Division of State Troopers. We also added the statement “reasonable aircraft access to Refuge lands in Alaska is required by ANILCA” to the justification of this compatibility determination.

Nearly all commenters told us that there were too many airplanes flying around the Refuge, particularly in the Kongakut River drainage, that landing sites had proliferated over the years, and overcrowding and visitor conflicts were occurring as a result. Most commenters felt that the Refuge should limit aircraft overflights and landings and designate no-fly zones to preserve visitors’ wilderness experience. One commenter felt that no-fly zones were needed or appropriate. All of these issues will be discussed in the Visitor Use Management and Wilderness Stewardship step-down planning processes. This compatibility determination will be revisited at that time to determine the need for changes, if any.

Refuge Determination (check one below):

☐ Use is not compatible

☒ Use is compatible

Stipulations Necessary to Ensure Compatibility

A special use permit with the following stipulations is required for commercial air transportation services. These stipulations are intended to minimize impacts and ensure compatibility. Refuge permits may also include other special conditions as necessary or appropriate for the specific operations or activities that are proposed. These stipulations will be updated periodically to reflect management needs or policy changes.

1. Failure to abide by any part of this special use permit; violation of any refuge related provision in Titles 43 (Part 36) or 50 (Subchapters B and C) Code of Federal Regulations; violation of the Marine Mammal Protection Act of 1972; violation of the Endangered Species Act of 1973; or violation of any pertinent State regulation (e.g., fish or game violation) will, with due process, be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
2. The permittee is responsible for ensuring that all employees, party members, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.

3. The permittee must maintain, throughout the use period specified on the permit, Comprehensive General Liability Insurance (\$300,000 each occurrence, \$500,000 annual aggregate) covering all ground or water based operations and (unless air transportation is already covered) Aviation Passenger Liability (\$150,000/seat plus \$100,000 property) covering all aircraft operations involving clients.
4. This permit may be cancelled or revised at any time by the Refuge manager in case of emergency (e.g., high fire danger, flooding, unusual resource problems, etc.).
5. The permittee must notify the Refuge manager during Refuge working hours in person or by telephone before beginning and upon completion of annual activities allowed by this permit.
6. Prior to beginning any activities allowed by this permit, the permittee must provide the Refuge manager with: (1) the name(s) and method of contact for the lead field guide(s); (2) aircraft and other vehicle types to be used and identification information for these vehicles; (3) names of assistant guides and helpers; and (4) any changes to information provided in the original permit application.
7. For billing purposes, the permittee must report the number of clients dropped off, picked-up, and/or shuttled on Arctic Refuge. The report must be received within 30 days of permit expiration. Failure to report by the due date, and pay the Service's client use day fees within 30 days after receiving a bill for collection, will be a violation of this permit.
8. This permit authorizes use only on Arctic Refuge lands. Use of land selected by or conveyed to the State of Alaska or North Slope Borough; or a Native corporation or individual is not authorized by this permit.
9. The permittee and permittee's clients do not have the exclusive use of the site(s) or lands covered by this permit, except for the authorized camp facilities (if applicable).
10. The permittee must take no action that interferes with subsistence activities of rural users or restricts the reasonable access of subsistence users to Refuge lands. This may include but is not limited to disturbance of wildlife and their movements near subsistence hunters, and damage to cabins, trails, traditional campsites, or caches used by subsistence users.
11. In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470 ee), no person may excavate, remove, damage or otherwise alter or deface, or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands unless permitted or exempted (see 16 U.S.C. 470cc for permit or exception guidance). No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange any archaeological resource if such resource was excavated or removed from public lands.
12. Construction of cabins, platforms, or other permanent structures is prohibited.
13. Use of off-road vehicles is prohibited in designated Wilderness areas. Off-road vehicle use in areas not designated as Wilderness is limited to events specifically authorized in writing and in advance of—and in direct support of—the permitted activity. The use of snowmobiles, dog teams, and other means of surface transportation may only be used when adequate snow cover is present and in such a manner as to prevent waste or

damage to the Refuge. The phrase “adequate snow cover” means snow is of a depth to protect the underlying vegetation and soil.

14. Snowmobiles, dog teams, watercraft, and other means of transportation shall be operated in such a manner as to prevent the herding, harassment, hazing, or driving of wildlife for viewing or other purposes.
15. Any human-wildlife interactions that have resulted in animals obtaining food, destroying property, or posing a threat to human safety must be reported to the Refuge manager immediately at (907) 456-0250, as soon as communication becomes available. You are required to submit a written report within 30 days to the Refuge manager for all interactions with grizzly bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a grizzly bear so that this data can be used to help prevent future human-bear conflicts. You may use the Bear Incident Report form (Service 2008). Animals taken in defense of life or property must be reported to the Refuge manager immediately, and to the Alaska State Troopers at (907) 451-5350, and salvaged in accordance with State regulations.
16. The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for take-off and landing, maintain a minimum altitude of 2,000 feet above ground level.
17. Any action by a permittee or the permittee's employees that unduly interferes with or harasses other Refuge visitors or impedes access to any site is strictly prohibited. Examples of prohibited acts include but are not limited to: 1) intentional low flights over camps or persons at less than 500 feet, except when necessary for take-off and landing; 2) parking aircraft or placing other objects (rocks, tents, etc.) on any landable area so as to restrict use by other aircraft; 3) otherwise intentionally interfering in the activity of other Refuge users; 4) and/or engaging in activity that is contrary to State and Federal laws.
18. In the Kongakut River drainage, permittee landings are limited to non-vegetated surfaces such as gravel bars, barrier islands, ridge tops and other areas with no apparent plant cover when viewed from the air during a normal landing site inspection pass. Water landings are allowed and ski operations may continue where adequate snow conditions exist.
19. The construction or clearing of landing area or pads is prohibited. Incidental hand removal of rocks and other minor obstructions may be allowed.
20. Temporary fuel caches are allowed only in designated areas from May 1 through September 30. They must be identified on a U.S. Geological Survey map (or map photocopy) and submitted for approval in writing by the Refuge manager before they are established. Fuel caches must conform to the following:
 - a. No more than 60 gallons can be stored per site.
 - b. Storage must be above the high water line.
 - c. Fuel is limited to aviation gas only.
 - d. Storage must be in containers approved for gasoline and labeled with the permittee's name, address, and type of fuel.

21. The permittee must maintain use areas in a neat and sanitary condition. Latrines must be located at least 200 feet from springs, lakes, and streams. All property (except cabins and/or tent frames) of the permittee must be removed from Refuge lands upon completion of permitted activities.
22. The preeminent value of Arctic Refuge lies in its unsurpassed wilderness condition. The permittee must ensure that all employees and clients seek to minimize the effect of their activities on the wilderness characteristics of the land, wildlife, and the unique experience available there.

All permitted activities that occur within 25 miles of the Beaufort Sea coastline will have the following additional condition:

- The permittee must read the Polar Bear Interaction Guidelines (Guidelines) (Arctic Refuge 2010) to these permit Special Conditions. The Guidelines must also be distributed to all employees and clients of the permittee before engaging in any activities on the Refuge. In addition, the following conditions shall be met:
 - Protection of den sites and minimizing disturbance to sows with small cubs is of critical importance. Guides operating under this permit must become knowledgeable of the signs and behaviors indicating the presence of a den and avoid those areas. No person shall approach or remain within one mile of a polar bear den or of a sow with small cubs. If, at any time, the permittee becomes aware of signs indicating close proximity to a polar bear den or encounters a sow with small cubs, all members of the guided party must immediately retreat to a distance of at least one mile. If, at any time, the location of a den becomes known to the permittee, no approach shall be made closer than one mile. When operating within 25 miles of the Beaufort Sea coastline, the permittee will store attractants (human food, dog food, garbage, etc.) in “bear-resistant” containers to minimize attracting polar bears and avoid conditioning bears to human food. Containers must be approved as “bear-resistant.” Information about certified “bear resistant” containers can be found at www.igbconline.org/html/container.html.
 - Legal take and harassment of polar bears is limited to defense of life or subsistence harvest by coastal-dwelling Native Alaskan situations only. Any killing or harassment of a polar bear in defense of life must be reported to the Refuge manager and to the U.S. Fish and Wildlife Service Office of Law Enforcement at (907) 456-2335 immediately, as soon as communication becomes available. You are also required to submit a completed copy of the Bear Incident Report form (Service 2008) to the Refuge manager for all interactions with polar bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a polar bear so that this data can be used to help prevent future human-bear conflicts.

Justification: Reasonable aircraft access to refuge lands in Alaska is required by ANILCA. Additionally, commercial aircraft operations in national wildlife refuges in Alaska facilitate a variety of quality opportunities for the public to hunt, fish, or enjoy outdoor activities where such activities are compatible with the Refuge’s purposes, resources, and management objectives. The congressional committee report on the National Wildlife Refuge System Improvement Act of 1997 states: “It establishes as the policy of the United States that wildlife-dependent

recreation, when it is compatible, is a legitimate and appropriate public use of the Refuge System, through which the American public can develop an appreciation for fish and wildlife.”

Commercial aircraft operations provide the public with access to unique hunting, fishing, wildlife observation, wildlife photography, and environmental education opportunities found few places in the world. These are activities the National Wildlife Refuge System Administration Act of 1966 (as amended by the Refuge Improvement Act of 1997) identifies as priority public uses. Commercial aircraft operations provide a valuable benefit to a segment of the public that does not have other means of access to the extremely remote environment of the Refuge and support other uses found compatible in separate compatibility determinations. Commercial aircraft operations also provide public access for other compatible Refuge uses (e.g., scientific research).

Special use permits authorizing this activity will be appropriately conditioned to protect Refuge resources and visitor experiences, and the activity will be monitored to ensure that an appropriate level of use is maintained. After fully considering the impacts of this activity, as described previously in the “Anticipated Impacts of Use(s)” section of this document, I find that this use will not materially interfere with or detract from the fulfillment of the Refuge System mission or the purposes of the Refuge.

Supporting Documents:

Arctic National Wildlife Refuge. 2010. Polar bear interaction guidelines. U.S. Fish and Wildlife Service, Fairbanks, Alaska. Unpublished. 3pp.

Interagency Grizzly Bear Committee. IBG Certified bear resistant products webpage. <http://www.igbconline.org/html/container.html>, Accessed August 23, 2012.

U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.

U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.

U.S. Fish and Wildlife Service. 2008. Region 7: Bear awareness and firearms safety training policy, Appendix F. U.S. Fish and Wildlife Service. Anchorage, Alaska. Unpublished. 36 pp.

U.S. Fish and Wildlife Service. 2010. Arctic National Wildlife Refuge Public Use Summary. U.S. Fish and Wildlife Service. Fairbanks, Alaska. Unpublished. 45 pp.

U.S. Fish and Wildlife Service. 2011. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.

Refuge Determination:

Refuge Manager/

Project Leader Approval

/signed/ Richard VossAugust 7, 2012

Date

Concurrence:

Regional Chief

National Wildlife

Refuge System

/signed/ Mike Boylan (acting)August 15, 2012

Date

Mandatory 10-year Re-Evaluation Date: 2022***Mandatory 15-year Re-Evaluation Date*** (for priority public uses): 2027***NEPA Compliance for Refuge Use Decision:***☐ Categorical Exclusion without Environmental Action Memorandum☐ Categorical Exclusion and Environmental Action Memorandum☐ Environmental Assessment and Finding of No Significant Impact☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Commercial Big-game Hunting Guide Services

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

The Wilderness Act of 1964 (Public Law 88-577) creates the following additional purposes for the designated Wilderness area within the Refuge’s boundaries; these purposes are within and supplemental to the Refuge’s ANILCA and Range purposes: secure an enduring resource of

Wilderness; protect and preserve the Wilderness character of areas within the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): This is a re-evaluation of the compatibility of use of Federal lands in the Refuge for guided hunting of big-game. This use is an existing activity that supports wildlife-dependent priority public uses. Commercial big-game hunting guide activities would occur during State-regulated hunting seasons. This compatibility determination addresses the full spectrum of uses associated with the overall activity of commercially guided hunting of big game, including all means of access, lodging and facilities, and other elements identified in the guides' operations plans. Authorized modes of access for guided hunts in all areas in the Refuge include fixed-wing aircraft, motorboats, non-motorized boats, dogsled, foot, snowshoe, and cross-country ski. Lodging and facilities include tents and other temporary structures, and caches. The compatibility of non-guided general hunting on the Refuge is evaluated in a separate compatibility determination.

The State of Alaska is primarily responsible for managing fish and resident wildlife through setting seasons, bag limits, methods and means of harvest, and licensing of commercial guiding operators. The State of Alaska divides the State into game management units (GMUs), and big-game hunting guides are authorized to provide services in a specified portion of a GMU (registered guide use area). The following GMUs fall within the boundaries of the Refuge: 25A, 25B, 25D, 26B, and 26C. The Refuge manages 16 commercial big-game guiding areas on the Refuge through an exclusive special use permit process. Fifteen areas are currently awarded to 12 guides. One guide area is not currently offered. Guides and their clients are required to follow current State and Federal hunting regulations, including the requirements for applicable licenses and permits. Clients of big-game hunting guides seek black and grizzly bears, caribou, Dall's sheep, moose, wolves, and wolverines. Many of the hunters on Arctic Refuge hunt several species during the same hunt. It is common for a hunter to have sheep, caribou, and grizzly bear tags for a hunt north of the Brooks Range, or moose, caribou, and grizzly bear tags for a south-side hunt.

On average, it appears that hunters make up 28 percent, and other recreational visitors make 72 percent, of the total number of commercially-supported visitors. Guided hunters made up about 25 percent of the total number of commercially-supported general hunters, while non-guided hunters using commercial air operators made up about 75 percent (Service 2010). Approximately 80 hunters a year utilize big-game hunting guide services (C. Villa, Service, unpublished data).

Availability of Resources: Permits are issued competitively for five years, with provision for renewal for an additional five-year term. The competitive process requires a substantial level of time and effort for the applicants and for Refuge and agency staff. Adequate Refuge personnel and base operational funds are available to manage guided big-game hunting activities at existing and projected levels.

Service staff participation includes the following. During the initial competitive process, Refuge employees review and rank applications; this process can take three employees up to four weeks, depending on the number of GMUs and applicants. The scores and applications are forwarded to the Refuge manager, who spends approximately one month writing and reviewing the prospectus, conducting guide interviews and making a selection, writing decision documents, and addressing appeals that may result in litigation. Appropriate staff assist the Refuge manager throughout the decision process.

After initial selection, Refuge employees spend about 10 days per year on oversight, permit compliance, and other guiding issues. Staff may spend one week issuing or renewing permits, administering use-day fee collections, monitoring permit compliance, and conducting related activities. Law enforcement officers spend an average of four to six weeks per year patrolling during the hunting season to monitor permit and hunting regulation compliance. In summary, staff time primarily involves reviewing applications, researching and writing decisions, responding to appeals, issuing and renewing special use permits every five years, ensuring licenses and certificates are current, collecting client use-day fees, and reporting data on an annual basis. An administrative fee is assessed when each permit is issued. In addition, client use-day fees are assessed for each day a guide has a client on the Refuge. Fees collected are returned to the Refuge to administer the program.

The Refuge's administrative oversight of the activity and comprehensive State and Federal regulations continually evolves to respond to management needs. Compliance with regulations and permit conditions will be routinely checked by Refuge staff. Refuge law enforcement personnel will also help minimize direct impacts from commercial air transportation services by enforcing compliance with special use conditions.

Anticipated Impacts of Use(s): Criteria in the competitive scoring and selection process used to select big-game guide permittees are intended to minimize impacts to resources in the Refuge and to other visitors. These criteria include impacts on wildlife resources; other Refuge resources such as water quality, soil, and vegetation; and other Refuge users, especially subsistence users. The criteria address such factors as target species, number of clients, transportation modes, amount of aircraft use, fuel storage, garbage and human waste management, methods to protect wildlife and habitat, type and location of lodging, and location of access points. These selection criteria are used to rank or score applicants and provide a strong incentive to maintain a low-impact guide service. Permit conditions and stipulations noted in the following sections also contribute to minimizing potential impacts.

Commercial big-game hunting is also regulated by the State, and new draft regulations (AS 08.54 and 12 AAC 75) are under review by the Big Game Commercial Services Board. Commercial big-game guiding operations may, in some cases, result in some competition or interference with subsistence users and/or other non-guided general hunters for the limited number of game animals in river corridors. Refuge staff members are aware of these potential conflicts and monitor use levels each hunting season. Should allocation conflicts arise, the U.S.

Fish and Wildlife Service (Service) will work to address them through the Federal Subsistence Board and the Alaska Board of Game and may develop further stipulations to address these concerns. These boards establish regulations aimed at managing populations of animals at sustainable levels and to avoid conflicts between user groups.

Perceived crowding in high-use drainages at peak times of the year is an issue, as well as physical impacts such as waste accumulation and localized vegetation damage. If the Refuge manager determines there are threats to resources or substantive user conflicts due to repeated landings, the permit may be modified to restrict the permit holder. The Refuge manager may also require removal of human waste at landing sites that are heavily used in the guide area. However, as these are emerging issues, further monitoring will need to be conducted. Future stipulations may be developed to address these concerns.

Other impacts associated with this activity could be minimal and transitory to minor, and long-term. Disturbance to vegetation is site specific, minor, and long-term and would likely be restricted to campsites that receive repetitive use and to aircraft landings on non-durable surfaces. Landing aircraft on non-durable surfaces can cause minor to moderate site-specific and long-term effects to Refuge habitats and vegetation. In several areas, soil compaction, scarring, and occasionally rutting have been documented. This is not a problem where aircraft land on durable surfaces such as gravel and sand bars, water, ice and snow, and certain other durable or resistant surfaces. These effects can be minimized or prevented by limitations, including temporal limits, on where aircraft can land or under what conditions, including aircraft weight or tire configuration. Although not known to occur on the Refuge, landing aircraft could introduce invasive species that could impact resources in the Refuge. We will continue to monitor for such occurrences. Low overflights, and sometimes landings and take-offs, can disturb or displace wildlife and bother visitors, although the effects are brief and usually minor.

Landings on vegetated lowland tundra and disturbance to vegetation outside established landing areas have been limited in the Kongakut drainage under the stipulations of the special use permit. Access to the Refuge during summer months would be by landing aircraft primarily on gravel bars and occasionally on tundra/vegetated areas. Landings on vegetated lowland tundra and disturbance to vegetation outside established landing areas could be limited under the stipulations of the special use permit. The introduction of invasive species could affect resources in the Refuge, although it is not known to have occurred by this activity in the Refuge to date. Staff will continue to monitor these areas for such occurrences.

Compliance with regulations and permit conditions will be routinely checked by officers. Refuge officers and State wildlife protection officers would routinely patrol the Refuge during hunting seasons.

Public Review and Comment:

Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge's Revised Comprehensive Conservation Plan (Revised Plan, Plan) and environmental impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan, which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on

the Refuge's web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. We received two specific comments on this compatibility determination.

One commenter suggested that we combine all consumptive recreation into a single compatibility determination called "Fish and Wildlife Harvest Programs" that would focus on the biological effects of wildlife management activities that are implemented through State regulations. The Service agrees that this is one way that compatibility determinations could be organized, and our policy allows for consideration of uses either independently or as a group of related issues. We feel that analyzing the commercial consumptive recreational uses individually and separate from the non-commercial consumptive uses serves us better for several reasons; the uses are not dependent upon one another, and we can better analyze the use and its potential to impact Refuge purposes, and propose stipulations that apply specifically to commercial users in the permit process when the use is considered individually. The same individual recommended that we not allow food and gear caches in Wilderness. Refuge regulations currently allow for the temporary storage of food and gear, and we believe this is reasonable as caches are often necessary for visitors who make long or expeditionary type trips across the Refuge. Current stipulations for commercially-guided hunters require that all cached food be stored in bear-resistant containers.

The Alaska Chapter of Wilderness Watch commented that current use levels may be exceeding what might be compatible, that stipulations on use are not adequate in all circumstances, and that this may be impacting Wilderness character. For example, crowding and human waste problems are occurring. While we have found that current public use programs do not materially interfere with or detract from the Refuge's purposes or the System mission and are therefore compatible, we acknowledge that the Refuge's public use management program has not fully protected Refuge values, including Wilderness character. The Visitor Use Management and Wilderness Stewardship step-down plans will address these issues, and it is likely that one or more uses will need to be re-evaluated as part of that planning process. It should be realized, however, that the Refuge has many mandates, including the requirement to provide for reasonable aircraft access to facilitate public use. In some areas, management must balance this access provision with uncompromised protection of natural conditions.

General comments mostly echoed the type of specific comments received about general hunting. Some people felt that all hunting, but especially big-game hunting for sport, could have an effect on the population structure and genetic diversity of animal populations on the Refuge. Some also felt that general big-game hunting (as opposed to subsistence), which typically involves commercial services, is inconsistent with Refuge purposes and the management goals stated in the Plan. When allowed, fair-chase principles should be followed. Several commenters felt that the Refuge needed more information on wildlife harvest, particularly in high access drainages, denning areas, feeding sites, or migration corridors. One person commented that hunting should be banned from Arctic Refuge. Several of the commenters from villages in the southern portion of the Refuge were concerned with harvest from non-subsistence hunters in the Red Sheep Creek area.

In response to comments about non-local guided hunters, we clarified the justification to explain that with few exceptions, non-Alaska residents are required by law to hire a guide to hunt sheep, brown bear, and mountain goats; therefore, if guided hunting wasn't permitted, non-Alaska residents would not have the opportunity to hunt sheep or grizzly bear on Arctic

Refuge. No other changes were made to the compatibility determination as a result of public comments, but minor edits were made from comments received during the Service's internal review. We increased the amount of staff time needed to review permits from one week to four based on previous experience, deleted some phrases that did not apply to commercial big-game hunting, and updated information on the related (supporting use) issue of aircraft impacts, as in other compatibility determinations. We also updated our permit stipulations to reflect the new Region 7 Cabin Policy (stipulation # 25).

Refuge Determination (check one below):

☐ Use is not compatible

☒ Use is compatible

Stipulations Necessary to Ensure Compatibility: A special use permit with the following stipulations is required for commercial big-game guiding services. These stipulations are intended to minimize impacts and ensure compatibility. Refuge permits may also include other special conditions as necessary or appropriate for the specific operations or activities that are proposed. These stipulations will be updated periodically to reflect management needs or policy changes.

1. Failure to abide by any part of this special use permit; violation of any refuge related provision in Titles 43 (Part 36) or 50 (Subchapters B and C) Code of Federal Regulations; violation of the Marine Mammal Protection Act of 1972; violation of the Endangered Species Act of 1973; or violation of any pertinent state regulation (e.g., fish or game violation) will, with due process, be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
2. The permittee is responsible for ensuring that all employees, party members, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
3. This permit may be cancelled or revised at any time by the Refuge manager in case of emergency (e.g., high fire danger, flooding, unusual resource problems, etc.).
4. The permittee must notify the Refuge manager during Refuge working hours in person or by telephone before beginning and upon completion of annual activities allowed by this permit.
5. The permittee is responsible for accurate record keeping and must provide the Refuge manager with a comprehensive summary report of the number of clients, and number of client days per activity type by December 31 for all uses during that calendar year unless stated otherwise in the permit. A legible copy of the State's "Hunt Record" for each client will be required in addition to the summary report.
6. The permittee and permittee's clients do not have the exclusive use of the site(s) or lands covered by this permit, except for the authorized camp facilities (if applicable).

7. The permittee must take no action that interferes with subsistence activities of rural users or restricts the reasonable access of subsistence users to Refuge lands. This may include but is not limited to disturbance of wildlife and their movements near subsistence hunters, and damage to cabins, trails, traditional campsites, or caches used by subsistence users.
8. In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470 ee), no person may excavate, remove, damage or otherwise alter or deface, or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands unless permitted or exempted (see 16 U.S.C 470cc for permit or exception guidance). No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange any archaeological resource if such resource was excavated or removed from public lands.
9. Construction of cabins, platforms, or other permanent structures is prohibited.
10. Use of off-road vehicles is prohibited in designated Wilderness areas. Off-road vehicle use in areas not designated as Wilderness is limited to events specifically authorized in writing and in advance of—and in direct support of—the permitted activity. The use of snowmobiles, dog teams, and other means of surface transportation may only be used when adequate snow cover is present and in such a manner as to prevent waste or damage to the Refuge. The phrase “adequate snow cover” means snow is of a depth to protect the underlying vegetation and soil.
11. Snowmobiles, dog teams, watercraft, and other means of transportation shall be operated in such a manner as to prevent the herding, harassment, hazing, or driving of wildlife for viewing or other purposes.
12. Any human-wildlife interactions that have resulted in animals obtaining food, destroying property, or posing a threat to human safety must be reported to the Refuge manager immediately at (907) 456-0250, as soon as communication becomes available. You are required to submit a written report within 30 days to the Refuge manager for all interactions with grizzly bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a grizzly bear so that this data can be used to help prevent future human-bear conflicts. You may use the Bear Incident Report form (Service 2008). Animals taken in defense of life or property must be reported to the Refuge manager immediately and to the Alaska State Troopers at (907) 451-5350, and salvaged in accordance with State regulations.
13. Use of fuel stoves is encouraged over use of wood for cooking and heating. Only dead and down wood may be used for fires and other purposes. Live and standing dead wood must not be altered or used in a way that causes damage to it.
14. Motorboat operators must possess a U.S. Coast Guard license for all passenger carrying operations, if required by U.S. Coast Guard regulations.
15. Failure to report the actual number of client use days per type of authorized activity by December 31 of each calendar year and annually pay the Service's established fees (client use day and reserved land site) within 30 days after receiving a bill for collection will be grounds for revocation of this permit.
16. Prior to beginning any activities allowed by this permit, the permittee must provide the Refuge manager with: (1) proof of Comprehensive General Liability Insurance

- (\$300,000 each occurrence, \$500,000 aggregate) covering all aspects of operations throughout the annual use period, (2) aircraft and other vehicle types to be used, with identification information, if different from the original permit or previous year; (3) changes in names of assistant guides and other employees; and (4) any other changes in information provided in the original permit/proposed operations plan.
17. The permittee may not sublet any part of the authorized use area and is prohibited from subcontracting clients with any other guide. The permittee must also be personally present with each client in the Refuge designated use area at least once during each contracted hunt.
 18. This permit does not authorized use of Native selected lands within the permit area unless approved by the Refuge manager. The applicant must provide the Refuge manager with written views from the affected Native organization(s) before authorization to use the selected lands can be considered. However, if the affected Native organization(s) provide no response to the permittee's request for views, the permittee may provide the Refuge manager with a copy of the letter that he/she sent requesting the views of Native organization(s). If any of the selected lands are conveyed during the term of this permit, the permittee will no longer be authorized to use those lands.
 19. This permit authorizes use on State selected lands. If any of these lands are conveyed during the term of this permit, the permittee will no longer be authorized to use those lands until and unless permission is obtained from the Alaska Department of Natural Resources.
 20. Any action by a permittee or the permittee's employees that unduly interferes with or harasses other Refuge visitors or impedes access to any site is strictly prohibited. Examples of prohibited acts include but are not limited to low flights over camps or persons at less than 500 feet (unless landing) and parking aircraft or placing other objects (rocks, tents, etc.) on any landable area so as to restrict use by other aircraft or persons.
 21. Fuel storage sites must be approved by the Refuge manager. Preparations to prevent and respond to a fuel spill must be fully adequate at all sites for the amount of fuel stored on site.
 22. Equipment caches may be located in approved areas. Contact the Refuge manager for approval. The cache will be clearly marked with the permittee's name, will be designed to blend in with the surrounding environment, and will be bear-proof.
 23. All temporary accommodations will be constructed of materials that blend with the immediate surroundings. Campsites, shelters, and equipment will be used and maintained in a manner consistent with the protection of area resources, including Wilderness character.
 24. Base camp locations must be approved by the Refuge manager. Base camps will be located on durable surfaces or relocated at intervals adequate to prevent site impacts.
 25. The Service does not guarantee protection of a permitted cabin or its contents in the event of fire. Public and firefighter safety is the first priority in wildland fire activities and decisions. Firefighter safety will not be compromised for structure protection. Current cabin permittees will be authorized to establish defensible space around the

permitted cabin or structure using Alaska Wildland Fire Coordinating Group Fire Wise standards. New permits for cabins constructed after the date of this policy may be issued without authorizing Fire Wise standards because of other resource considerations. In all cases, the cabin permit must clearly state that the permittee understands the inherent risk in wildfire and that the cabin and its contents may not be protected in the event of a wildfire.

26. The permittee's operation plan, as amended and accepted by the U.S. Fish and Wildlife Service, is hereby incorporated in its entirety as a special condition. All deviations from the operations plan must receive prior written approval by the Refuge manager or his designee.
27. Frequent landing sites are limited to non-vegetated surfaces such as gravel bars, barrier islands, ridge tops, and other areas with no apparent plant cover when viewed from the air during a normal landing site inspection pass. Aircraft will avoid landing on fragile or wet tundra soil sites. Water landings are allowed and ski operations may continue where adequate snow cover exists. If the Refuge manager determines there is a threat to resources or substantive user conflicts due to repeated landings, then the permit may be modified to restrict the permit holder to designated sites or types of sites.
28. All aircraft being used in a commercial guiding operation must have 12" identification numbers in contrasting colors that are readily visible.
29. The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for take-off and landing, maintain a minimum altitude of 2,000 feet above ground level.
30. The construction or clearing of landing areas or pads is prohibited. Incidental hand removal of rocks and other minor obstructions may be allowed.
31. The permittee must maintain their use areas in a neat and sanitary condition. Latrines must be located at least 200 feet from springs, lakes, and streams. All property (except cabins and/or tent frames) of the permittee must be removed from Refuge lands upon completion of permitted activities.
32. Provisions for human waste management and disposal must be approved by the Refuge manager.
33. All garbage and trash will be secured in a manner that minimizes attraction to wildlife and must be removed from the field before vacating the site for the season.
34. The preeminent value of Arctic Refuge lies in its unsurpassed wilderness condition. The permittee must ensure that all employees and clients seek to minimize the effect of their activities on the wilderness characteristics of the land, wildlife, and the unique experience available there.

For special use permits issued in designated Wilderness, the following conditions also apply:

- Boat motors and/or generators are not authorized for use within designated Wilderness.

All permitted activities that occur within 25 miles of the Beaufort Sea coastline will have the following additional condition:

- The permittee must read the Polar Bear Interaction Guidelines (Guidelines) (Arctic Refuge 2010) to these permit Special Conditions. The Guidelines must also be distributed to all employees and clients of the permittee before engaging in any activities on the Refuge. In addition, the following conditions shall be met:
 - Protection of den sites and minimizing disturbance to sows with small cubs is of critical importance. Guides operating under this permit must become knowledgeable of the signs and behaviors indicating the presence of a den and avoid those areas. No person shall approach or remain within one mile of a polar bear den or of a sow with small cubs. If, at any time, the permittee becomes aware of signs indicating close proximity to a polar bear den or encounters a sow with small cubs, all members of the guided party must immediately retreat to a distance of at least one mile. If, at any time, the location of a den becomes known to the permittee, no approach shall be made closer than one mile. When operating within 25 miles of the Beaufort Sea coastline, the permittee will store attractants (human food, dog food, garbage, etc.) in “bear-resistant” containers to minimize attracting polar bears and avoid conditioning bears to human food. Containers must be approved as “bear-resistant.” Information about certified “bear resistant” containers can be found at www.igbconline.org/html/container.html.
 - Legal take and harassment of polar bears is limited to defense of life or subsistence harvest by coastal-dwelling Native Alaskan situations only. Any killing or harassment of a polar bear in defense of life must be reported to the Refuge manager and to the U.S. Fish and Wildlife Service Office of Law Enforcement at (907) 456-2335 immediately, as soon as communication becomes available. You are also required to submit a completed copy of the Bear Incident Report form (Service 2008) to the Refuge manager for all interactions with polar bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a polar bear so that this data can be used to help prevent future human-bear conflicts.

Justification: The congressional committee report on the National Wildlife Refuge System Improvement Act of 1997 states: “It establishes as the policy of the United States that wildlife-dependent recreation, when it is compatible, is a legitimate and appropriate public use of the Refuge System, through which the American public can develop an appreciation for fish and wildlife.”

Big-game guides are competitively selected to operate on Refuge lands through a formal process, first established by regional policy in 1992, and later codified (50 CFR 36.41). Competitive selection is intended to limit or manage commercial guiding to a level compatible with Refuge purposes and to ensure that quality guiding services are available to the public. Big-game guides are required to comply with all applicable State and Federal laws and regulations and to obtain required State and Federal permits and/or authorizations related to their guiding activities.

In Arctic Refuge, the objective of allowing commercial big-game guiding is to make available to the public a variety of quality recreational hunts on areas of the Refuge where such activities are compatible with the mission of the Refuge System and the Refuge’s purposes, and consistent with management objectives. With few exceptions, non-Alaska residents are required by law to

hire a guide to hunt sheep, brown bear, and mountain goats (goats do not occur on Arctic Refuge). Non-Alaska resident aliens—people who are not citizens of the United States—must hire a guide to hunt any big-game species (State of Alaska hunting regulations). Therefore, if guided hunting was not permitted, non-Alaska residents would not have the opportunity to hunt sheep or grizzly bear on Arctic Refuge. Hunting is a healthy, traditional outdoor pastime, deeply rooted in the American heritage. Hunting can instill a unique understanding and appreciation of wildlife, their behavior, and their habitat needs (605 FW 2.3).

In order to maintain quality hunting programs on the Refuge, the Arctic Guide Use Offering requires that general hunting reflect well on the Refuge and on the tradition of hunting, and promote positive hunting values and hunter ethics such as fair chase. Arctic Refuge provides guided hunters with reasonable harvest opportunities, less crowding, less competition, fewer conflicts between hunters, and relatively undisturbed wildlife. Guides are expected to help ensure greater hunter safety, less than average crippling loss, and less interference from or dependence on mechanized aspects of the sport (from Arctic Refuge Guide Use Area Offering).

To protect sensitive resources and the pristine wilderness values of guide use areas and to maintain quality wilderness experiences for other users, strong consideration for selection of guides is given to proposed operations that incorporate Leave No Trace or other minimal impact techniques in base and spike camp operations, and minimize use and impacts of aircraft or other motorized access. In addition, the guiding activities authorized are subject to permit conditions needed to protect the natural resources, subsistence user access, and wilderness values of the area.

After fully considering the impacts of this activity, as described previously in the “Anticipated Impacts of Use(s)” section of this document, it is my determination that commercially guided big-game hunting activities on the Refuge do not materially interfere with or detract from the purposes of the Refuge or the mission of the Refuge System.

Supporting Documents:

Arctic National Wildlife Refuge. 2010. Polar bear interaction guidelines. U.S. Fish and Wildlife Service, Fairbanks, Alaska. Unpublished. 3pp.

U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.

U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.

U.S. Fish and Wildlife Service. 1992. Environmental Assessment for the Policy on Commercial Big Game Guide-Outfitters and Transporters on National Wildlife Refuges in Alaska. U.S. Fish and Wildlife Service, May 22, 1992. Anchorage, Alaska, USA.

U.S. Fish and Wildlife Service. 2008. Region 7: Bear awareness and firearms safety training policy, Appendix F. U.S. Fish and Wildlife Service. Anchorage, Alaska. Unpublished. 36 pp.

- U.S. Fish and Wildlife Service. 2010. Arctic National Wildlife Refuge Public Use Summary. U.S. Fish and Wildlife Service. Fairbanks, Alaska. Unpublished. 45 pp.
- U.S. Fish and Wildlife Service. 2011. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.

Refuge Determination:

Refuge Manager/
Project Leader Approval /signed/ Richard Voss July 30, 2012
Date

Concurrence:

Regional Chief
National Wildlife
Refuge System /signed/ Mike Boylan (acting) August 15, 2012
Date

Mandatory 10-year Re-Evaluation Date: 2022

Mandatory 15-year Re-Evaluation Date (for priority public uses): 2027

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusion and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Commercial Recreational Fishing Guide Services

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

The Wilderness Act of 1964 (Public Law 88-577) creates the following additional purposes for the designated Wilderness area within the Refuge’s boundaries; these purposes are within and

supplemental to the Refuge's ANILCA and Range purposes: secure an enduring resource of Wilderness; protect and preserve the Wilderness character of areas within the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): This is a re-evaluation of the compatibility of commercial recreational fishing guide services as a use of Federal lands in Arctic Refuge. This activity was originally found to be compatible in 1988 during the development of the original Arctic Refuge Comprehensive Conservation Plan and again determined to be compatible in 1994, subject to reasonable regulation and special conditions provided with a special use permit.

The State of Alaska is primarily responsible for managing fish and resident wildlife through setting seasons, bag limits, methods and means of harvest; and licensing of commercial guiding operators. Commercial recreational fishing guide services provided in the Refuge are only allowed by Refuge special use permit. "Run of the river" fishing operations are required by Refuge management in place of operations that provide multi-night base camping on a single spawning ground. Means of access include fixed-wing airplanes, inflatable boats, hiking, and snowmobiling. Guided recreational fishing in Alaska occurs spring through winter and is managed under State fishing regulations (5AAC). The major rivers and lakes on the Refuge have fair fishing opportunities, based on reasonable accessibility by airplane or boat, and sustainable populations of anadromous and/or resident fish. Although all these drainages provide opportunities for multi-day use and overnight primitive camping, distance and cost of traveling to these areas for day-use recreational fishing is prohibitive for most visitors. Species of primary interest are arctic char, lake trout, and grayling.

Commercially guided recreational fishing generally occurs for lake trout or Arctic char, either in conjunction with other use or, rarely, as the primary use. The information available indicates that catch-and-release fishing is common. More often, recreational fishing has occurred as an incidental, occasional, or subsidiary activity to other guided activities such as floating, hiking, or big-game hunting, for example, and has not been considered as a guided activity in that context. Only two non-motorized, commercially guided recreational fishing services special use permits have been issued within the last 10 years. Neither of these permits reported any activity. It is likely the reason for low use is that much better, less expensive fishing is available elsewhere in the State.

Availability of Resources: Adequate Refuge personnel and base operational funds are available to manage commercially guided recreational fishing at current existing and projected

levels. Administrative staff time primarily involves issuing permits, ensuring the licenses and certifications are current, collecting client use-day fees, and recording activity data. Field work associated with administering the program primarily involves monitoring permittees' compliance with the terms of the permits and resource law enforcement patrols. Estimated staff time to annually administer and monitor these permits is less than two weeks. An administrative fee is assessed when each permit is issued. In addition, a client use-day fee is assessed for each day a guide has a client on the Refuge. In addition, fees are returned to the Refuge to manage the program.

Anticipated Impacts of Use(s): The Federal Subsistence Board and State Board of Fisheries regularly adopt regulations in response to fish population levels and to address issues of fishery allocation. Providing an opportunity for continued subsistence uses of fishery resources by local residents receives the highest priority from the Federal Subsistence Board. Recent (1998 to present) Chinook salmon returns have been characterized as poor, and managers (State and Federal) may restrict recreational use of this resource. Chum salmon experienced a worrisome decline in the late 1990s; however, recent run strengths indicate that a recreational fishery on chum salmon currently is sustainable. Guided recreational harvests are monitored to protect fish, as well as subsistence resources for people living near the Refuge.

At current levels, guided recreational fishing harvests require little to no monitoring, and there are no anticipated deleterious effects on fish habitat. Should intensity of use increase, Refuge staff would increase monitoring efforts. If necessary, Refuge staff would review regulations and propose changes to protect fishery resources and subsistence fishing opportunities for people living near the Refuge. We will continue to work with the Fairbanks Fish and Wildlife Field Office to implement inventories and conduct studies aimed at better understanding fish populations on the Refuge.

Additional potential impacts or threats are associated with airplane or motorboat access. Landing aircraft on non-durable surfaces can cause minor to moderate site-specific and long-term effects to Refuge habitats and vegetation. In several areas, soil compaction, scarring, and occasionally rutting have been documented. This is not a problem where aircraft land on durable surfaces such as gravel and sand bars, water, ice and snow, and certain other durable or resistant surfaces. These effects can be minimized or prevented by limitations, including temporal limits, on where aircraft can land or under what conditions, including aircraft weight or tire configuration. Although not known to occur on the Refuge, landing aircraft could introduce invasive species that could impact resources in the Refuge. We will continue to monitor for such occurrences. Low overflights, and sometimes landings and take-offs, can disturb or displace wildlife and bother visitors, although the effects are brief and usually minor.

Landings on vegetated lowland tundra and disturbance to vegetation outside established landing areas have been limited in the Kongakut drainage under the stipulations of the special use permit. Access to the Refuge during summer months would be by landing aircraft primarily on gravel bars and, occasionally on tundra/vegetated areas. Landings on vegetated lowland tundra and disturbance to vegetation outside established landing areas could be limited under the stipulations of the special use permit.

The accidental introduction of invasive aquatic species from fishing tackle or waders could affect Refuge resources, although it is not known to have taken place in the Refuge to date.

Aquatic invasive species can cause long-term damage to aquatic ecosystems. Staff will continue to monitor areas for such occurrences.

Public Review and Comment: Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge's Revised Comprehensive Conservation Plan (Revised Plan, Plan) and environmental impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan, which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on the Refuge's web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. We received one specific comment on this compatibility determination.

One commenter suggested that we combine all consumptive recreation into a single compatibility determination called "Fish and Wildlife Harvest Programs" that would focus on the biological effects of wildlife management activities that are implemented through State regulations. The Service agrees that this is one way that compatibility determinations could be organized, and our policy allows for consideration of uses either independently or as a group of related issues. We feel that analyzing the commercial consumptive recreational uses individually and separate from the non-commercial consumptive uses serves us better for several reasons; the uses are not dependent upon one another, and we can better analyze the use and its potential to impact Refuge purposes, and propose stipulations that apply specifically to commercial users in the permit process when the use is considered individually.

We received two general comments on fishing, both of which wanted to ensure the Refuge maintains quality fishing and not allow popular fishing sites to become over-fished. The comments also did not want associated camping areas along rivers to become overused and degraded.

No changes were made to the compatibility determination as a result of public comments except that we updated information on the related (supporting use) issue of aircraft impacts, as in other compatibility determinations. Minor edits were also made from comments received during the Service's internal review.

Determination:

☐ Proposed activity is not compatible

☒ Proposed activity is compatible

Stipulations Necessary to Ensure Compatibility: A special use permit with the following stipulations is required for commercial recreational fishing guide services. These stipulations are intended to minimize impacts and ensure compatibility. Refuge permits may also include other special conditions as necessary or appropriate for the specific operations or activities that are proposed. These stipulations will be updated periodically to reflect management needs or policy changes.

1. Failure to abide by any part of this special use permit; violation of any refuge related provision in Titles 43 (Part 36) or 50 (Subchapters B and C) Code of Federal Regulations; violation of the Marine Mammal Protection Act of 1972; violation of the Endangered Species Act of 1973; or violation of any pertinent state regulation (e.g., fish or game violation) will, with due process, be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
2. The permittee is responsible for ensuring that all employees, party members, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
3. The permittee must maintain, throughout the use period specified on the permit, Comprehensive General Liability Insurance (\$300,000 each occurrence, \$500,000 annual aggregate) covering all ground or water based operations and (unless air transportation is already covered) Aviation Passenger Liability (\$150,000/seat plus \$100,000 property) covering all aircraft operations involving clients.
4. This permit may be cancelled or revised at any time by the Refuge manager in case of emergency (e.g., high fire danger, flooding, unusual resource problems, etc.).
5. The permittee must notify the Refuge manager during Refuge working hours in person or by telephone before beginning and upon completion of annual activities allowed by this permit.
6. Prior to beginning any activities allowed by this permit, the permittee must provide the Refuge manager with: (1) the name(s) and method of contact for the lead field guide(s); (2) aircraft and other vehicle types to be used and identification information for these vehicles; (3) names of assistant guides and helpers; and (4) any changes in information provided in the original permit application.
7. The permittee must provide the Refuge manager with a Client Use Report of the trip dates, locations, number of clients each trip, number of clients per trip, and number and species of all animals taken (if applicable). The permittee may be required to provide names, addresses, and phone numbers of clients.
8. Client Use Reports must be received by October 15, or within 30 days of permit expiration, whichever date is earliest. For permits valid beyond October 31, partial reports including all activity through October 15 must be received by October 31, and reports for activity between October 16 and the date of the permit's expiration must be received within 30 days of the permit's expiration. Failure to report the actual number of client use days per type of activity on or before the due date, and pay the Service's client use day fees within 30 days after receiving a bill for collection, will be a violation of this permit.
9. This permit authorizes use only on Arctic Refuge lands. Use of land selected by or conveyed to the State of Alaska or North Slope Borough; or a Native corporation or individual is not authorized by this permit.

10. The permittee and permittee's clients do not have the exclusive use of the site(s) or lands covered by this permit, except for the authorized camp facilities (if applicable).
11. The permittee must take no action that interferes with subsistence activities of rural users or restricts the reasonable access of subsistence users to Refuge lands. This may include but is not limited to disturbance of wildlife and their movements near subsistence hunters, and damage to cabins, trails, traditional campsites, or caches used by subsistence users.
12. In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470 ee), no person may excavate, remove, damage or otherwise alter or deface, or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands unless permitted or exempted (see 16 U.S.C 470cc for permit or exception guidance). No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange any archaeological resource if such resource was excavated or removed from public lands.
13. Construction of cabins, platforms, or other permanent structures is prohibited.
14. Use of off-road vehicles is prohibited in designated Wilderness areas. Off-road vehicle use in areas not designated as Wilderness is limited to events specifically authorized in writing and in advance of—and in direct support of—the permitted activity. The use of snowmobiles, dog teams, and other means of surface transportation may only be used when adequate snow cover is present and in such a manner as to prevent waste or damage to the Refuge. The phrase “adequate snow cover” means snow is of a depth to protect the underlying vegetation and soil.
15. Snowmobiles, dog teams, watercraft, and other means of transportation shall be operated in such a manner as to prevent the herding, harassment, hazing, or driving of wildlife for viewing or other purposes.
16. Any human-wildlife interactions that have resulted in animals obtaining food, destroying property, or posing a threat to human safety must be reported to the Refuge manager immediately at (907) 456-0250, as soon as communication becomes available. You are required to submit a written report within 30 days to the Refuge manager for all interactions with grizzly bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a grizzly bear so that this data can be used to help prevent future human-bear conflicts. You may use the Bear Incident Report form (Service 2008). Animals taken in defense of life or property must be reported to the Refuge manager immediately, and to the Alaska State Troopers at (907) 451-5350, and salvaged in accordance with State regulations.
17. Use of fuel stoves is encouraged over use of wood for cooking and heating. Only dead and down wood may be used for fires and other purposes. Live and standing dead wood must not be altered or used in a way that causes damage to it.
18. In general and where possible, camps must be located on durable surfaces (snow, sand or gravel). Camps located on vegetation must be relocated at intervals adequate to prevent site impacts. Sites at popular aircraft access points that are already heavily impacted can continue to be used. Along high use rivers and lakes, camps must not be located on vegetated sites that show human caused scuffing or matting of vegetation.

19. Total group size, including guides, is limited to seven people for land-based trips and 10 people for water-based trips. Permit holders can have one group on a river or water body at a time. Concurrent possession of other Refuge permits does not increase this number.
20. Campsites may be occupied for a maximum of two nights, after which the camp must be moved at least one mile and not reoccupied by the same guide service within the following 14 days. An exception is allowed in situations where inclement weather might make river travel unsafe.
21. All garbage, litter, and debris must be removed from the Refuge. Food, garbage, and other materials must be stored to minimize attraction to bears and other wildlife. All evidence of your camp must be obliterated prior to your departure from the site. Equipment and other property must be removed from the Refuge upon completion of the permitted activities.
22. Human waste must not be left less than 200 feet from springs, lakes, and streams. Bury waste under soil (or under snow at the ground level during periods when the ground is frozen). Paper toilet tissue, if used, must be packed out or burned completely to ash. Moist towelettes or sanitary products must be removed as trash. In high use areas, especially the Kongakut and Hulahula river corridors and extended base camps, we encourage packing out human waste.
23. Prior to entry onto the Refuge, the permit holder must provide to the Refuge manager copies of State Fishing Guide licenses and U.S. Coast Guard licenses as appropriate for operation of motorized watercraft (if one will be used) of all guides working under this permit.
24. The permittee agrees to minimize accidental fish mortality through effective catch-and-release fishing practices and avoiding wading through spawning fish. Please utilize killed fish.
25. Records of fish caught and released and mortalities must be tallied by species and drainage and reported to Refuge staff with the annual report.
26. The preeminent value of Arctic Refuge lies in its unsurpassed wilderness condition. The permittee must ensure that all employees and clients seek to minimize the effect of their activities on the wilderness characteristics of the land, wildlife, and the unique experience available there.

For special use permits issued in designated Wilderness, the following condition also applies:

- Boat motors and/or generators are not authorized for use within designated Wilderness.

All permitted activities that occur within 25 miles of the Beaufort Sea coastline will have the following additional condition:

- The permittee must read the Polar Bear Interaction Guidelines (Guidelines) (Arctic Refuge 2010) to these permit Special Conditions. The Guidelines must also be distributed to all employees and clients of the permittee before engaging in any activities on the Refuge. In addition, the following conditions shall be met:
 - Protection of den sites and minimizing disturbance to sows with small cubs is of critical importance. Guides operating under this permit must become knowledgeable of the signs and behaviors indicating the presence of a den and

avoid those areas. No person shall approach or remain within one mile of a polar bear den or of a sow with small cubs. If, at any time, the permittee becomes aware of signs indicating close proximity to a polar bear den or encounters a sow with small cubs, all members of the guided party must immediately retreat to a distance of at least one mile. If, at any time, the location of a den becomes known to the permittee, no approach shall be made closer than one mile. When operating within 25 miles of the Beaufort Sea coastline, the permittee will store attractants (human food, dog food, garbage, etc.) in “bear-resistant” containers to minimize attracting polar bears and avoid conditioning bears to human food. Containers must be approved as “bear-resistant.” Information about certified “bear resistant” containers can be found at www.igbconline.org/html/container.html.

- Legal take and harassment of polar bears is limited to defense of life or subsistence harvest by coastal-dwelling Native Alaskan situations only. Any killing or harassment of a polar bear in defense of life must be reported to the Refuge manager and to the U.S. Fish and Wildlife Service Office of Law Enforcement at (907) 456-2335 immediately, as soon as communication becomes available. You are also required to submit a completed copy of the Bear Incident Report form (Service 2008) to the Refuge manager for all interactions with polar bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a polar bear so that this data can be used to help prevent future human-bear conflicts.

Justification: The congressional committee report on the National Wildlife Refuge System Improvement Act of 1997 states: “It establishes as the policy of the United States that wildlife-dependent recreation, when it is compatible, is a legitimate and appropriate public use of the Refuge System, through which the American public can develop an appreciation for fish and wildlife.” Commercial recreational fishing guide services also support a traditional activity that Congress intended to preserve with enactment of ANILCA. Guides support not only angling, but also other activities, including wildlife observation and photography, all of which the National Wildlife Refuge System Administration Act of 1966 (as amended by the Refuge Improvement Act of 1997) identifies as priority public uses.

Guided recreational fishing operations on the Refuge would provide the public with high quality recreational opportunities. These visitor services are a valuable benefit to a segment of the public that is not physically able to participate, not comfortable with participating, or choose not to participate in non-guided fishing trips in the Refuge.

Recreational fishing has been found compatible with Refuge purposes and is one of the priority public uses of national wildlife refuges. Guides help facilitate public participation in this activity. After fully considering the impacts of this activity, as described previously in the “Anticipated Impacts of Use(s)” section of this document, it is my determination that commercial recreational fishing guide service activities in the Refuge do not materially interfere with or detract from the purposes of the Refuge or the mission of the Refuge System.

Supporting Documents:

- Arctic National Wildlife Refuge. 2010. Polar bear interaction guidelines. U.S. Fish and Wildlife Service, Fairbanks, Alaska. Unpublished. 3pp.
- Interagency Grizzly Bear Committee. IBG Certified bear resistant products webpage. <http://www.igbconline.org/html/container.html>, Accessed August 23, 2012.
- U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.
- U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.
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- U.S. Fish and Wildlife Service. 2011. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.

Refuge Determination:

Refuge Manager/ Project Leader Approval	<u>/signed/ Richard Voss</u>	<u>August 4, 2012</u>
		Date

Concurrence:

Regional Chief National Wildlife Refuge System	<u>/signed/ Mike Boylan (acting)</u>	<u>August 15, 2012</u>
		Date

Mandatory 10-year Re-Evaluation Date: 2022

Mandatory 15-year Re-Evaluation Date (for priority public uses): 2027

NEPA Compliance for Refuge Use Decision:

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusion and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Commercial Recreational Guide Services

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

The Wilderness Act of 1964 (Public Law 88-577) creates the following additional purposes for the designated Wilderness area within the Refuge’s boundaries; these purposes are within and

supplemental to the Refuge's ANILCA and Range purposes: secure an enduring resource of Wilderness; protect and preserve the Wilderness character of areas within the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): This description of use includes a re-evaluation of the compatibility of use of Federal lands in the Refuge for all types of non-consumptive guided recreation (i.e., not hunting and fishing). Guided commercial recreation activities encompass a wide array of outdoor activities but mainly include river floating, kayaking, camping, backpacking, base-camping, polar bear viewing, dog mushing, wildlife viewing, photography, etc. Means of access is primarily by commercially operated aircraft but could also include dog teams, motorized or non-motorized boat, foot, or skiing. The original compatibility determination for guided recreation was made in 1994, subject to reasonable regulation and special conditions provided with a special use permit.

Arctic Refuge visitation has generally remained steady since the late 1980s, averaging around 1,000 visitors per year, yet there has been a steady increase in the number of commercial permits issued. Commercially guided recreation tours are an activity that supports wildlife-dependent priority public uses. Across activity types, more than half of the commercially-supported visitation is guided. On average, where locations are known, about 77 percent of overall commercially-supported visitation occurs north of the Brooks Range, while about 23 percent occurs on the south side. Nearly one-quarter (21 percent) of the commercially-supported visitors to the Refuge visit the Kongakut River drainage on the north side of the Brooks Range. Commercially guided or transported recreational visitors spend, on average, about nine days in the Refuge, in groups that average around five individuals. (Service 2008).

According to the recent Arctic Refuge Visitor Study Summary (Christensen Research 2009), the greatest positive influence on visits came from experiencing the components of "wilderness" (92 percent), "A Sense of Vastness" (92 percent), "Remoteness and Isolation" (89 percent), "A Sense of Adventure" (84 percent), and "Natural Conditions" (84 percent). Additionally, the Refuge purposes most frequently rated as "Very Important" were "Wildlife" (97 percent), "Wilderness" (96 percent), "A bequest to future generations" (89 percent), "Remoteness and isolation" (89 percent), and "A place where natural processes continue" (86 percent). According to the study, respondents encountered an average of two other groups on their trip, saw or heard four airplanes, and saw an average of one site with evidence of previous visitor use.

Arctic Refuge Public Use Summary (2010) identifies several current trends important to commercial recreational guide services:

1. *Dalton Highway-based Visitation* - There is high probability that the western boundary of the Refuge will continue to become more popular with visitors as awareness of relatively economical Dalton Highway-based access continues to rise. Arctic Refuge managers now consider the Dalton Highway the Refuge's "front country."
2. *Polar Bear Viewing* - The opportunity to view polar bears outside of captivity offers a valuable tool for delivering species and land conservation messages if viewing is practiced in a way that promotes a conservation ethic. Arctic Refuge is responsible for ensuring that commercial uses of its lands and waters, including the emerging opportunity to view polar bears with a commercial guide, are conducted in a way that complies with both the Marine Mammal Protection Act and the Endangered Species Act. The Refuge is committed to a wide array of partners to manage its commercial guided polar bear viewing program for optimal support of polar bear conservation;
3. *Packrafting* - The emergence of commercially-manufactured, lightweight, backpackable inflatable rafts is making rivers and streams that were once unfloatable due to low water or lack of access more available to a range of users. This could potentially change the patterns of use on Arctic Refuge. The potential consequences of this increase are unknown.

Availability of Resources: Adequate Refuge personnel and base operational funds are available to manage commercial guided recreational activities at existing and projected levels. Administrative staff time primarily involves issuing permits, ensuring that licenses and certifications are current, collecting client use-day fees, and recording activity data. Field work associated with administering the program primarily involves monitoring permittees' compliance with the terms of the permits. Estimated staff time to annually administer and monitor these permits is one staff member for 30 to 60 days.

Anticipated Impacts of Use(s): We anticipate minimal to minor, site-specific impacts to fish and wildlife resources, other Refuge resources, or other Refuge users. Disturbance to wildlife or other Refuge users could occur if other groups or wildlife are encountered during a visit. Damage to vegetation should be limited by the stipulations of a permit. Permittees are required to camp on durable surfaces when they are available. Impacts from base-camping are minimized by requiring long-term camping on durable surfaces only or by requiring relocation of a base camp to avoid damage to vegetation. Compliance with regulations and permit conditions will be routinely checked by Refuge staff. Refuge law enforcement personnel will also help minimize direct impacts from recreational guide services by enforcing compliance with special use conditions.

Perceived crowding in high-use drainages at peak times of the year is an issue, as well as reports of physical impacts such as waste accumulation and localized vegetation damage in these high-use drainages. These are emerging issues that require further monitoring and assessment. Future stipulations may be developed to address these concerns.

Additional potential impacts or threats are associated with airplane or motorboat access. Landing aircraft on non-durable surfaces can cause minor to moderate site-specific and long-term effects to Refuge habitats and vegetation. In several areas, soil compaction, scarring, and

occasionally rutting have been documented. This is not a problem where aircraft land on durable surfaces such as gravel and sand bars, water, ice and snow, and certain other durable or resistant surfaces. These effects can be minimized or prevented by limitations, including temporal limits, on where aircraft can land or under what conditions, including aircraft weight or tire configuration. Although not known to occur on the Refuge, landing aircraft could introduce invasive species that could impact resources in the Refuge. We will continue to monitor for such occurrences. Low overflights, and sometimes landings and take-offs, can disturb or displace wildlife and bother visitors, although the effects are brief and usually minor.

Access to the Refuge during summer months would be by landing aircraft primarily on gravel bars. Winter access would be by “ski-equipped” aircraft. Landings on vegetated lowland tundra and disturbance to vegetation outside established landing areas have been limited in the Kongakut drainage under the stipulations of the special use permit. If damage to non-durable surface has been found, it may be necessary to further limit aircraft landings at those sites to reduce impacts to Refuge resources. Additionally, the introduction of invasive species could affect Refuge resources, although it is not known to have occurred by aircraft landings or any of the commercial recreational activities in the Refuge to date. Staff will continue to monitor areas for such occurrences. Temporary displacement and/or disturbance to wildlife can occur in response to low-level overflights and during take-offs and approaches to landings, but impacts would likely be short-term and minimal.

Public Review and Comment: Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge’s Revised Comprehensive Conservation Plan (Revised Plan, Plan) and environmental impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan, which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on the Refuge’s web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. We received three specific comments on this compatibility determination.

One commenter suggested that we combine all recreational uses into a single compatibility determination titled “Visitor Use.” The Service agrees that this is one way that compatibility determinations could be organized, and our policy allows for consideration of uses either independently or as a group of related issues. We feel that analyzing the commercial recreational uses individually and separate from the non-commercial uses serves us better for several reasons; the uses are not dependent upon one another, and we can better analyze the use and its potential to impact Refuge purposes, and propose stipulations that apply specifically to each type of use and to commercial users in the permit process when the uses are considered individually.

Another individual was concerned that there is no limit to the number of recreational guides or to the number of trips or clients that permittees can take to the Refuge and suggested that this should be addressed in the step-down management plan in order to ensure compatibility. The Service plans to address use levels in the Visitor Use Management and Wilderness Stewardship step-down plans. If the use changes significantly due to restrictions in the future plans, a new compatibility determination will be drafted to reflect the changes.

The Alaska Chapter of Wilderness Watch commented that current use levels may be exceeding what might be compatible, that stipulations on use are not adequate in all circumstances, and that this may be impacting Wilderness character. For example, crowding and human waste problems are occurring. While we have found that current public use programs do not materially interfere with or detract from the Refuge's purposes or the System mission and are therefore compatible, we acknowledge that the Refuge's public use management program has not fully protected Refuge values, including Wilderness character. The Visitor Use Management and Wilderness Stewardship step-down plans will address these issues, and it is likely that one or more uses will need to be re-evaluated as part of that planning process. It should be realized, however, that the Refuge has many mandates, including the requirement to provide for reasonable aircraft access to facilitate public use. In some areas, management must balance this access provision with uncompromised protection of natural conditions.

Many general comments mentioned that impacts from visitors were already occurring and expressed the desire to have the Refuge limit commercial users, consider disallowing commercial groups in certain areas, and to give priority to non-guided users. Some commenters suggested specific limits on group sizes and the numbers of groups on a river at a time; others just made general comments on limits. One commenter thought that group size should be larger than currently allowed to provide for safety in bear country. Many commenters were concerned that visitors may be impacting wildlife, particularly caribou, and the Refuge should adequately address this. Some commenters were specifically concerned that human waste along river corridors may be creating a potential health issue; at least one person commented that, in their experience on the Refuge, this was not a problem. Many people also commented that Wilderness recreation should allow opportunities for visitors to experience adventure, challenge, solitude, independence, and freedom with minimal interference from Refuge staff but that the Refuge should ensure that visitor uses do not impact Wilderness character.

As a result of public and internal comments, we clarified that this compatibility determination deals only with non-consumptive guided recreation (i.e., not hunting and fishing). We acknowledged that human waste accumulation and localized vegetation damage has been reported along river corridors and at popular campsites, and we updated information on the related (supporting use) issue of aircraft impacts, as in other compatibility determinations.

Refuge Determination (check one below):

☐ Use is not compatible

☒ Use is compatible

Stipulations Necessary to Ensure Compatibility: A special use permit with the following stipulations is required for commercial recreational guide services. These stipulations are intended to minimize impacts and ensure compatibility. Refuge permits may also include other special conditions as necessary or appropriate for the specific operations or activities that are proposed. These stipulations will be updated periodically to reflect management needs or policy changes.

Commercial Recreational Guide Services Special Use Permit Conditions – General:

1. Failure to abide by any part of this special use permit; violation of any refuge related provision in Titles 43 (Part 36) or 50 (Subchapters B and C) Code of Federal Regulations; violation of the Marine Mammal Protection Act of 1972; violation of the Endangered Species Act of 1973; or violation of any pertinent state regulation (e.g., fish or game violation) will, with due process, be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
2. The permittee is responsible for ensuring that all employees, party members, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
3. The permittee must maintain, throughout the use period specified on the permit, Comprehensive General Liability Insurance (\$300,000 each occurrence, \$500,000 annual aggregate) covering all ground or water based operations and (unless air transportation is already covered) Aviation Passenger Liability (\$150,000/seat plus \$100,000 property) covering all aircraft operations involving clients.
4. This permit may be cancelled or revised at any time by the Refuge manager in case of emergency (e.g., high fire danger, flooding, unusual resource problems, etc.).
5. The permittee must notify the Refuge manager during Refuge working hours in person or by telephone before beginning and upon completion of annual activities allowed by this permit.
6. Prior to beginning any activities allowed by this permit, the permittee must provide the Refuge manager with: (1) the name(s) and method of contact for the lead field guide(s); (2) aircraft and other vehicle types to be used and identification information for these vehicles; (3) names of assistant guides and helpers; and (4) any changes in information provided in the original permit application.
7. The permittee must provide the Refuge manager with a Client Use Report of the trip dates, locations, number of clients each trip, number of clients per trip, and number and species of all animals taken (if applicable). The permittee may be required to provide names, addresses, and phone numbers of clients.
8. Client Use Reports must be received by October 15, or within 30 days of permit expiration, whichever date is earliest. For permits valid beyond October 31, partial reports including all activity through October 15 must be received by October 31, and reports for activity between October 16 and the date of the permit's expiration must be received within 30 days of the permit's expiration. Failure to report the actual number of client use days per type of activity on or before the due date, and pay the Service's client use day fees within 30 days after receiving a bill for collection, will be a violation of this permit.
9. This permit authorizes use only on Arctic Refuge lands. Use of land selected by or conveyed to the State of Alaska or North Slope Borough; or a Native corporation or individual is not authorized by this permit.

10. The permittee and permittees' clients do not have the exclusive use of the site(s) or lands covered by this permit, except for the authorized camp facilities (if applicable).
11. The permittee must take no action that interferes with subsistence activities of rural users or restricts the reasonable access of subsistence users to Refuge lands. This may include but is not limited to disturbance of wildlife and their movements near subsistence hunters, and damage to cabins, trails, traditional campsites, or caches used by subsistence users.
12. In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470 ee), no person may excavate, remove, damage or otherwise alter or deface, or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands unless permitted or exempted (see 16 U.S.C. 470cc for permit or exception guidance). No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange any archaeological resource if such resource was excavated or removed from public lands.
13. Construction of cabins, platforms, or other permanent structures is prohibited.
14. Use of off-road vehicles is prohibited in designated Wilderness areas. Off-road vehicle use in areas not designated as Wilderness is limited to events specifically authorized in writing and in advance of—and in direct support of—the permitted activity. The use of snowmobiles, dog teams, and other means of surface transportation may only be used when adequate snow cover is present and in such a manner as to prevent waste or damage to the Refuge. The phrase “adequate snow cover” means snow is of a depth to protect the underlying vegetation and soil.
15. Snowmobiles, dog teams, watercraft, and other means of transportation shall be operated in such a manner as to prevent the herding, harassment, hazing, or driving of wildlife for viewing or other purposes.
16. Any human-wildlife interactions that have resulted in animals obtaining food, destroying property, or posing a threat to human safety must be reported to the Refuge manager immediately at (907) 456-0250, as soon as communication becomes available. You are required to submit a written report within 30 days to the Refuge manager for all interactions with grizzly bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a grizzly bear so that this data can be used to help prevent future human-bear conflicts. You may use the Bear Incident Report form (Service 2008). Animals taken in defense of life or property must be reported to the Refuge manager immediately, and to the Alaska State Troopers at (907) 451-5350, and salvaged in accordance with State regulations.
17. Use of fuel stoves is encouraged over use of wood for cooking and heating. Only dead and down wood may be used for fires and other purposes. Live and standing dead wood must not be altered or used in a way that causes damage to it.
18. In general and where possible, camps must be located on durable surfaces (snow, sand or gravel). Camps located on vegetation must be relocated at intervals adequate to prevent site impacts. Sites at popular aircraft access points that are already heavily impacted can continue to be used. Along high use rivers and lakes, camps must not be located on vegetated sites that show human caused scuffing or matting of vegetation.

19. Total group size including guides is limited to seven people for land-based trips; and 10 people for water-based trips. Permit holders can have one group on a river or water body at a time. Concurrent possession of other Refuge permits does not increase this number.
20. All garbage, litter, and debris must be removed from the Refuge. Food, garbage, and other materials must be stored to minimize attraction to bears and other wildlife. All evidence of your camp must be obliterated prior to your departure from the site. Equipment and other property must be removed from the Refuge upon completion of the permitted activities.
21. Human waste must not be left less than 200 feet from springs, lakes, and streams. Bury waste under soil (or under snow at the ground level during periods when the ground is frozen). Paper toilet tissue, if used, must be packed out or burned completely to ash. Moist towelettes or sanitary products must be removed as trash. In high use areas, especially the Kongakut and Hulahula river corridors and extended base camps, we encourage packing-out of human waste.
22. The preeminent value of Arctic Refuge lies in its unsurpassed wilderness condition. The permittee must ensure that all employees and clients seek to minimize the effect of their activities on the wilderness characteristics of the land, wildlife, and the unique experience available there.

Additional Conditions for Commercial Dog Mushing Permits:

Conditions 1-21 plus the following:

- Dog waste associated with overnight or extended camps should be scattered no less than 200 feet from springs, lakes, and streams.
- Dog food should be heated with a stove—not local firewood or vegetation—whenever possible.
- Snowmobiles may not be used for logistical support or to break or set trail for guided sled dog trips, nor may they be used for any purpose in association with the permitted commercial activity in designated Wilderness.
- Sled dogs must be staked out on picket cables or similar gang lines and not tied individually to trees.
- Straw or hay may not be transported into the Refuge.

Additional Conditions for Commercial Polar Bear Viewing Permits:

Conditions 1-16 listed in general conditions plus the following:

- Operations under this permit are restricted to day use only. “Day use” is defined as that period between sunrise and sunset. No overnight camping or guiding operations are authorized under this permit. There will be no evidence of guiding activities upon your departure from any site. All garbage, litter, and debris must be removed from the Refuge. Equipment and all personal property must be removed from the Refuge upon completion of each day's permitted activities.

- For all guided polar bear viewing activities, the permittee must read the Polar Bear Viewing Guidelines (Service 2011b) to these permit Special Conditions. The Guidelines must also be distributed to all employees and clients of the permittee before engaging in any activities on the Refuge. In addition, the following conditions shall be met:
 - The permittee must ensure all guides and clients are familiar with the permittee's polar bear safety plan through a safety briefing and are familiar with proper emergency procedures before embarking to view polar bears.
 - Protection of den sites and minimizing disturbance to sows with small cubs is of critical importance. Guides operating under this permit must become knowledgeable of the signs and behaviors indicating the presence of a den and avoid those areas. No person shall approach or remain within one mile of a polar bear den or of a sow with small cubs. If, at any time, the permittee becomes aware of signs indicating close proximity to a polar bear den or encounters a sow with small cubs, all members of the guided party must immediately retreat to a distance of at least one mile. If, at any time, the location of a den becomes known to the permittee, no approach shall be made closer than one mile.
 - To ensure the safety of clients, and provide for a quality guided experience, guides operating under this permit must remain in close proximity of all clients, at all times, while in the field. Staging, dropping off, or otherwise abandoning or separating members from a guided party, for any reason, is prohibited. "Close proximity" is defined as that distance whereby communication between individuals may take place with a normally spoken voice.
 - Permittees are expected to fully comply with the provisions of the Marine Mammal Protection Act. Permittees shall ensure all members of their party maintain appropriate distances from polar bears at all times to prevent disruptions in normal behaviors. Approaching or behaving around polar bears in a way that results in any act of pursuit, torment, or annoyance that has the potential to injure or disturb a polar bear by causing disruption of behavioral patterns, including but not limited to migration, breathing, nursing, breeding, feeding, or sheltering, is a violation of the Marine Mammal Protection Act, is considered harassment, and represents grounds for immediate revocation of this special use permit.
 - It is illegal to restrict movements of swimming bears. If viewing from a boat, do not block the path in which the bear is travelling. If the bear is passing, put the engine in neutral to allow the bear to pass. While operating the boat, do not approach, encircle, or pursue a swimming bear; do not trap a swimming bear between boats; do not separate a swimming mother from her cubs. If approached by a swimming bear, move the boat away to minimize interactions. If the bear persists, leave the area while avoiding abrupt movements or sounds, such as sudden use of the engine throttle.
 - Total group size, including guides, is limited to seven people for land-based and 10 people for water-based trips. Permit holders can have one group operating at a time. Concurrent possession of other Refuge permits does not increase this number.
 - Permittees using watercraft must comply with all applicable U.S. Coast Guard regulations, including but not limited to vessel, operator, and safety equipment requirements.

- As the intent of the permit is to facilitate bear viewing in a natural environment under naturally occurring conditions, no bait, attractant, lure, call, or artificial substance may be placed or otherwise used to entice, attract, or hold polar bears in an area to facilitate viewing opportunities. Any attempt to feed polar bears is an illegal disturbance. When operating within 25 miles of the Beaufort Sea coastline, the permittee will store attractants (human food, dog food, garbage, etc.) in “bear-resistant” containers to minimize attracting polar bears and avoid conditioning bears to human food. Containers must be approved as “bear-resistant.” Information about certified “bear resistant” containers can be found at www.igbconline.org/html/container.html.
- Human-polar bear interactions that have resulted in bears obtaining food, destroying property, or posing a threat to human safety must be reported to the Refuge manager immediately at (907) 456-0250, as soon as communication becomes available. Legal take and harassment of polar bears is limited to defense of life or subsistence harvest by coastal-dwelling Native Alaskan situations only. Any killing or harassment of a polar bear in defense of life must be reported to the Refuge manager and to the U.S. Fish and Wildlife Service Office of Law Enforcement at (907) 456-2335 immediately, as soon as communication becomes available. You are also required to submit a written report of the incident within 30 days to the Refuge manager for all interactions with polar bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a polar bear so that this data can be used to help prevent future human-bear conflicts. You may use the attached Bear Incident Report form.

All permitted commercial recreational guide service activities that occur within, or may occur within, 25 miles of the Beaufort Sea coastline will have the following additional condition:

- The permittee must read the Polar Bear Interaction Guidelines (Guidelines) (Arctic Refuge 2010) to these permit Special Conditions. The Guidelines must also be distributed to all employees and clients of the permittee before engaging in any activities on the Refuge. In addition, the following conditions shall be met:
 - Protection of den sites and minimizing disturbance to sows with small cubs is of critical importance. Guides operating under this permit must become knowledgeable of the signs and behaviors indicating the presence of a den and avoid those areas. No person shall approach or remain within one mile of a polar bear den or of a sow with small cubs. If, at any time, the permittee becomes aware of signs indicating close proximity to a polar bear den or encounters a sow with small cubs, all members of the guided party must immediately retreat to a distance of at least one mile. If, at any time, the location of a den becomes known to the permittee, no approach shall be made closer than one mile. When operating within 25 miles of the Beaufort Sea coastline, the permittee will store attractants (human food, dog food, garbage, etc.) in “bear-resistant” containers to minimize attracting polar bears and avoid conditioning bears to human food. Containers must be approved as “bear-resistant.” Information about certified “bear resistant” containers can be found at www.igbconline.org/html/container.html.
 - Legal take and harassment of polar bears is limited to defense of life or subsistence harvest by coastal-dwelling Native Alaskan situations only. Any killing or harassment of a polar bear in defense of life must be reported to the Refuge

- manager and to the U.S. Fish and Wildlife Service Office of Law Enforcement at (907) 456-2335 immediately, as soon as communication becomes available. You are also required to submit a completed copy of the Bear Incident Report form (Service 2008) to the Refuge manager for all interactions with polar bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a polar bear so that this data can be used to help prevent future human-bear conflicts.
- Legal take and harassment of polar bears is limited to defense of life or subsistence harvest by coastal-dwelling Native Alaskan situations only. Any killing or harassment of a polar bear in defense of life must be reported to the Refuge manager and to the U.S. Fish and Wildlife Service Office of Law Enforcement at (907) 456-2335 immediately, as soon as communication becomes available. You are also required to submit a completed copy of the Bear Incident Report form (Service 2008) to the Refuge manager for all interactions with polar bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a polar bear so that this data can be used to help prevent future human-bear conflicts.

Justification: The objective of guided tour services in national wildlife refuges is to make available a variety of quality opportunities for the public to enjoy outdoor activities where such activities are compatible with the Refuge's purposes, resources, and management objectives. Furthermore, the congressional committee report on the National Wildlife Refuge System Improvement Act of 1997 states: "It establishes as the policy of the United States that wildlife-dependent recreation, when it is compatible, is a legitimate and appropriate public use of the Refuge System, through which the American public can develop an appreciation for fish and wildlife."

Recreational guides provide a service that visitors often require to access the Refuge and gain an appreciation for its resources. Guided recreational services considered here include activities occurring throughout the year. Guided recreational tour providers are required, as a condition of their permits, to provide information on the primary activity, location, length of stay, group size, and other related items. These reports provide the most accurate and reliable information the U.S. Fish and Wildlife Service (Service) has on Refuge use by visitors. Guided recreational activities contribute to fulfillment of the Refuge System mission by providing access for non-local Refuge visitors and therefore facilitate priority public uses and other compatible.

Special use permits authorizing the activity will be appropriately conditioned to protect Refuge resources and visitor experiences, and the activity will be monitored to ensure that an appropriate level of use is maintained. Emerging issues will be further monitored and, if needed, stipulated to ensure Refuge resources and visitor experiences are protected. When conducted in accordance with Service regulations, I find that these uses will not materially interfere with or detract from the purposes for which the Refuge was created, including the Wilderness Act purposes for the Refuge Wilderness area and fulfillment of the mission of the Refuge System.

Supporting Documents:

- Arctic National Wildlife Refuge. 2010. Polar bear interaction guidelines. U.S. Fish and Wildlife Service, Fairbanks, Alaska. Unpublished. 3pp.
- Christensen Research. 2009. Arctic National Wildlife Refuge visitors study: the characteristics, experiences, and preferences of Refuge visitors. Christensen Research, U. S. Fish & Wildlife Service, and The Aldo Leopold Wilderness Research Institute, Missoula, Montana, USA.
- Interagency Grizzly Bear Committee. IBG Certified bear resistant products webpage. <http://www.igbconline.org/html/container.html>, Accessed August 23, 2012.
- U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.
- U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.
- U.S. Fish and Wildlife Service. 2008. Region 7: Bear awareness and firearms safety training policy, Appendix F. U.S. Fish and Wildlife Service. Anchorage, Alaska. Unpublished. 36 pp.
- U.S. Fish and Wildlife Service. 2010. Arctic National Wildlife Refuge Public Use Summary. U.S. Fish and Wildlife Service. Fairbanks, Alaska. Unpublished. 45 pp.
- U.S. Fish and Wildlife Service. 2011a. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.
- U.S. Fish and Wildlife Service. 2011b. Polar bear viewing information. Revision June 2011. U.S. Fish and Wildlife Service, Anchorage, Alaska, USA. <http://arctic.fws.gov/pdf/pbguidelines2011.pdf>. Accessed August 23, 2012.

Refuge Determination:

Refuge Manager/ Project Leader Approval	<u>/signed/ Richard Voss</u>	<u>August 4, 2012</u>
		Date

Concurrence:

Regional Chief National Wildlife Refuge System	<u>/signed/ Mike Boylan (acting)</u>	<u>August 15, 2012</u>
		Date

Mandatory 10-year Re-Evaluation Date: 2022

Mandatory 15-year Re-Evaluation Date (for priority public uses): 2027

NEPA Compliance for Refuge Use Decision:

☐ Categorical Exclusion without Environmental Action Memorandum

☐ Categorical Exclusion and Environmental Action Memorandum

☐ Environmental Assessment and Finding of No Significant Impact

☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Commercial Videography and Audio Recording

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

The Wilderness Act of 1964 (Public Law 88-577) creates the following additional purposes for the designated Wilderness area within the Refuge’s boundaries; these purposes are within and

supplemental to the Refuge's ANILCA and Range purposes: secure an enduring resource of Wilderness; protect and preserve the Wilderness character of areas within the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): Commercial videography and audio recording are existing uses on the Refuge. The use facilitates interpretation and environmental education. The activity was found compatible in the Refuge's 1988 Comprehensive Conservation Plan and again in 1994. This document re-examines the compatibility of this activity.

Commercial videography and audio recording involve solo or small groups (seven or fewer) accessing the Refuge by fixed-wing aircraft and either staging in one spot or hiking or floating anywhere in the Refuge. Sound-recording devices and batteries are small and are removed after the recording period. This evaluation does not examine the compatibility of a large-scale movie production involving more than seven people or productions using temporary structures or stages. The peak period for this activity is in the summer, though it may be permitted at any time of the year and has occurred in winter in the past. These activities are authorized by special use permit with special conditions to avoid impacts to Refuge resources and disruption to subsistence users and visitors.

Availability of Resources: Adequate Refuge personnel and base operational funds are available to manage activities at existing and projected levels. Administrative staff time (approximately 10 staff days per year) is used to prepare special use permits, involving telephone conversations, written correspondence, and personal interaction with permittees regarding ongoing activities. Field work associated with administering the program primarily involves monitoring (when applicable) activities to ensure all activities remain compatible.

Anticipated Impacts of Use(s): We anticipate minimal impacts to fish and wildlife resources, other Refuge resources, or other Refuge users. Compliance with regulations and permit conditions will be routinely checked by Refuge staff. Refuge law enforcement personnel will also help minimize direct impacts from commercial audio-visual activities by enforcing compliance with special use conditions.

Direct impacts to Refuge habitats may be minimal and transitory because access to the Refuge would be primarily by landing aircraft on gravel bars. Operations on vegetated lowland tundra and disturbance to vegetation would be limited under the stipulations of the

special use permit. The introduction of invasive species could affect Refuge resources, although it is not known to have occurred by this activity in the Refuge to date, and staff will continue to monitor for such occurrences. Temporary displacement and/or disturbance to wildlife can occur, but impacts would likely be short-term and minimal. Impacts to designated Wilderness would be negligible because these activities are restricted Wilderness areas per the Wilderness Act of 1964 and U.S. Fish and Wildlife Service Wilderness Policy (610FW2.12.D).

Public Review and Comment:

Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge's Revised Comprehensive Conservation Plan (Revised Plan, Plan) and environmental impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan, which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on the Refuge's web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. We received one public comment regarding commercial videography on the Refuge.

The commenter was concerned that filmmaking would temporarily displace caribou during migration. Stipulations in this compatibility determination mandate permittees take no action that interferes with subsistence activities of rural users and prohibits wildlife harassment by aircraft. Only minor editorial changes were made to the compatibility determination as a result of internal review.

Refuge Determination (check one below):

- ☐ Use is not compatible
☒ Use is compatible

Stipulations Necessary to Ensure Compatibility: A special use permit with the following stipulations is required for commercial filming and audio recording. These stipulations are intended to minimize impacts and ensure compatibility. Refuge permits may also include other special conditions as necessary or appropriate for the specific operations or activities that are proposed. These stipulations will be updated periodically to reflect management needs or policy changes.

1. Failure to abide by any part of this special use permit; violation of any refuge related provision in Titles 43 (Part 36) or 50 (subchapters B and C) Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will, with due process, be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the

authority of this permit (e.g., assistants). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.

2. The permittee is responsible for ensuring that all employees, party members, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
3. This permit may be cancelled or revised at any time by the Refuge manager in case of emergency (e.g., high fire danger, flooding, unusual resource problems, etc.).
4. The permittee or party chief shall notify the Refuge manager during Refuge working hours in person or by telephone before beginning and upon completion of activities allowed by this permit.
5. Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge manager with: (1) the name and method of contact for the field party chief/supervisor; (2) aircraft and other vehicle types to be used and identification information for these vehicles; (3) names of assistant guides and helpers; and (4) any changes in information provided in the original permit application.
6. The Refuge manager, upon request, shall be afforded the opportunity and logistical support from the nearest commercial transportation site to accompany the permittee for the purpose of inspecting and monitoring permittee activities. A final inspection trip provided by the permittee of the areas of use may be required by the Refuge manager to determine compliance with the terms of this permit.
7. This permit authorizes use only on Arctic Refuge lands. Use of land selected by or conveyed to the State of Alaska or North Slope Borough; or a Native corporation or individual is not authorized by this permit.
8. The permittee and permittee's clients do not have the exclusive use of the site(s) or lands covered by this permit.
9. The permittee must take no action that interferes with subsistence activities of rural users or restricts the reasonable access of subsistence users to Refuge lands. This may include but is not limited to disturbance of wildlife and their movements near subsistence hunters, and damage to cabins, trails, traditional campsites, or caches used by subsistence users.
10. In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470 ee), no person may excavate, remove, damage or otherwise alter or deface, or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands unless permitted or exempted (see 16 U.S.C 470cc for permit or exception guidance). No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange any archaeological resource if such resource was excavated or removed from public lands.
11. In accordance with the Wilderness Act (16 U.S. C. 1131-1136) and U.S. Fish and Wildlife Service Wilderness Policy (610 FW 12.2), commercial filming within designated Wilderness is prohibited unless previously evaluated and approved by the Refuge manager as appropriate, compatible, and necessary to provide educational information about uses and values and does not degrade the Wilderness character of the area.

12. Construction of cabins, platforms, or other permanent structures is prohibited.
13. Use of off-road vehicles is prohibited in designated Wilderness areas. Off-road vehicle use in areas not designated as Wilderness is limited to events specifically authorized in writing and in advance of and in direct support of the permitted activity. The use of snowmobiles, dog teams, and other means of surface transportation may only be used when adequate snow cover is present and in such a manner as to prevent waste or damage to the Refuge. The phrase “adequate snow cover” means snow is of a depth to protect the underlying vegetation and soil.
14. In accordance with Marine Mammals Management Act (16 U.S.C. 1374), filming of polar bears for education or commercial purposes is not authorized without Department of Management Authority approval and/or permits (Section 104(c)(6)).
15. The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for take-off and landing, maintain a minimum altitude of 2,000 feet above ground level.
16. Helicopter landings are not authorized.
17. Snowmobiles, dog teams, watercraft, and other means of transportation shall be operated in such a manner as to prevent the herding, harassment, hazing, or driving of wildlife for viewing or other purposes.
18. Any human wildlife interactions that have resulted in animals obtaining food, destroying property, or posing a threat to human safety must be reported to the Refuge manager immediately at (907) 456-0250, as soon as communication becomes available. You are required to submit a written report within 30 days to the Refuge manager for all interactions with grizzly bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a grizzly bear so that this data can be used to help prevent future human-bear conflicts. You may use the Bear Incident Report form (Service 2008). Animals taken in defense of life or property must be reported to the Refuge manager immediately, and to the Alaska State Troopers at (907) 451-5350, and salvaged in accordance with State regulations.
19. Use of fuel stoves is encouraged over use of wood for cooking and heating. Only dead and down wood may be used for fires and other purposes. Live and standing dead wood must not be altered or used in a way that causes damage to it.
20. In general and where possible, camps must be located on durable surfaces (snow, sand or gravel). Camps located on vegetation must be relocated at intervals adequate to prevent site impacts. Sites at popular aircraft access points that are already heavily impacted can continue to be used. Along high use rivers and lakes, camps must not be located on vegetated sites that show human caused scuffing or matting of vegetation.
21. All garbage, litter, and debris must be removed from the Refuge. Food, garbage, and other materials must be stored to minimize attraction to bears and other wildlife. All evidence of your camp must be obliterated prior to your departure from the site. Equipment and other property must be removed from the Refuge upon completion of the permitted activities.

22. Human waste must not be left less than 200 feet from springs, lakes, and streams. Bury waste under soil (or under snow at the ground level during periods when the ground is frozen). Paper toilet tissue, if used, must be packed out or burned completely to ash. Moist towelettes or sanitary products must be removed as trash.
23. The preeminent value of Arctic Refuge lies in its unsurpassed wilderness condition. The permittee must ensure that all employees and clients seek to minimize the effect of their activities on the wilderness characteristics of the land, wildlife, and the unique experience available there.

All permitted activities that occur within 25 miles of the Beaufort Sea coastline will have the following additional condition:

- The permittee must read the Polar Bear Interaction Guidelines (Guidelines) (Arctic Refuge 2010) to these permit Special Conditions. The Guidelines must also be distributed to all employees and clients of the permittee before engaging in any activities on the Refuge. In addition, the following conditions shall be met:
 - Protection of den sites and minimizing disturbance to sows with small cubs is of critical importance. Guides operating under this permit must become knowledgeable of the signs and behaviors indicating the presence of a den and avoid those areas. No person shall approach or remain within one mile of a polar bear den or of a sow with small cubs. If, at any time, the permittee becomes aware of signs indicating close proximity to a polar bear den or encounters a sow with small cubs, all members of the guided party must immediately retreat to a distance of at least one mile. If, at any time, the location of a den becomes known to the permittee, no approach shall be made closer than one mile. When operating within 25 miles of the Beaufort Sea coastline, the permittee will store attractants (human food, dog food, garbage, etc.) in “bear-resistant” containers to minimize attracting polar bears and avoid conditioning bears to human food. Containers must be approved as “bear-resistant.” Information about certified “bear resistant” containers can be found at www.igbconline.org/html/container.html.
 - Legal take and harassment of polar bears is limited to defense of life or subsistence harvest by coastal-dwelling Native Alaskan situations only. Any killing or harassment of a polar bear in defense of life must be reported to the Refuge manager and to the U.S. Fish and Wildlife Service Office of Law Enforcement at (907) 456-2335 immediately, as soon as communication becomes available. You are also required to submit a completed copy of the Bear Incident Report form (Service 2008) to the Refuge manager for all interactions with polar bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a polar bear so that this data can be used to help prevent future human-bear conflicts.

Justification: Audio-visual production on the Refuge can increase public understanding of wildlife in the Refuge, its history, and its role in managing and protecting natural resources. The policy of the U.S. Fish and Wildlife Service (Service) is to provide Refuge access and/or assistance to legitimate producers of audio and/or visual recordings. Such assistance or access will not be provided if production operations are incompatible with Refuge purposes. Priority consideration is extended to producers of wildlife and natural resource related audio or visual

materials (8RM16.1). Regulations concerning filming and recording activities are established in 43 CFR, Subtitle A, Section 5.1. To protect Wilderness areas, commercial audio-visual productions in Wilderness are managed differently. Section 4(c) of the Wilderness Act of 1964 prohibits commercial enterprises in designated Wilderness. Commercial videography is generally prohibited in Wilderness areas unless we determine it is necessary to provide educational information about Wilderness uses and values and does not degrade the Wilderness character of the area. In cases where we allow such photography as a commercial service, we first evaluate it for appropriateness and compatibility, and—like all commercial audio-visual activities—we manage the use through an audio-visual productions permit (610FW2.12.D). After fully considering the impacts of these activities, as described previously in the “Anticipated Impacts of Use(s)” section of this document, it is my determination that commercial audio-visual activities within the Refuge do not materially interfere with or detract from the purposes of the Refuge or the mission of the Refuge System.

Supporting Documents:

Arctic National Wildlife Refuge. 2010. Polar bear interaction guidelines. U.S. Fish and Wildlife Service, Fairbanks, Alaska. Unpublished. 3pp.

Interagency Grizzly Bear Committee. IBG Certified bear resistant products webpage. <http://www.igbconline.org/html/container.html>, Accessed August 23, 2012.

U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.

U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.

U.S. Fish and Wildlife Service. 2008. Region 7: Bear awareness and firearms safety training policy, Appendix F. U.S. Fish and Wildlife Service. Anchorage, Alaska. Unpublished. 36 pp.

U.S. Fish and Wildlife Service. 2011. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.

Refuge Determination:

Refuge Manager/ Project Leader Approval	<u>/signed/ Richard Voss</u>	<u>August 4, 2012</u>
		Date

Concurrence:

Regional Chief
National Wildlife
Refuge System

/signed/ Mike Boylan (acting)

August 15, 2012

Date

Mandatory 10-year Re-Evaluation Date: 2022

Mandatory 15-year Re-Evaluation Date (for priority public uses): 2027

NEPA Compliance for Refuge Use Decision:

 Categorical Exclusion without Environmental Action Memorandum

 Categorical Exclusion and Environmental Action Memorandum

 Environmental Assessment and Finding of No Significant Impact

 X Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Commercial Shore-Fast Sea Ice Access

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

The Wilderness Act of 1964 (Public Law 88-577) creates the following additional purposes for the designated Wilderness area in the Refuge’s boundaries; these purposes are within and

supplemental to the Refuge's ANILCA and Range purposes: secure an enduring resource of Wilderness; protect and preserve the Wilderness character of areas in the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): This is a re-evaluation of this activity, which was found compatible in the 1988 Arctic Refuge Comprehensive Conservation Plan and again in 1994. The village of Kaktovik has traditionally received commercial goods and heavy equipment, excluding fuel, delivered overland from Deadhorse during winter. Transportation activities usually occur when sea ice travel is safe in mid- to late January through late April. CATCO all-terrain vehicles, also known as Rolligons, and other similar vehicles have been used to haul freight in the past. They weigh several thousand pounds and use extremely large, very low pressure air bags to move across a surface. Depending on the amount of freight, one to four vehicles in a train would complete one to two round trips per year. The equipment follows a west to east path along the shoreline driving on solid ice at least one mile from the shore when practicable. Shore-fast sea ice access by commercial companies is authorized with a special use permit, and special conditions are designed to avoid impacts to Refuge resources and disruption to subsistence users and visitors. To ensure that this activity does not adversely affect polar bears and complies with applicable laws, Section 7 of the Endangered Species Act and Marine Mammal Protection Act consultations are required for this permit.

Availability of Resources: Adequate Refuge personnel and base operational funds are available to manage activities at existing and projected levels. Administrative staff time (as many as five staff days per year) primarily involves phone conversations, written correspondence, formal or informal consultations with other U.S. Fish and Wildlife Service (Service) offices, and personal interaction with permittees regarding ongoing activities. Field work associated with administering the program primarily involves monitoring (when applicable) activities to ensure all activities remain compatible.

Anticipated Impacts of Use(s): We anticipate minimal impacts to fish and wildlife resources, other Refuge resources, or other Refuge users. The Refuge's administrative oversight of the activity and comprehensive Federal regulations continually evolve to respond to management needs. Compliance with regulations and permit conditions will be routinely checked by Refuge staff. Refuge law enforcement personnel will also help minimize direct impacts from commercial shore-fast sea ice access activities by enforcing compliance with special use conditions.

Consultations under the Marine Mammal Protection Act and Section 7 of the Endangered Species Act ensure that polar bear and polar bear critical habitat is not adversely affected. Stipulations are included in the special use permit to ensure that permittee activities avoid polar bear denning habitat, reduce the potential for interactions, and minimize impacts when interactions occur. Impacts to Refuge habitats may be minimal and transitory because access to the Refuge would be primarily by operating on sea ice with applicable restrictions to avoid polar bear denning habitat. Impacts to vegetation will not occur because all travel is restricted to sea ice. The introduction of invasive species could affect Refuge resources, although it is not known to have occurred by this activity in the Refuge to date, and staff will continue to monitor for such occurrences. In rare instances, temporary displacement and/or disturbance to wildlife, particularly polar bears, can occur. Impacts would likely be short-term and minimal because of avoidance measures put in place by permit conditions and Endangered Species Act and Marine Mammal Protection Act consultations.

Public Review and Comment: Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge's Revised Comprehensive Conservation Plan (Revised Plan, Plan) and environmental impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan, which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on the Refuge's web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. We received five specific comments on this compatibility determination.

The Northern Alaska Environmental Center, the Alaska Wilderness League, and the Sierra Club commented that further review was needed for this activity. They thought the description of the use should be narrowed to include only the support of the delivery of goods by aircraft and barge to the city of Kaktovik and to exclude any activities that are prohibited in the Refuge, including any industrial activities such as support for offshore oil and gas exploration or development. They also felt that there is insufficient information and analysis in the draft environmental impact statement about the existing activity for commercial sea-fast sea ice access upon which to analyze compatibility, specifically that more information is needed about the types of vehicles deployed, frequency, exact geographic scope, number and timing of trips, and the past history of activities including any spills and other factors. Further, they were concerned that the use would be occurring on sea ice in designated critical habitat for polar bears at a time when bears are denning. Finally, they asked if the use included travel on ice within designated Wilderness, how climate change is affecting the reliability of sea ice travel, how often haulers end up travelling on land—and, if so, if this was a result of open water conditions and how often the vehicles are hauling fuel. They also requested that any permits should clearly prohibit travel on land, including barrier islands, and require live Global Positioning System (GPS) data of their routes. Another commenter also voiced concerns about insufficient information (timing, scope, etc.) provided to assess if the use is compatible.

Oil and gas development on Arctic Refuge is not allowed in the 1002 Area without congressional approval. Therefore, it is not considered as a proposed or existing use, and the compatibility determination does not address it as a potential use of shore-fast ice travel. The

compatibility determination for Commercial Shore-fast Sea Ice Access applies only to travel for delivery of goods and equipment to the Village of Kaktovik and not to other activities. The compatibility determination already outlines types and numbers of vehicles, route of travel, and time of year. Permits are conditioned to protect Refuge resources, and these special conditions of the permit are outlined in the “Stipulations Necessary to Ensure Compatibility.” They prohibit crossing barrier islands or overland travel and the discharge of petroleum products or toxic materials. Any fuel storage must be outlined in a pre-approved plan of operations, and those of greater than 55 gallons must be in double-walled containers. Permittees are instructed to follow the Polar Bear Interaction Guidelines, and intra-service Endangered Species Act Section 7 consultation is conducted annually for all permitted activities on the Refuge that occur in polar bear critical habitat. We will consider the suggestion to utilize live GPS track logs for monitoring vehicle routes in future permits.

No changes were made to the compatibility determination as a result of public comments.

Refuge Determination (check one below):

☐ Use is not compatible

☒ Use is compatible

Stipulations Necessary to Ensure Compatibility: A special use permit with the following stipulations is required for commercial shore-fast sea ice access. These stipulations are intended to minimize impacts and ensure compatibility. Refuge permits may also include other special conditions as necessary or appropriate for the specific operations or activities that are proposed. These stipulations will be updated periodically to reflect management needs or policy changes.

1. Failure to abide by any part of this special use permit; violation of any refuge related provision in Titles 43 (Part 36) or 50 (sub-chapters B and C), Code of Federal Regulations; or violation of any pertinent State regulation (e.g., fish or game violation) will, with due process, be considered grounds for revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., research assistants). Appeals of decisions relative to permits are handled in accordance with Title 50 Code of Federal Regulations Part 36.41.
2. The permittee is responsible for ensuring that all employees, party members, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of the permit.
3. This permit may be cancelled or revised at any time by the Refuge manager in case of emergency (e.g., high fire danger, flooding, unusual resource problems, etc.).
4. A copy of this permit must be in the permittee's or field party chief's possession at all times while exercising the privileges of the permit.
5. The permittee or party chief must notify the Refuge manager during Refuge working hours in person or by telephone before beginning and upon completion of annual activities allowed by this permit.

6. Prior to beginning any activities allowed by this permit, the permittee must provide the Refuge manager with: (1) the name(s) and method of contact for the lead field guide(s); (2) aircraft and other vehicle types to be used and identification information for these vehicles; (3) names of assistant guides and helpers; and (4) any changes in information provided in the original permit application.
7. The Refuge manager or designee, upon request, shall be afforded the opportunity and logistical support from the nearest commercial transportation site to accompany the permittee for the purpose of inspection and monitoring permittee activities. A final inspection trip provided by the permittee of the areas of use may be required by the Refuge manager to determine compliance with the terms of this permit.
8. An annual report of activities conducted on the Refuge shall be provided to the Refuge manager within 30 days of the permit expiration (normally 1-2 pages).
9. This permit authorizes use only on Arctic Refuge lands. Use of land selected by or conveyed to the State of Alaska or North Slope Borough; or a Native corporation or individual is not authorized by this permit.
10. The permittee and permittee's employees, coworkers, or contractors do not have the exclusive use of the site(s) or lands covered by this permit.
11. The permittee must take no action that interferes with subsistence activities of rural users or restricts the reasonable access of subsistence users to Refuge lands. This may include but is not limited to disturbance of wildlife and their movements near subsistence hunters and damage to cabins, trails, traditional campsites, or caches used by subsistence users.
12. In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470 ee), no person may excavate, remove, damage or otherwise alter or deface, or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands unless permitted or exempted (see 16 U.S.C 470cc for permit or exception guidance). No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange any archaeological resource if such resource was excavated or removed from public lands.
13. Construction of cabins, platforms, or other permanent structures is prohibited.
14. Crossing barrier islands or overland travel with surface vehicles on Refuge lands is prohibited. Entry on Refuge lands is permitted only to ensure personnel and equipment safety. Vehicle travel will cease once safety is reached. The Refuge manager will be immediately notified.
15. The operation of vehicles resulting in herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for take-off and landing, and as necessary for safety, shall maintain a minimum altitude of 2,000 feet above ground level.
16. Any human-wildlife interactions that have resulted in animals obtaining food, destroying property, or posing a threat to human safety, must be reported to the Refuge manager immediately at (907) 456-0250, as soon as communication becomes available. You are required to submit a written report within 30 days to the Refuge manager for all interactions with grizzly bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a grizzly bear so that this data can be used to help prevent future human-bear conflicts. You may use the Bear

Incident Report form (Service 2008). Animals taken in defense of life or property must be reported to the Refuge manager immediately, and to the Alaska State Troopers at (907) 451-5350, and salvaged in accordance with State regulations.

17. Unauthorized caches of fuel or other supplies are prohibited. Fuel storage, if any, will be as outlined in the operations plan, pre-approved by the manager, and in compliance with regional Service fuel storage policy.
18. All fuel containers with a storage capacity greater than 55 gallons shall be of double-wall construction. All fuel containers, including those emptied, shall be capped when not in actual use.
19. No discharge of petroleum products or toxic materials shall be made within the Refuge. All hazardous substance utilized and/or generated by permitted activity shall be contained, controlled, and cleaned up. Such measures shall take precedence over all other matters except human safety. All spills or leakage of petroleum products or toxic materials, fires, fatalities, and any other conditions that threaten resources in the Refuge, the environment, or human safety shall be reported by the permittee to the Refuge manager immediately or as soon as communication can be established.
20. Permittees shall maintain their use areas in a neat and sanitary condition. All combustible solid waste generated by permitted activity shall be incinerated or returned to the permittee's base of operations for disposal in accordance with applicable Federal, State, and local standards. All property of the permittee, including non-combustible solid waste, shall be removed from Refuge lands upon completion of permitted activities for disposal in accordance with applicable Federal, State, and local standards. Latrines must be located at least 200 feet from springs, lakes, and streams to avoid contamination of water resources. Toilet paper must be burned or packed out.
21. The permittee must read the Polar Bear Interaction Guidelines (Arctic Refuge 2010) to these permit Special Conditions. The Guidelines must also be distributed to all employees and clients of the permittee before engaging in any activities on the Refuge. In addition, the following conditions shall be met:
 - a. Protection of den sites and minimizing disturbance to sows with small cubs is of critical importance. Guides operating under this permit must become knowledgeable of the signs and behaviors indicating the presence of a den and avoid those areas. No person shall approach or remain within one mile of a polar bear den or of a sow with small cubs. If, at any time, the permittee becomes aware of signs indicating close proximity to a polar bear den or encounters a sow with small cubs, all members of the party must immediately retreat to a distance of at least one mile. If, at any time, the location of a den becomes known to the permittee, no approach shall be made closer than one mile.
 - b. When operating within 25 miles of the Beaufort Sea coastline, the permittee will store attractants (human food, dog food, garbage, etc.) in "bear-resistant" containers to minimize attracting polar bears and avoid conditioning bears to human food. Containers must be approved as "bear-resistant." Information about certified "bear resistant" containers can be found at www.igbconline.org/html/container.html (Interagency Grizzly Bear Committee 2011).

- c. Legal take and harassment of polar bears is limited to defense of life or subsistence harvest by coastal-dwelling Native Alaskan situations only. Any killing or harassment of a polar bear in defense of life must be reported to the Refuge manager and to the U.S. Fish and Wildlife Service Office of Law Enforcement at (907) 456-2335 immediately, as soon as communication becomes available. You are also required to submit a completed copy of the Bear Incident Report form (Service 2008) to the Refuge manager for all interactions with polar bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a polar bear so that this data can be used to help prevent future human-bear conflicts.
22. The preeminent value of Arctic Refuge lies in its unsurpassed wilderness condition. The permittee must ensure that all employees and clients seek to minimize the effect of their activities on the wilderness characteristics of the land, wildlife, and the unique experience available there.

Justification: Commercial shore-fast sea ice access by CATCO or other similar vehicles to the Village of Kaktovik and other inholdings provides one of the least damaging modes of heavy freight transportation consistent with the adequate and feasible access guaranteed by ANILCA, Section 1110. Additionally, use of shore-fast sea ice is the only viable, economical option in the winter to transport large construction equipment, building supplies, and other such commercial goods. When working in the parameters of the permit special conditions and requirements of Endangered Species Act and Marine Mammal Protection Act consultations, sea ice travel produces no known degradation to the substrate or polar bear critical habitat, and negligible displacement of polar bear or other wildlife found along the coast when sea ice travel is practicable. After fully considering the impacts of these activities, as described previously in the “Anticipated Impacts of Use(s)” section of this document, it is my determination that commercial shore-fast sea ice access activities in the Refuge do not materially interfere with or detract from the purposes of the Refuge or the mission of the Refuge System.

Supporting Documents:

- Arctic National Wildlife Refuge. 2010. Polar bear interaction guidelines. U.S. Fish and Wildlife Service, Fairbanks, Alaska. Unpublished. 3pp.
- Interagency Grizzly Bear Committee. IBG Certified bear resistant products webpage. <http://www.igbconline.org/html/container.html>, Accessed August 23, 2012.
- U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.
- U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.

U.S. Fish and Wildlife Service. 2008. Region 7: Bear awareness and firearms safety training policy, Appendix F. U.S. Fish and Wildlife Service. Anchorage, Alaska. Unpublished. 36 pp.

U.S. Fish and Wildlife Service. 2011. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.

Refuge Determination:

Refuge Manager/

Project Leader Approval /signed/ Richard Voss August 4, 2012
Date

Concurrence:

Regional Chief

National Wildlife

Refuge System /signed/ Mike Boylan (acting) August 15, 2012
Date

Mandatory 10-year Re-Evaluation Date: 2022

Mandatory 15-year Re-Evaluation Date (for priority public uses): 2027

NEPA Compliance for Refuge Use Decision:

☐ Categorical Exclusion without Environmental Action Memorandum

☐ Categorical Exclusion and Environmental Action Memorandum

☐ Environmental Assessment and Finding of No Significant Impact

☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Uses: Non-Wildlife-Dependent Recreational Activities

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

The Wilderness Act of 1964 (Public Law 88-577) creates the following additional purposes for the designated Wilderness area in the Refuge’s boundaries; these purposes are within and

supplemental to the Refuge's ANILCA and Range purposes: secure an enduring resource of Wilderness; protect and preserve the Wilderness character of areas in the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): This determination evaluates non-guided public uses not covered in other compatibility determinations, including camping, hiking, backpacking, mountaineering, river floating, firewood cutting for recreational purposes, boating (motorized and non-motorized), plant gathering (including berry picking), rock gathering, cross-country skiing, dog sledding, skijoring, snowmobiling, beach use, packrafting, snowshoeing, and other general outdoor recreation when the uses are not associated with one of the other uses evaluated elsewhere for compatibility. This is a re-evaluation of the compatibility of non-wildlife-dependent recreational uses on Federal lands in Arctic Refuge. Most of these activities were originally found to be compatible in 1988 during the development of the original Arctic Refuge Comprehensive Conservation Plan and again determined to be compatible in 1994.

Means of accessing the Refuge for these uses may include commercial or non-commercial fixed-wing aircraft, packraft, motorized and non-motorized boat, snowmobile, etc. Non-wildlife-dependent recreational activities occur year-round. They may occur as activities unto themselves or in association with other uses.

Availability of Resources: Adequate Refuge personnel and base operational funds are available to manage these activities at current and projected levels. Administrative staff time primarily involves phone conversations, written correspondence, public use surveys, and interaction with visitors at the interagency visitor center. Staff will also be involved with subsequent step-down planning for visitor use management and with monitoring recreational activities.

Field work associated with administering this use primarily involves conducting patrols to increase visitor compliance with State and Federal regulations. Refuge staff members opportunistically conduct outreach with visitors to minimize the impacts of camping; improve understanding of local residents' subsistence activities; and increase awareness of private inholdings and property. Outreach efforts at the Arctic Interagency Visitor Center in Coldfoot emphasize Leave No Trace or other minimal impact camping and hiking practices to minimize impacts to Refuge resources.

Anticipated Impacts of Use(s): These activities are anticipated to have negligible effects on most Refuge resources, but effects may vary on wildlife and other visitors depending on the type of activity. For example, the sounds of snowmobiles could affect visitors' experience of solitude and natural quiet. Temporary displacement and/or disturbance to wildlife can occur in response to movement of motorized or non-motorized means of transportation, including boating, hiking, skiing, etc., but impacts would likely be short-term and minimal.

Visitors engaged in non-commercial, non-wildlife-dependent activities may encounter or contribute to the following emerging issues:

1. *Perceived Crowding and User Conflicts* - Simultaneous visits by hunting and recreation groups in some high-use areas due to weather or high demand have led to a reported erosion of visitor experiences and user conflicts.
2. *Physical impacts* - Human waste accumulation and localized vegetation damage has been reported from camping or aircraft landing on non-durable surfaces.
3. *Dalton Highway-based Visitation* - There is high probability that the western boundary of the Refuge will continue to become more popular with visitors as awareness of relatively economical Dalton Highway-based access continues to rise. Arctic Refuge managers now consider the Dalton Highway the Refuge's "front country."
4. *Packrafting* - The emergence of commercially-manufactured, lightweight, backpackable inflatable rafts is making rivers and streams that were once unfloatable (due to low water or lack of access) more available to a range of users. This could potentially change the patterns of use on Arctic Refuge.

During peak visitation, limited landing areas in some drainages may contribute to perceived crowding and user conflicts. Additionally, some localized vegetation damage caused by landing aircraft or camping on non-durable surfaces has been reported. These are emerging issues that need to be further monitored and evaluated. Future actions may be needed to address these concerns.

Impacts associated with this activity could be minimal and transitory to minor, and long-term. Disturbance to vegetation is site specific, minor, and long-term and would likely be restricted to campsites that receive repetitive use and to aircraft landings on non-durable surfaces. Landing aircraft on non-durable surfaces can cause minor to moderate site-specific and long-term effects to Refuge habitats and vegetation. In several areas, soil compaction, scarring, and occasionally rutting have been documented. This is not a problem where aircraft land on durable surfaces such as gravel and sand bars, water, ice and snow, and certain other durable or resistant surfaces. These effects can be minimized or prevented by limitations, including temporal limits, on where aircraft can land or under what conditions, including aircraft weight or tire configuration. Although not known to occur on the Refuge, landing aircraft could introduce invasive species that could impact resources in the Refuge. We will continue to monitor for such occurrences. Low overflights, and sometimes landings and take-offs, can disturb or displace wildlife and bother visitors, although the effects are brief and usually minor.

Access to the Refuge during summer months would be by landing aircraft primarily on gravel bars. Winter access would be by "ski-equipped" aircraft. Landings on vegetated lowland tundra and disturbance to vegetation outside established landing areas could be limited under the stipulations of the special use permit. Although non-commercial aircraft are not required to

acquire a special use permit, when possible through outreach, we encourage those operators to land on durable surfaces such as gravel bars and to avoid vegetated tundra or soft surfaces. However, if damage to non-durable surface is found, it may be necessary to further limit aircraft landings at those sites to reduce impacts to Refuge resources. Additionally, the introduction of invasive species could affect Refuge resources, particularly through the use of pack stock, although it is not known to have occurred to date. The likelihood of invasive species introduction from pack stock can be mitigated through measures such as the prohibition of straw and hay or the use of pelletized food. Staff will continue to monitor areas for such occurrences.

Public Review and Comment: Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge's Revised Comprehensive Conservation Plan (Revised Plan, Plan) and environmental impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan, which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on the Refuge's web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. We received one specific comment from an individual on this compatibility determination.

The commenter suggested that we combine all recreational uses into a single compatibility determination titled "Visitor Use." The Service agrees that this is one way that compatibility determinations could be organized, and our policy allows for consideration of uses either independently or as a group of related issues. We feel that analyzing the commercial recreational uses individually and separate from the non-commercial uses serves us better for several reasons; the uses are not dependent upon one another, and we can better analyze the use and its potential to impact Refuge purposes, and propose stipulations that apply specifically to each type of use and to commercial users in the permit process when the uses are considered individually. We also feel that analyzing consumptive uses separate from non-consumptive uses allows for a more focused analysis of the use and its potential impacts to Refuge purposes.

Many general comments mentioned that impacts from visitors were already occurring. They expressed the desire to have the Refuge limit private users (in addition to commercial users) but to give priority to non-guided users in an allocation system. Some commenters suggested specific limits on group sizes and the numbers of groups on a river at a time; others just made general comments on limits. One commenter thought that group size should be larger than currently allowed to provide for safety in bear country. Many commenters were concerned that visitors may be impacting wildlife, particularly caribou, and the Refuge should adequately address this. Some commenters were specifically concerned that human waste along river corridors may be creating a potential health issue; at least one person commented that, in their experience on the Refuge, this was not a problem. Many people also commented that Wilderness recreation should allow opportunities for visitors to experience adventure, challenge, solitude, independence, and freedom with minimal interference from Refuge staff, but that the Refuge should ensure that visitor uses do not impact Wilderness character.

As a result of internal review comments, we added mountaineering and river floating to the list of non-wildlife-dependent activities evaluated. The only other change made to the

compatibility determination was updating information on the related (supporting use) issue of aircraft impacts, as in other compatibility determinations.

Refuge Determination (check one below):

☐ Use is not compatible

☒ Use is compatible

Stipulations Necessary to Ensure Compatibility: Special use permits are not required for these non-wildlife-dependent recreational activities, so there are no associated stipulations. However, visitors will be required to comply with existing State and Federal regulations. The Refuge provides information on Leave No Trace principles, or other minimal impact techniques, and other means to minimize impacts to Refuge resources.

Justification: These non-wildlife-dependent, recreational activities provide opportunities for the public to engage in a variety of outdoor activities, which may increase public appreciation of the Refuge and its resources. Wilderness and recreation values, as well as establishing purposes of the Refuge, are preserved by promoting wilderness appreciation and wildland pursuits. The activities have been found compatible when conducted in relation to other Refuge uses such as wildlife observation and photography, hunting, fishing, trapping, or subsistence activities. While Refuge visitors may come solely to engage in these non-priority public use activities, they are more often associated with wildlife-dependent activities or other activities already evaluated for compatibility such as commercially guided recreational activities or commercial air transportation. Emerging issues will be further monitored and, if needed, regulated to ensure Refuge resources and visitor experiences are protected. When conducted in accordance with U.S. Fish and Wildlife Service (Service) regulations, I find that these uses will not materially interfere with or detract from the purposes for which the Refuge was created, including Wilderness Act purposes for the Refuge Wilderness area and fulfillment of the mission of the Refuge System.

Supporting Documents:

U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.

U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.

U.S. Fish and Wildlife Service. 1994. Compatibility Determination for Non-wildlife Dependent Recreational Activities. U.S. Fish and Wildlife Service, Fairbanks, Alaska. U.S. Fish and Wildlife Service. 2011. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.

Refuge Determination:

Refuge Manager/
Project Leader Approval /signed/ Richard Voss August 4, 2012
Date

Concurrence:

Regional Chief
National Wildlife
Refuge System /signed/ Mike Boylan (acting) August 15, 2012
Date

Mandatory 10-year Re-Evaluation Date: 2022

Mandatory 15-year Re-Evaluation Date (for priority public uses): 2027

NEPA Compliance for Refuge Use Decision:

☐ Categorical Exclusion without Environmental Action Memorandum
☐ Categorical Exclusion and Environmental Action Memorandum
☐ Environmental Assessment and Finding of No Significant Impact
☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Reburial of Human Remains per State and Federal Guidelines

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

The Wilderness Act of 1964 (Public Law 88-577) creates the following additional purposes for the designated Wilderness area in the Refuge’s boundaries; these purposes are within and supplemental to the Refuge’s ANILCA and Range purposes: secure an enduring resource of

Wilderness; protect and preserve the Wilderness character of areas in the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): The Refuge anticipates requests to rebury human remains eroding from recorded and unrecorded prehistoric sites and remains that have been removed from prehistoric sites. The inadvertent discovery section of the Native American Graves Protection and Repatriation Act of 1990 (Public Law 101-601) requires that the land management agency identify and notify the closest Native organization, and—if requested—provide for the repatriation of the remains. With this in mind, the Refuge has prepared this compatibility determination to cover anticipated burial requests during the next 10 years. Each proposed burial and its proposed reburial location would need to be approved by the regional historic preservation officer, who will ensure compliance with the National Historic Preservation Act, Section 106, prior to issuance of a permit for this activity.

Reburial of repatriated human remains would take place near the place of discovery of such remains or near their original burial place. Each burial would involve a small excavation with hand tools. Impacts to Refuge resources would be negligible and short-term, with no foreseeable long-term effects, and would not affect subsistence use of the Refuge. A copy of the GPS coordinates and contents of the burial site will be filed at Refuge headquarters and with the regional historic preservation officer. The remains should be buried with a modern object (e.g., coin, dated button) to indicate it is a historical reburial.

Availability of Resources: Except for issuance of the permit, no Refuge resources would be needed to administer use. All activities associated with use would be accomplished by the permittee.

Anticipated Impacts of Use(s): Reburials would result in minimal and short-term impacts to Refuge resources, involving a few small-scale excavations with hand tools and then interment of the remains.

Public Review and Comment: Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge's Revised Comprehensive Conservation Plan (Revised Plan, Plan) and environmental impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan,

which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on the Refuge's web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. No comments were received on this subject and no changes were made.

Refuge Determination (check one below):

☐ Use is not compatible

☒ Use is compatible

Stipulations Necessary to Ensure Compatibility: A special use permit with the following stipulations is required for reburial of human remains per State and Federal guidelines. These stipulations are intended to minimize impacts and ensure compatibility. Refuge permits may also include other special conditions as necessary or appropriate for the specific operations or activities that are proposed. These stipulations will be updated periodically to reflect management needs or policy changes.

1. Failure to abide by any part of this special use permit; violation of any refuge related provision in Titles 43 (Part 36) or 50 (Subchapters B and C) Code of Federal Regulations; violation of the Marine Mammal Protection Act of 1972; violation of the Endangered Species Act of 1973; or violation of any pertinent state regulation (e.g., fish or game violation) will, with due process, be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
2. The permittee is responsible for ensuring that all employees, party members, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
3. This permit may be cancelled or revised at any time by the Refuge manager in case of emergency (e.g., high fire danger, flooding, unusual resource problems, etc.).
4. A copy of this permit must be in the permittee's or field party chief's possession at all times while exercising the privileges of the permit.
5. The permittee must notify the Refuge manager during Refuge working hours in person or by telephone before beginning and upon completion of annual activities allowed by this permit.
6. Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge manager with: (1) the name and method of contact for the field party chief/supervisor; (2) aircraft and other vehicle types to be used and identification information for these vehicles; (3) names of assistant guides and helpers; and (4) any changes in information provided in the original permit application.

7. This permit authorizes use only on Arctic Refuge lands. Use of land selected by or conveyed to the State of Alaska or North Slope Borough; or an individual is not authorized by this permit. The permittee and permittee's clients do not have the exclusive use of the site(s) or lands covered by this permit, except for the authorized camp facilities (if applicable).
8. This permit does not authorized use of Native selected lands within the permit area unless approved by the Refuge manager. The applicant must provide the Refuge manager with written views from the affected Native organization(s) before authorization to use the selected lands can be considered. However, if the affected Native organization(s) provide no response to the permittee's request for views, the permittee may provide the Refuge manager with a copy of the letter that he/she sent requesting the views of Native organization(s). If any of the selected lands are conveyed during the term of this permit, the permittee will no longer be authorized to use those lands.
9. The permittee and permittee's clients do not have the exclusive use of the site(s) or lands covered by this permit.
10. The permittee must take no action that interferes with subsistence activities of rural users or restricts the reasonable access of subsistence users to Refuge lands. This may include but is not limited to disturbance of wildlife and their movements near subsistence hunters, and damage to cabins, trails, traditional campsites, or caches used by subsistence users.
11. Any action by a permittee or the permittee's employees which unduly interferes with or harasses other Refuge visitors or impedes access to any site is strictly prohibited. Examples of prohibited acts include but are not limited to low flights over camps or persons at less than 500 feet (unless landing) and parking aircraft or placing other objects (rocks, tents, etc.) on any landable area so as to restrict use by other aircraft or persons.
12. In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470 ee), no person may excavate, remove, damage or otherwise alter or deface, or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands unless permitted or exempted (see 16 U.S.C 470cc for permit or exception guidance). No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange any archaeological resource if such resource was excavated or removed from public lands.
13. Construction of cabins, platforms, or other permanent structures is prohibited. Wall tents with floors that are completely removed from the Refuge at the end of field season are allowed.
14. The construction of landing areas or pads is prohibited. Incidental hand removal of rocks and other minor obstructions may be permitted.
15. The permittee must maintain their use areas in a neat and sanitary condition. Human waste must not be left less than 200 feet from springs, lakes, and streams. Bury waste under soil (or under snow at the ground level during periods when the ground is frozen). Paper toilet tissue, if used, must be packed out or burned completely to ash. Moist towelettes or sanitary products must be removed as trash.

16. All garbage and non-combustible debris will be removed from the Refuge (not buried). Food, garbage, and supplies will be stored so as not to attract wildlife. All equipment and property must be removed from Refuge lands upon completion of permitted activities.
17. Any human-wildlife interactions that have resulted in animals obtaining food, destroying property, or posing a threat to human safety must be reported to the Refuge manager immediately at (907) 456-0250, as soon as communication becomes available. You are required to submit a written report within 30 days to the Refuge manager for all interactions with grizzly bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a grizzly bear so that this data can be used to help prevent future human-bear conflicts. You may use the Bear Incident Report form (Service 2008). Animals taken in defense of life or property must be reported to the Refuge manager immediately, and to the Alaska State Troopers at (907) 451-5350, and salvaged in accordance with State regulations.
18. The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for take-off and landing, maintain a minimum altitude of 2,000 feet above ground level.
19. Helicopter landings are not authorized.
20. The use of off-road vehicles (except snowmobiles with adequate snow cover) is prohibited. The use of snowmobiles, dog teams, and other means of surface transportation may only be used when adequate snow cover is present and in such a manner as to prevent waste or damage to the Refuge. The phrase “adequate snow cover” means snow is of a depth to protect the underlying vegetation and soil.
21. Snowmobiles, dog teams, watercraft, and other means of transportation shall be operated in such a manner as to prevent the herding, harassment, hazing, or driving of wildlife for viewing or other purposes.
22. Reburial of repatriated human remains will take place near the place of discovery of such remains and/or near the place of their original burial. To avoid the possibility of disturbing additional human remains, reburials should not take place at the original burial location or a known archaeological site.
23. The permittee or permittees’ representatives will make the smallest possible excavation, using only hand tools.
24. The GPS coordinates and a list of the contents of the burial site will be filed at Refuge headquarters and with the Regional Historic Preservation Officer within 30 days of burial.
25. Remains shall be buried with a modern object (e.g., coin, button, etc., with date) to indicate that it is an historical reburial.
26. An annual report of activities conducted on the Refuge shall be provided to the Refuge manager within 30 days of the permit expiration (normally 1-2 pages). The GPS coordinates should be provided to the Refuge manager in the annual report along with what type of maintenance or activity was performed.

Justification: This proposed use is necessary for the Refuge to comply with the Native American Graves Protection and Repatriation Act of 1990 (Public Law 101-601). The use is limited and short-term and thus will result in minimal impact to Refuge resources. After fully considering the impacts of these activities, as described previously in the “Anticipated Impacts of Use(s)” section of this document, it is my determination that reburial of human remains in the Refuge does not materially interfere with or detract from the purposes of the Refuge or the mission of the Refuge System.

Supporting Documents:

- U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.
- U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.
- U.S. Fish and Wildlife Service. 2008. Region 7: Bear awareness and firearms safety training policy, Appendix F. U.S. Fish and Wildlife Service. Anchorage, Alaska. Unpublished. 36 pp.
- U.S. Fish and Wildlife Service. 2011. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.

Refuge Determination:

Refuge Manager/ Project Leader Approval	<u>/signed/ Richard Voss</u>	<u>August 4, 2012</u>
		Date

Concurrence:

Regional Chief National Wildlife Refuge System	<u>/signed/ Mike Boylan (acting)</u>	<u>August 15, 2012</u>
		Date

Mandatory 10-year Re-Evaluation Date: 2022

Mandatory 15-year Re-Evaluation Date (for priority public uses): 2027

NEPA Compliance for Refuge Use Decision:

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusion and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Recreational (General) Fishing

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

The Wilderness Act of 1964 (Public Law 88-577) creates the following additional purposes for the designated Wilderness area in the Refuge’s boundaries; these purposes are within and

supplemental to the Refuge's ANILCA and Range purposes: secure an enduring resource of Wilderness; protect and preserve the Wilderness character of areas in the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): This is a re-evaluation of the compatibility of non-commercially-supported general fishing as a use of Federal lands in Arctic Refuge. This activity was originally found to be compatible in 1988 during the development of the original Arctic Refuge Comprehensive Conservation Plan and again determined to be compatible in 1994.

Means of access for fishing include fixed-wing airplanes, motorboats, non-motorized boats, hiking, and snowmobiling. General fishing is associated with other activities, such as camping, river rafting, hunting, etc. Fishing occurs spring through winter and is managed under State of Alaska fishing regulations (5AAC). The major rivers on the Refuge have good recreational fishing opportunities, based on reasonable accessibility by float plane or boat and, based on current low levels of harvest, have sustainable populations of anadromous and/or resident fish. There are also recreational fish resources in the Refuge's coastal system. Although all these drainages provide opportunities for day-use and overnight primitive camping, distance and cost of traveling to these areas for day-use fishing is prohibitive for most visitors.

Fishing patterns are estimated primarily through direct observation by Refuge staff and reports from commercial aircraft operators and from local residents. Use is concentrated in the summer months on rivers when flows are amenable to river travel. This activity is often secondary or is peripheral to other activities, which have been evaluated in separate compatibility determinations.

Availability of Resources: Adequate Refuge personnel and base operational funds are available to manage general fishing at existing levels. Administrative staff time primarily involves phone conversations and written correspondence, and could involve engagement in regulatory review.

Field work associated with administering the program primarily involves conducting law enforcement patrols to ensure recreational users' compliance with State fishing regulations and Refuge regulations and to work with adjacent land owners to monitor public use. It is estimated that less than two weeks of staff time is required to manage this use.

Anticipated Impacts of Use(s): The Federal Subsistence Board and State Board of Fisheries regularly adopt regulations in response to fish population levels and to address issues of fishery allocation. Providing an opportunity for continued subsistence uses of fishery resources by local residents receives the highest priority from the Federal Subsistence Board. Recent (1998 to present) Chinook salmon returns have been characterized as poor, and managers (State and Federal) may restrict recreational use of this resource. Chum salmon experienced a worrisome decline in the late 1990s; however, recent run strengths indicate that a general fishery on chum salmon currently is sustainable.

At current levels, general fishing harvests require little to no monitoring, and there are no anticipated deleterious effects on fish habitat. Should intensity of use increase, Refuge staff would increase monitoring efforts. If necessary, Refuge staff would review regulations and propose changes to protect fishery resources and subsistence fishing opportunities for people living near the Refuge. We will continue to work with the Fairbanks Fish and Wildlife Field Office to implement population inventories and conduct studies aimed at better understanding fish populations on the Refuge.

Visitors engaged in general fishing activities may encounter or contribute to the following emerging issues:

1. *Perceived Crowding and User Conflicts* - Simultaneous visits by hunting and recreation groups in some high-use areas due to weather, or high demand, have led to a reported erosion of visitor experiences and user conflicts.
2. *Physical impacts* - Human waste accumulation and localized vegetation damage has been reported from camping or aircraft landing on non-durable surfaces.
3. *Dalton Highway-based Visitation* - There is high probability that the western boundary of the Refuge will continue to become more popular with visitors as awareness of relatively economical Dalton Highway-based access continues to rise. Arctic Refuge managers now consider the Dalton Highway the Refuge's "front country."

During peak visitation, limited landing areas in some drainages may contribute to perceived crowding and user conflicts. Additionally, some localized vegetation damage caused by landing aircraft or camping on non-durable surfaces has been reported. These are emerging issues that need to be further monitored and evaluated. Future actions may be needed to address these concerns.

Impacts associated with this activity could be minimal and transitory to minor, and long-term. Disturbance to vegetation is site specific, minor, and long-term and would likely be restricted to campsites that receive repetitive use and to aircraft landings on non-durable surfaces. Landing aircraft on non-durable surfaces can cause minor to moderate site-specific and long-term effects to Refuge habitats and vegetation. In several areas, soil compaction, scarring, and occasionally rutting have been documented. This is not a problem where aircraft land on durable surfaces such as gravel and sand bars, water, ice and snow, and certain other durable or resistant surfaces. These effects can be minimized or prevented by limitations, including temporal limits, on where aircraft can land or under what conditions, including aircraft weight or tire configuration. Although not known to occur on the Refuge, landing aircraft could introduce invasive species that could impact resources in the Refuge. We will continue to monitor for such occurrences. Low overflights, and sometimes landings and take-offs, can disturb or displace wildlife and bother visitors, although the effects are brief and usually minor.

Access to the Refuge during summer months would be by landing aircraft primarily on gravel bars. Winter access would be by “ski-equipped” aircraft. Landings on vegetated lowland tundra and disturbance to vegetation outside established landing areas could be limited under the stipulations of the special use permit. Although non-commercial aircraft are not required to acquire a special use permit, when possible through outreach, we encourage those operators to land on durable surfaces such as gravel bars and to avoid vegetated tundra or soft surfaces. The accidental introduction of invasive aquatic species from fishing tackle or waders could affect Refuge resources, although it is not known to have in the Refuge to date. Aquatic invasive species can cause long term damage to aquatic ecosystems. Staff will continue to monitor areas for such occurrences.

Public Review and Comment:

Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge’s Revised Comprehensive Conservation Plan (Revised Plan, Plan) and environmental impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan, which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on the Refuge’s web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. We received one specific comment from an individual on this compatibility determination.

The commenter suggested that we combine all consumptive recreation into a single compatibility determination called “Fish and Wildlife Harvest Programs” that would focus on the biological effects of wildlife management activities that are implemented through State regulations. The Service agrees that this is one way that compatibility determinations could be organized, and our policy allows for consideration of uses either independently or as a group of related issues. We feel that analyzing the commercial consumptive recreational uses individually and separate from the non-commercial consumptive uses serves us better for several reasons; the uses are not dependent upon one another, and we can better analyze the use and its potential to impact Refuge purposes, and propose stipulations that apply specifically to commercial users in the permit process when the use is considered individually.

We received two general comments on fishing, both of which wanted to ensure that the Refuge maintain quality fishing and not allow popular fishing sites to become over-fished. They also did not want associated camping area along rivers to become overused and degraded. No changes were made to the compatibility determination as a result of public comments except that we updated information on the related (supporting use) issue of aircraft impacts, as in other compatibility determinations.

Refuge Determination (check one below):

☐ Use is not compatible

☒ Use is compatible

Stipulations Necessary to Ensure Compatibility: Special use permits are not required for general fishing activities, so there are no associated stipulations. However, visitors will be required to comply with existing State and Federal regulations. The Refuge provides information on Leave No Trace principles, or other minimal impact techniques, and other means to minimize impacts to Refuge resources.

Justification: The National Wildlife Refuge System Administration Act of 1966, as amended by the Refuge Improvement Act of 1997, identifies compatible general fishing as one of six priority public uses of national wildlife refuges. The law states that, when managed in accordance with principles of sound fish and wildlife management, administration of these uses has been, and is expected to continue to be, generally compatible and that priority public uses should receive enhanced consideration over other public uses in refuge planning and management. The law also states that the U.S. Fish and Wildlife Service (Service) should provide increased opportunities for parents and their children to safely engage in traditional outdoor activities such as fishing.

Means of access by airplanes, motorboats, snowmobiles and non-motorized means for traditional activities, as provided by ANILCA and as currently regulated by the Service, have not materially interfered with or detracted from Refuge purposes. Should motorized transportation in support of general fishing increase to levels where it interferes with Refuge purposes, staff would work with anglers, air operators, and/or Alaska Department of Fish and Game to address impacts and resolve compatibility concerns.

General fishing is an activity that Congress intended to preserve when the Refuge was designated by ANILCA. Recreational fishing in the Refuge provides the public with high quality recreational opportunities. The State Board of Fisheries and the Federal Subsistence Board, respectively, review regulations to manage public fishery resources and to provide the continued opportunity for subsistence fishing by local residents in response to changing fish population levels and harvest patterns. These regulations provide adequate protection for the fishery resources and continued subsistence opportunities in balance with other Refuge purposes. Emerging issues will be further monitored and, if needed, regulated to ensure Refuge resources and visitor experiences are protected. When conducted in accordance with Service regulations, I find that these uses will not materially interfere with or detract from the purposes for which the Refuge was created, including Wilderness Act purposes for the Refuge Wilderness area and fulfillment of the mission of the Refuge System.

Supporting Documents:

U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.

U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.

U.S. Fish and Wildlife Service. 2011. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.

Refuge Determination:

Refuge Manager/ Project Leader Approval	<u>/signed/ Richard Voss</u>	<u>August 4, 2012</u>
		Date

Concurrence:

Regional Chief National Wildlife Refuge System	<u>/signed/ Mike Boylan (acting)</u>	<u>August 15, 2012</u>
		Date

Mandatory 10-year Re-Evaluation Date: 2022

Mandatory 15-year Re-Evaluation Date (for priority public uses): 2027

NEPA Compliance for Refuge Use Decision:

☐ Categorical Exclusion without Environmental Action Memorandum

☐ Categorical Exclusion and Environmental Action Memorandum

☐ Environmental Assessment and Finding of No Significant Impact

☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: General Hunting

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

The Wilderness Act of 1964 (Public Law 88-577) creates the following additional purposes for the designated Wilderness area in the Refuge’s boundaries; these purposes are within and

supplemental to the Refuge's ANILCA and Range purposes: secure an enduring resource of Wilderness; protect and preserve the Wilderness character of areas in the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): Non-guided general hunting is re-evaluated in this determination. General hunting was found to be compatible in the 1988 Comprehensive Conservation Plan and was again determined to be compatible in 1994. Associated activities such as camping, backpacking, hiking, and other incidental uses are considered part of general hunting. Allowable temporary facilities include tents, tent frames, tent platforms, weather ports, and caches.

The State of Alaska divides the state into game management units (GMUs). The following GMUs fall within the boundaries of the Refuge: 25A, 25B, 25D, 26B, and 26C. General hunters are required to follow current State and Federal hunting regulations, including the requirements for applicable licenses and permits. The State of Alaska is primarily responsible for managing fish and resident wildlife through setting seasons, bag limits, methods and means of harvest, and licensing of commercial guiding operators.

The majority of general hunting has been for moose, caribou, Dall's sheep, wolf, and grizzly bear, but hunting for black bear, small game, and waterfowl also occurs on the Refuge, as allowed under State of Alaska hunting regulations (5 AAC). The number of recreational use-days for small-game and waterfowl hunting on the Refuge is unknown but thought to be minimal.

Current means of access to the Refuge include fixed-wing aircraft, motorboats, snowmobiles, and non-motorized means. However, most general hunters use a commercial air operator to access the Refuge. On average, it appears that hunters make up 28 percent of the total number of commercially-supported visitors. An unknown number of general hunters use their personal airplanes (Service 2010).

Levels of general hunting are estimated primarily from direct observation by Refuge staff, annual reports provided by commercial air transportation services that transport most general hunters to locations in the Refuge, and information from State harvest tickets. Permitted air operators provide visitor information, including primary activity, location, length of stay, and group size.

Availability of Resources: The Refuge is not staffed adequately to manage and enforce general hunting at current and projected levels. The Plan includes an objective to hire a second full-time law enforcement officer, to be shared with Yukon Flats and Kanuti National

Wildlife Refuges. In the interim, we share personnel resources across refuges and the U.S. Fish and Wildlife Service (Service), and we coordinate with State troopers and visitor services staff to manage current levels of general hunting.

Staff time in the office primarily involves phone conversations and written correspondence to answer questions from hunters, attendance at regulatory meetings, and engagement in the regulatory review process. Field work associated with administering the program primarily involves conducting law enforcement patrols to ensure hunter compliance with State and Federal refuge regulations. Refuge staff members opportunistically conduct outreach to hunters to increase their awareness of national wildlife refuge programs, the status of local wildlife populations, the relationship of regulations to sustainable yield, and the importance of knowing land ownership and regulatory boundaries in locations where hunting activities are to take place.

Anticipated Impacts of Use(s): The Refuge is directly involved in review and implementation of the regulatory process and administrative oversight of general hunting. Because of combined regulatory (harvest) and law enforcement efforts of the State and Refuge personnel, direct impacts from general hunting under existing management should have minimal impacts to fish and wildlife resources, other Refuge resources, or other Refuge users.

Commercial air transportation services are discouraged from dropping general hunters in areas used by subsistence hunters. Most subsistence hunting occurs in areas of the Refuge where Refuge and private lands are intermingled. Boundaries of private lands can be difficult to distinguish, and inadvertent trespass could occur because non-local hunters would not be aware of the mixed ownership. Refuge staff members are aware of these potential conflicts and monitor use levels each hunting season. Should conflicts arise, the Service will work to address them through the Federal Subsistence Board and Alaska Board of Game. These boards have established regulations aimed at managing populations of animals at sustainable levels and preventing conflicts between user groups.

Visitors engaged in general hunting activities may encounter or contribute to the following emerging issues:

1. *Perceived Crowding and User Conflicts* - Simultaneous visits by hunting and recreation groups in some high-use areas due to weather or high demand have led to a reported erosion of visitor experiences and user conflicts.
2. *Physical impacts* - Human waste accumulation and localized vegetation damage has been reported, either from camping or aircraft landing on non-durable surfaces.
3. *Dalton Highway-based Visitation* - There is high probability that the western boundary of the Refuge will continue to become more popular with visitors as awareness of relatively economical Dalton Highway-based access continues to rise. Arctic Refuge managers now consider the Dalton Highway the Refuge's "front country."

During peak visitation, limited landing areas in some drainages may contribute to perceived crowding and user conflicts. Additionally, some localized vegetation damage caused by landing aircraft or camping on non-durable surfaces has been reported. These are emerging issues that need to be further monitored and evaluated. Future actions may be needed to address these concerns.

Impacts associated with this activity could be minimal and transitory to minor, and long-term. Disturbance to vegetation is site specific, minor, and long-term and would likely be restricted to campsites that receive repetitive use and to aircraft landings on non-durable surfaces. Landing aircraft on non-durable surfaces can cause minor to moderate site-specific and long-term effects to Refuge habitats and vegetation. In several areas, soil compaction, scarring, and occasionally rutting have been documented. This is not a problem where aircraft land on durable surfaces such as gravel and sand bars, water, ice and snow, and certain other durable or resistant surfaces. These effects can be minimized or prevented by limitations, including temporal limits, on where aircraft can land or under what conditions, including aircraft weight or tire configuration. Although not known to occur on the Refuge, landing aircraft could introduce invasive species that could impact resources in the Refuge. We will continue to monitor for such occurrences. Low overflights, and sometimes landings and take-offs, can disturb or displace wildlife and bother visitors, although the effects are brief and usually minor. Landings on vegetated lowland tundra and disturbance to vegetation outside established landing areas could be limited under the stipulations of the special use permit. Although non-commercial aircraft are not required to acquire a special use permit, we encourage those operators to land on durable surfaces such as gravel bars and to avoid vegetated tundra or soft surfaces. Temporary displacement and/or disturbance to wildlife can occur with any form of motorized transport (Calef et al. 1976; Olliff et al. 1999; Creel et al. 2002), but impacts would likely be short-term and minimal. A large increase in general hunting on the Refuge could cause user conflicts, wildlife disturbance, and—in some cases—undermine the wilderness characteristics of the Refuge. To minimize impacts on lands and resources in the Refuge, law enforcement patrols will be routinely conducted to maximize compliance with existing policies, rules, and regulations. The introduction of invasive plant species carried on boats, people, animals, and aircraft could affect Refuge resources, although no known introductions have occurred on the Refuge to date. Refuge staff will continue to monitor for such occurrences.

Public Review and Comment: Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge's Revised Comprehensive Conservation Plan (Revised Plan, Plan) and environmental impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan, which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on the Refuge's web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. We received one specific comment from an individual on this compatibility determination.

The individual suggested that we combine all consumptive recreation into a single compatibility determination called "Fish and Wildlife Harvest Programs" that would focus on the biological effects of wildlife management activities that are implemented through State regulations. The Service agrees that this is one way that compatibility determinations could be organized, and our policy allows for consideration of uses either independently or as a group of related issues. We feel that analyzing the commercial consumptive recreational uses individually and separate from the non-commercial consumptive uses serves us better for several reasons; the uses are not dependent upon one another, and we can better analyze the

use and its potential to impact Refuge purposes, and propose stipulations that apply specifically to commercial users in the permit process when the use is considered individually. The same individual recommended that we not allow food and gear caches in Wilderness. Refuge regulations currently allow for the temporary storage of food and gear, and we believe this is reasonable as caches are often necessary for visitors who make long or expeditionary type trips across the Refuge. Food storage is a concern, however, and during the visitor use management planning process, we will consider a requirement that all cached food be stored in bear-resistant containers.

The same commenter also thought the Service's description of "minimal impacts" is not supported by the analysis of the hunting effects on fish and wildlife populations and that this use would have a high potential of impacts to some wildlife populations (e.g., wolf). The State of Alaska has the primary responsibility for management of fish and resident wildlife on all lands in Alaska including national wildlife refuges and has agreed, per the Master Memorandum of Understanding with the Service, to "manage fish and resident wildlife populations in their natural species diversity on Service lands." However, the Service is the final authority over management of fish and wildlife on refuge lands and waters. Both agencies agree "to recognize that the taking of fish and wildlife by hunting, trapping, or fishing on Service lands in Alaska is authorized in accordance with applicable State and Federal law unless State regulations are found to be incompatible with documented refuge goals, objectives, or management plans." The Service believes the existing levels of hunting on Arctic Refuge are compatible with Refuge purposes. If any individual existing or proposed State fish and wildlife management proposal did not conform to the Plan, the Refuge would find the use incompatible and would not allow the use on the Refuge. As for Alaska Department of Fish and Game (ADFG) regulations and the harvest of fish and wildlife, the promulgation of regulations is not a Refuge use and therefore is not subject to compatibility. The "take of fish and wildlife" under State regulations on Arctic Refuge, including all equipment, facilities and services needed to support hunting, was evaluated in two compatibility determinations ("Commercial Big-game Hunting Services" and "General Hunting") and found to "not materially interfere with or detract from the fulfillment of the Refuge purposes and the System mission." Therefore these uses are compatible.

General comments mostly echoed the type of specific comments received about general hunting. Some people felt that all hunting, but especially general hunting, could have an effect on the population structure and genetic diversity of animal populations on the Refuge. Some also felt that general big-game hunting (as opposed to subsistence), which typically involves commercial services, is inconsistent with Refuge purposes and the management goals stated in the Plan. When allowed, fair-chase principles should be followed. Several commenters felt that the Refuge needed more information on wildlife harvest, particularly in high access drainages, denning areas, feeding sites, or migration corridors. One person commented that hunting should be banned from Arctic Refuge. Several of the commenters from villages in the southern portion of the Refuge were concerned with harvest from non-subsistence hunters in the Red Sheep Creek area. No changes were made to the compatibility determination as a result of public comments except that we updated information on the related (supporting use) issue of aircraft impacts, as in other compatibility determinations.

Refuge Determination (check one below):☐ Use is not compatible☒ Use is compatible

Stipulations Necessary to Ensure Compatibility: Special use permits are not required for general hunting activities, so there are no associated stipulations. However, visitors will be required to comply with existing State and Federal regulations. The Refuge provides information on Leave No Trace principles, or other minimal impact techniques, and other means to minimize impacts to Refuge resources.

Justification: The National Wildlife Refuge System Administration Act of 1966 (as amended by the Refuge Improvement Act of 1997) identifies general hunting as one of six priority public uses of National Wildlife Refuge System lands. The law states that, when managed in accordance with principles of sound fish and wildlife management, administration of this use has been, and is expected to continue to be, generally compatible, and that priority public uses should receive enhanced consideration over other public uses in refuge planning and management. The law also states that the Service should provide increased opportunities for families to experience compatible wildlife-dependent recreation, particularly opportunities for parents and their children to safely engage in traditional outdoor activities such as hunting.

Means of access by airplanes, motorboats, snowmobiles and non-motorized means for traditional activities, as provided by ANILCA and as currently regulated by the Service, have not materially interfered with or detracted from Refuge purposes. Should motorized transportation in support of hunting increase to levels where it interferes with Refuge purposes, staff would work with hunters, commercial air operators, and/or Alaska Department of Fish and Game to address impacts and resolve compatibility concerns.

General hunting is an activity that Congress intended to preserve when the Refuge was designated by ANILCA. General hunting in the Refuge provides the public with quality general hunting opportunities found few places in the world. To ensure sustainability of harvest of local residents, the State Board of Game and the Federal Subsistence Board regularly adopt regulations in response to wildlife population levels and management needs. These regulations provide adequate protection for wildlife resources and continued hunting opportunities, in balance with other Refuge purposes. Emerging issues will be further monitored and, if needed, regulated to ensure Refuge resources and visitor experiences are protected. When conducted in accordance with Service regulations, I find that these uses will not materially interfere with or detract from the purposes for which the Refuge was created, including Wilderness Act purposes for the Refuge Wilderness area and fulfillment of the mission of the Refuge System.

Supporting Documents:

- Calef, G.W., E.A. DeBock, and G.M. Lortie. 1976. The reaction of barren-ground caribou to aircraft. *Arctic* 29(4):201-212.
- Creel, S., J.E. Fox, A. Hardy, J. Sands, B. Garrott, and R.O. Peterson. 2002. Snowmachine activity and glucocorticoid stress responses in wolves and elk. *Conservation Biology* 16:809-814.
- Olliff, T., K. Legg, and B. Kaeding, editors. 1999. Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Wyoming. 315 pages.
- U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.
- U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.
- U.S. Fish and Wildlife Service. 2010. Arctic National Wildlife Refuge Public Use Summary. U.S. Fish and Wildlife Service. Fairbanks, Alaska. Unpublished. 45 pp.
- U.S. Fish and Wildlife Service. 2011. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.

Refuge Determination:

Refuge Manager/
Project Leader Approval /signed/ Richard Voss August 4, 2012
Date

Concurrence:

Regional Chief
National Wildlife
Refuge System /signed/ Mike Boylan (acting) August 15, 2012
Date

Mandatory 10-year Re-Evaluation Date: 2022

Mandatory 15-year Re-Evaluation Date (for priority public uses): 2027

NEPA Compliance for Refuge Use Decision:

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusion and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Furbearer Trapping (Non-Subsistence)

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

The Wilderness Act of 1964 (Public Law 88-577) creates the following additional purposes for the designated Wilderness area in the Refuge’s boundaries; these purposes are within and

supplemental to the Refuge's ANILCA and Range purposes: secure an enduring resource of Wilderness; protect and preserve the Wilderness character of areas in the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): This determination re-evaluates the compatibility of furbearer trapping on the Refuge by trappers who are not qualified subsistence users because of residence in a non-rural area, such as Fairbanks. Trapping was found to be a compatible use in the Refuge's 1988 Comprehensive Conservation Plan and then again in 1994. Wolves, fox, beaver, marten, lynx, snowshoe hares, wolverine, ermine, and river otters are regularly trapped on the Refuge. Trapping occurs during winter on the Refuge in accordance with State of Alaska trapping regulations and seasons (5 AAC). Trapping activity has generally been decreasing since the 1980s. Access to trapping areas is primarily by fixed-wing aircraft and snowmobile. Currently, only a small number of traplines are active. Trappers often use one or more permitted cabins to support the activity. Compatibility determinations for trapping cabins will not be completed in the Plan; they will be done for each cabin separately at the time of permit renewal.

Availability of Resources: Adequate Refuge personnel and base operational funds are available to manage trapping on the Refuge. Refuge personnel spend less than five days per year managing this use.

Anticipated Impacts of Use(s): No long-term adverse impacts on wildlife populations or other Refuge resources are likely to occur due to continuation of trapping on the Refuge. State trapping regulations are established to ensure healthy, sustainable furbearer populations. Interviews with trappers and information from carcasses can be useful to biologists in determining population parameters of furbearers such as productivity and reproductive history. This added information can positively impact furbearer population management. Intensity of harvest and density of traplines on the Refuge is very low, and overall trapping pressure has declined since the 1980s; therefore, except for the occasional harvest of non-targeted animals, trapping has little impact on Refuge resources. Diminishing trapping activity seems to have been the result of low fur prices, high energy prices, and diminishing interest. Refuge staff will monitor harvest and attempt to determine trends through field observations and trapper interviews. If population concerns manifest, the U.S. Fish and Wildlife Service (Service) will

become engaged in review of the appropriate State of Alaska trapping regulations. Refuge staff will also be engaged in field enforcement of trapping regulations.

Public Review and Comment: Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge's Revised Comprehensive Conservation Plan (Revised Plan, Plan) and environmental impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan, which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on the Refuge's web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. We received one specific comment from an individual on this compatibility determination.

The individual suggested that we combine all consumptive recreation into a single compatibility determination called "Fish and Wildlife Harvest Programs" that would focus on the biological effects of wildlife management activities that are implemented through State regulations. The Service agrees that this is one way that compatibility determinations could be organized, and our policy allows for consideration of uses either independently or as a group of related issues. We feel that analyzing the commercial consumptive recreational uses individually and separate from the non-commercial consumptive uses serves us better for several reasons; the uses are not dependent upon one another, and we can better analyze the use and its potential to impact Refuge purposes, and propose stipulations that apply specifically to commercial users in the permit process when the use is considered individually.

The State of Alaska and several others commented that, when compatible, recreational trapping was an appropriate use of a national wildlife refuge in Alaska. Many general comments centered on the Service acquiring a better inventory of trapping cabins and were concerned about the limitation on new cabins. The Alaska Board of Game wanted to ensure that trapping was recognized as a traditional activity and be allowed to continue. One commenter felt that trapping in designated Wilderness was inconsistent with an area "untrammelled by man." Most people did not have an issue with allowing recreational trapping as long as it did not interfere with Refuge purposes, but some felt that trapping should not be allowed. No changes were made to the compatibility determination as a result of public comments.

Refuge Determination (check one below):

☐ Use is not compatible

☒ Use is compatible

Stipulations Necessary to Ensure Compatibility: Special use permits are not required for furbearer trapping activities, so there are no associated stipulations. However, visitors will be required to comply with existing State and Federal regulations. The Refuge provides information on Leave No Trace principles, or other minimal impact techniques, and other

means to minimize impacts to Refuge resources. Additionally, those trappers utilizing trapping cabins on the Refuge will need to abide by stipulations for trapping cabin permits.

Justification: Furbearer trapping is among the traditional uses of Arctic Refuge that ANILCA sought to preserve. The entire Refuge is open to this use, which is conducted under State trapping regulations. No special use permit is necessary for trapping, although a permit is necessary to use a cabin in association with trapping activity. After fully considering the impacts of these activities, as described previously in the “Anticipated Impacts of Use(s)” section of this document, it is my determination that non-subsistence furbearer trapping in the Refuge does not materially interfere with or detract from the purposes of the Refuge or the mission of the Refuge System.

Supporting Documents:

U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.

U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.

U.S. Fish and Wildlife Service. 2011. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.

Refuge Determination:

Refuge Manager/ Project Leader Approval	<u>/signed/ Richard Voss</u>	<u>August 4, 2012</u>
		Date

Concurrence:

Regional Chief National Wildlife Refuge System	<u>/signed/ Mike Boylan (acting)</u>	<u>August 15, 2012</u>
		Date

Mandatory 10-year Re-Evaluation Date: 2022

Mandatory 15-year Re-Evaluation Date (for priority public uses): 2027

NEPA Compliance for Refuge Use Decision:

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusion and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Uses: Scientific Research

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

The Wilderness Act of 1964 (Public Law 88-577) creates the following additional purposes for the designated Wilderness area in the Refuge’s boundaries; these purposes are within and

supplemental to the Refuge's ANILCA and Range purposes: secure an enduring resource of Wilderness; protect and preserve the Wilderness character of areas in the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): This compatibility determination addresses the wide variety of research activities that have historically occurred or may occur on the land now comprising Arctic Refuge. Researchers must obtain a special use permit from the Refuge manager unless the research is done cooperatively with the Refuge. This compatibility determination addresses the full spectrum of uses associated with the scientific research of fish, wildlife, habitat, and other Refuge resources. It includes all means of access, lodging, facilities, and other elements that would be included in a typical research proposal. The scope of this determination includes research conducted by all agencies or entities other than the U.S. Fish and Wildlife Service (Service) and the Alaska Department of Fish and Game (ADFG). If ADFG were to propose a research project outside of the parameters of the existing Master Memorandum of Understanding with the Service, the terms of this compatibility determination would most likely apply to any activities proposed. If not, a separate compatibility determination would be required. Research conducted by the Service or where the Service is acting as a major partner is considered an administrative activity under 603 FW 2.10 published in the Federal Register (Vol. 65, No. 202). Research conducted by, or in cooperation with, the Service in designated Wilderness is subject to a Minimum Requirement Analysis.

Specific authorized means of access for all areas on the Refuge will be noted in each special use permit. Potential means of access include fixed-wing aircraft, helicopter, motorized or non-motorized boat, snowmobile, dogsled, foot, snowshoes, and cross-country skis. Logistical support may include base camps and spike camps with tents, tent frames, weather ports, removable floors, existing administrative cabins, satellite communication systems, human waste management, and temporary fuel and supply caches. Authorizations for all activities and forms of access included in this compatibility determination in designated Wilderness will be reviewed with regard to the Refuge purposes, the Wilderness Act, and other applicable legislative and administrative provisions and are subject to a Minimum Requirement Analysis.

Arctic Refuge is composed of five terrestrial ecoregions and freshwater, marine, and estuarine aquatic habitats. Research may occur in all of these areas. Research has been and will continue to be a common activity. Research activities would occur at all times of the year but mostly in the spring, summer, and/or fall. A partial list of research categories includes biology, ecology, botany, geology, climatology, glaciology, paleontology, archeology, paleoecology, sociology, oceanography, hydrology, space physics, geophysics, and anthropology.

Research may employ a wide spectrum of methods from many disciplines of science. Lethal sampling may be needed in some studies where it furthers the purposes of the Refuge, is integral to the study methods, and no reasonable alternative exists. Studies that involve invasive procedures or that harm or materially alter the behavior of the animal under study must be in compliance with the Animal Welfare Act and, as appropriate, be approved by an Institutional Animal Care and Use Committee prior to implementing field work. Such studies also require an approved operational plan or scientific permit from the Alaska Department of Fish and Game.

Equipment for sampling may include hand powered and motorized instruments (tools). Researchers would be expected to submit investigation plans or proposals, annual activity reports, and copies of publications resulting from the research. Researchers would be required to minimize effects on other users of Refuge lands. They would also be encouraged to contact neighboring communities to discuss proposed and completed projects.

Scientific research activities may be authorized by the Service in designated Wilderness provided there are no significant or long-term impacts on Wilderness character or Refuge purposes, and the research furthers administrative or educational objectives, or scientific knowledge of the Wilderness area. There must also be reasonable assurance that the benefits of the research outweigh impacts on Wilderness character, and disturbed areas are returned to their previous condition to the extent practical. The Service cannot allow a prohibited use in designated Wilderness. However, the Service itself may conduct or permit certain activities that are normally prohibited in designated Wilderness if the activities are “necessary to meet minimum requirements for the administration of the area for the purpose of [the Wilderness] Act” (Section 4(c) of the Wilderness Act).

Availability of Resources: Adequate Refuge personnel and base operational funds are available to manage research activities at current levels. Administrative staff time, from 30 to 45 days per year, primarily involves phone conversations, written correspondence, proposal review, permit issuance, field monitoring of special use permit compliance with permit conditions, and other professional interactions with researchers. Equipment and facilities are in place to administer this program at current levels. The Refuge’s administrative oversight of the activity and comprehensive State and Federal regulations continually evolve to respond to management needs. Compliance with regulations and permit conditions will be routinely checked by Refuge staff.

Equipment might include aircraft, trucks, boats, and snowmobiles used in monitoring compliance of special use permits. Facilities include tent camps, fuel storage, etc. Researchers submit investigation plans, which are evaluated for compatibility with Refuge purposes. Access issues are examined similarly. Special use permits are written with stipulations called “Special Conditions” to ensure compatibility.

When requested, the permit holder would provide logistical support for site visits by Refuge staff for purposes of monitoring permit compliance. Logistical support may include transportation from Fairbanks or a community adjacent to the Refuge. An administrative fee is charged to private companies and for-profit organizations seeking to do research or data collection on the Refuge. This fee is waived for research associated with public agencies and educational institutions.

Anticipated Impacts of Use(s): The Refuge manager would ensure that impacts be minimized through special conditions incorporated in each special use permit. Factors such as project purpose, data collection methods, number of researchers, transportation, aircraft use, fuel storage, garbage and/or human waste management, project duration, type and location of lodging, and location of access points would determine the extent of effects on the Refuge. Potential short-term effects on other Refuge visitors include exposure to sights and sounds that diminish the wilderness experience for which the Refuge is renowned. Minor disruption of animal movements may occur. Some animals, plants, or other objects of natural history may be collected when justified. Potential cumulative effects on Refuge resources and visitors will be evaluated annually. Management action would be taken to avoid cumulative effects through public dialogue, development and enforcement of permit conditions, and denial of permits. The Refuge manager will exercise his or her authority as necessary to stop, terminate, amend, or establish new permit conditions if research activities are found to have unanticipated detrimental effects on Refuge resources, authorized public use, or the health and safety of the public. A new compatibility determination would be required if research activities have unacceptable effects on Refuge purposes or resources.

Public Review and Comment: Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge's Revised Comprehensive Conservation Plan (Revised Plan, Plan) and environmental impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan, which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on the Refuge's web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. We received two specific comments from individuals on this compatibility determination.

One individual recommended that we not allow food and gear caches in Wilderness. Refuge regulations currently allow for the temporary storage of food and gear, and we believe this is reasonable as caches are often necessary for visitors who make long or expeditionary type trips across the Refuge. Food storage is a concern, however, and during the visitor use management planning process, we will consider a requirement that all cached food be stored in bear-resistant containers.

Another individual was concerned that the draft compatibility determination lacks specificity in describing its scope of uses and asked how the Service allowed the National Aeronautics and Space Administration (NASA) to drop rockets into Arctic Refuge from the Poker Flat Research Range. The types of ongoing scientific research on Arctic Refuge is described in the Revised Plan that accompanies this compatibility determination, and we will further describe ongoing and needed research in a research step-down plan shortly after approval of the Revised Plan. If needed, the compatibility determination will be revised following completion of the research step-down plan. NASA is preparing a separate environmental impact statement on its Poker Flat Research Range Sounding Rockets Program, which will be available for public review by the fall of 2012. We cannot and do not regulate the air space above the Refuge. We are working closely with NASA to address potential effects of the Sounding Rockets Program on the Refuge. The current program has been found compatible with the purposes of Arctic Refuge. A copy of

the compatibility determination is at http://alaska.fws.gov/nwr/planning/pdf/arctic_recovery.pdf and is not included as part of this Plan.

Many general commenters noted that additional research on wildlife populations and trends and the effects of hunting on wildlife would be very useful to management. Others commented on the need for other specific types of research. Several commenters wanted to see more traditional ecological knowledge considered with scientific research. Several people noted they would like to see more local youth involved (hired) with research. The Alaska Wilderness League and several other organizations thought the Service needs to provide full information about the State's activities for management and research in order to provide a comprehensive assessment of all the activities that are done within the Refuge, including within its designated Wilderness area. Additionally, many of these commenters felt that the Service's research and management programs, as well as activities of other entities such as university researchers, need to better represented to help the public determine if these actions are compatible.

No changes were made to the compatibility determination in response to the general comments received. The Service believes that research and monitoring were adequately addressed in the Plan and would be more fully discussed in the Inventory and Monitoring (and research) step-down plan. In response to internal comments, we clarified that researchers must obtain a special use permit from the Refuge manager "unless the research is done cooperatively with the Refuge." We also limited associated facilities to field facilities, including tent camps and fuel storage but not administrative cabins, offices, etc.

Refuge Determination (check one below):

☐ Use is not compatible

☒ Use is compatible

Stipulations Necessary to Ensure Compatibility: A special use permit with the following stipulations is required for scientific research. These stipulations are intended to minimize impacts and ensure compatibility. Refuge permits may also include other special conditions as necessary or appropriate for the specific operations or activities that are proposed. These stipulations will be updated periodically to reflect management needs or policy changes.

1. Failure to abide by any part of this special use permit; violation of any Refuge related provision in Titles 43 (Part 36) or 50 (sub-chapters B and C), Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will, with due process, be considered grounds for revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., research assistants). Appeals of decisions relative to permits are handled in accordance with Title 50 Code of Federal Regulations Part 36.41.
2. The permittee is responsible for ensuring that all employees, party members, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of the permit.
3. A copy of this permit must be in the permittee's or field party chief's possession at all times while exercising the privileges of the permit.

4. This permit may be cancelled or revised at any time by the Refuge manager in case of emergency (e.g., high fire danger, flooding, unusual resource problems, etc.).
5. The permittee must notify the Refuge manager during Refuge working hours in person or by telephone before beginning and upon completion of annual activities allowed by this permit.
6. Prior to beginning any activities allowed by this permit, the permittee must provide the Refuge manager with: (1) the name(s) and method of contact for the lead field guide(s); (2) aircraft and other vehicle types to be used and identification information for these vehicles; (3) names of assistant guides and helpers; and (4) any changes in information provided in the original permit application.
7. The Refuge manager or designee, upon request, shall be afforded the opportunity and logistical support from the nearest commercial transportation site to accompany the permittee for the purpose of inspection and monitoring permittee activities. A final inspection trip provided by the permittee of the areas of use may be required by the Refuge manager to determine compliance with the terms of this permit.
8. An annual report of activities conducted on the Refuge shall be provided to the Refuge manager within 30 days of the permit expiration (normally 1-2 pages). Copies of all final reports will be forwarded to the Refuge manager. If helicopters are used, the activity report must include a detailed summary of activities for inclusion in the Refuge helicopter landing database. The summary must include:
 - a. aircraft model,
 - b. operator company or ownership,
 - c. Arctic Refuge-issued Special Use Permit number of operator,
 - d. date and time of flights,
 - e. number of hours flown,
 - f. landing locations with GPS coordinates in decimal degrees, and
 - g. date and time of each landing.
9. This permit authorizes use only on Arctic Refuge lands. Use of land selected by or conveyed to the State of Alaska or North Slope Borough; or a Native corporation or individual is not authorized by this permit.
10. The permittee and permittee's employees, coworkers, or contractors do not have the exclusive use of the site(s) or lands covered by this permit.
11. The permittee must take no action that interferes with subsistence activities of rural users or restricts the reasonable access of subsistence users to Refuge lands. This may include but is not limited to disturbance of wildlife and their movements near subsistence hunters, and damage to cabins, trails, traditional campsites, or caches used by subsistence users.
12. Any action by a permittee or the permittee's employees which unduly interferes with or harasses other Refuge visitors or impedes access to any site is strictly prohibited. Examples of prohibited acts include but are not limited to low flights over camps or

- persons at less than 500 feet (unless landing) and parking aircraft or placing other objects (rocks, tents, etc.) on any landable area so as to restrict use by other aircraft or persons.
13. In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470 ee), no person may excavate, remove, damage or otherwise alter or deface, or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands unless permitted or exempted (see 16 U.S.C 470cc for permit or exception guidance). No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange any archaeological resource if such resource was excavated or removed from public lands.
 14. The operation of aircraft resulting in herding, harassment, hazing, or driving of wildlife is prohibited except to accomplish the authorized research. It is recommended that all aircraft, except for take-off and landing, and as necessary for safety, shall maintain a minimum altitude of 2,000 feet above ground level.
 15. Helicopter use may be authorized in some instances. Those authorized with helicopter access must comply with the following:
 - a. Landing is prohibited except for the direct support of the activity covered by this permit and emergencies. No recreational use of helicopters is permitted. The following site is authorized: (name and site coordinates)
 - b. Overnight stays must be authorized.
 - c. Personnel transported are restricted to only those necessary to accomplish the authorized activity.
 16. Unauthorized caches of fuel or other supplies are prohibited. Fuel storage, if any, will be as outlined in the operations plan, pre-approved by the manager, and in compliance with regional Service fuel storage policy.
 17. The construction of landing areas or pads is prohibited. Incidental hand removal of rocks and other minor obstructions may be permitted.
 18. Snowmobiles, dog teams, watercraft, and other means of transportation shall be operated in such a manner as to prevent the herding, harassment, hazing, or driving of wildlife for viewing or other purposes.
 19. The use of off-road vehicles (except snowmobiles with adequate snow cover) is prohibited. The use of snowmobiles, dog teams, and other means of surface transportation may only be used when adequate snow cover is present and in such a manner as to prevent waste or damage to the Refuge. The phrase “adequate snow cover” means snow is of a depth to protect the underlying vegetation and soil.
 20. Any human-wildlife interactions that have resulted in animals obtaining food, destroying property, or posing a threat to human safety must be reported to the Refuge manager immediately at (907) 456-0250, as soon as communication becomes available. You are required to submit a written report within 30 days to the Refuge manager for all interactions with grizzly bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a grizzly bear so that this data can be used to help prevent future human-bear conflicts. You may use the Bear Incident Report form (Service 2008). Animals taken in defense of life

or property must be reported to the Refuge manager immediately, and to the Alaska State Troopers at (907) 451-5350, and salvaged in accordance with State regulations.

21. Use of fuel stoves is encouraged over use of wood for cooking and heating. Only dead and down wood may be used for fires and other purposes. Live and standing dead wood must not be altered or used in a way that causes damage to it.
22. In general and where possible, camps must be located on durable surfaces (snow, sand or gravel). Camps located on vegetation must be relocated at intervals adequate to prevent site impacts. Sites at popular aircraft access points that are already heavily impacted can continue to be used. Along high use rivers and lakes, camps must not be located on vegetated sites that show human caused scuffing or matting of vegetation.
23. Construction of cabins, platforms, or other permanent structures is prohibited. Wall tents with floors that are completely removed from the Refuge at the end of field season are allowed.
24. No discharge of petroleum products or toxic materials shall be made within the Refuge. All hazardous substance utilized and/or generated by permitted activity shall be contained, controlled, and cleaned up. Such measures shall take precedence over all other matters except human safety. All spills or leakage of petroleum products or toxic materials, fires, fatalities, and any other conditions which threaten resources in the Refuge, the environment, or human safety, shall be reported by the permittee to the Refuge manager immediately or as soon as communication can be established.
25. Permittees shall maintain their use areas in a neat and sanitary condition. All garbage, litter, and debris must be removed from the Refuge. Food, garbage, and other materials must be stored to minimize attraction to bears and other wildlife. All evidence of your camp must be obliterated prior to your departure from the site. Equipment and other property must be removed from the Refuge upon completion of the permitted activities.
26. Human waste must not be left less than 200 feet from springs, lakes, and streams. Bury waste under soil (or under snow at the ground level during periods when the ground is frozen). Paper toilet tissue, if used, must be packed out or burned completely to ash. Moist towelettes or sanitary products must be removed as trash.
27. The preeminent value of Arctic Refuge lies in its wilderness condition. The permit holder shall ensure that all employees and clients seek to minimize the effect of their activities on the wilderness characteristics of the land, wildlife, and the unique experience available here.

All permitted activities that occur within 25 miles of the Beaufort Sea coastline will have the following additional condition:

- The permittee must read the Polar Bear Interaction Guidelines (Guidelines) (Arctic Refuge 2010) to these permit Special Conditions. The Guidelines must also be distributed to all employees and clients of the permittee before engaging in any activities on the Refuge. In addition, the following conditions shall be met:
 - Protection of den sites and minimizing disturbance to sows with small cubs is of critical importance. Guides operating under this permit must become knowledgeable of the signs and behaviors indicating the presence of a den and

avoid those areas. No person shall approach or remain within one mile of a polar bear den or of a sow with small cubs. If, at any time, the permittee becomes aware of signs indicating close proximity to a polar bear den or encounters a sow with small cubs, all members of the guided party must immediately retreat to a distance of at least one mile. If, at any time, the location of a den becomes known to the permittee, no approach shall be made closer than one mile. When operating within 25 miles of the Beaufort Sea coastline, the permittee will store attractants (human food, dog food, garbage, etc.) in “bear-resistant” containers to minimize attracting polar bears and avoid conditioning bears to human food. Containers must be approved as “bear-resistant.” Information about certified “bear resistant” containers can be found at www.igbconline.org/html/container.html.

- Legal take and harassment of polar bears is limited to defense of life or subsistence harvest by coastal-dwelling Native Alaskan situations only. Any killing or harassment of a polar bear in defense of life must be reported to the Refuge manager and to the U.S. Fish and Wildlife Service Office of Law Enforcement at (907) 456-2335 immediately, as soon as communication becomes available. You are also required to submit a completed copy of the Bear Incident Report form (Service 2008) to the Refuge manager for all interactions with polar bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a polar bear so that this data can be used to help prevent future human-bear conflicts.

Justification: Section 101 of ANILCA states, in part, the intent of Congress to maintain opportunities for scientific research on conservation system units, including national wildlife refuges. The U. S. Fish and Wildlife Service (Service) supports research as described in the Refuge Manual (4 RM 6.1), which states:

“Natural and social science information is necessary for the proper management of the National Wildlife Refuge System. It is the policy of the Service to encourage and support research and management studies in order to provide scientific data upon which decisions regarding management of units of the refuge system may be based. The Service will also permit the use of a refuge for other investigatory scientific purposes when such use is compatible with the objectives for which the refuge is managed. Priority will be given to studies that contribute to the enhancement, protection, use, preservation, and management of native wildlife populations and their habitats in their natural diversity.”

According to the Wilderness Act of 1964, science is one of the purposes of Wilderness. Section 4(b) of the Wilderness Act states:

“Except as otherwise provided in this Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical uses.”

All proposed research conducted by other agencies or entities will be thoroughly evaluated prior to authorization and then monitored closely to ensure that the activities do not materially interfere with or detract from the purposes of the refuge or the mission of the Refuge System.

Scientific investigations of wildlife, resources, and social interactions will support conservation of fish and wildlife and their habitats, and facilitate the Refuge’s ability to provide for wildlife-dependent priority public. These investigations must be conducted safely. After fully

considering the impacts of this activity, as described previously in the “Anticipated Impacts of Use(s)” section of this document, it is my determination that scientific research activities in the Refuge do not materially interfere with or detract from the purposes of the Refuge or the mission of the Refuge System.

Supporting Documents:

Arctic National Wildlife Refuge. 2010. Polar bear interaction guidelines. U.S. Fish and Wildlife Service, Fairbanks, Alaska. Unpublished. 3pp.

Interagency Grizzly Bear Committee. IBG Certified bear resistant products webpage. <http://www.igbconline.org/html/container.html>, Accessed August 23, 2012.

U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.

U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.

U.S. Fish and Wildlife Service. 2008. Region 7: Bear awareness and firearms safety training policy, Appendix F. U.S. Fish and Wildlife Service. Anchorage, Alaska. Unpublished. 36 pp.

U.S. Fish and Wildlife Service. 2011. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.

Refuge Determination:

Refuge Manager/ Project Leader Approval	<u>/signed/ Richard Voss</u>	<u>August 6, 2012</u>
		Date

Concurrence:

Regional Chief National Wildlife Refuge System	<u>/signed/ Mike Boylan (acting)</u>	<u>August 15, 2012</u>
		Date

Mandatory 10-year Re-Evaluation Date: 2022

Mandatory 15-year Re-Evaluation Date (for priority public uses): 2027

NEPA Compliance for Refuge Use Decision:

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusion and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Subsistence Harvest of House Logs

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

The Wilderness Act of 1964 (Public Law 88-577) creates the following additional purposes for the designated Wilderness area in the Refuge’s boundaries; these purposes are within and supplemental to the Refuge’s ANILCA and Range purposes: secure an enduring resource of

Wilderness; protect and preserve the Wilderness character of areas in the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): Small scale subsistence log cutting was originally found to be compatible in the Refuge's 1988 Comprehensive Conservation Plan and was again determined to be compatible in 1994. Associated uses include hunting, fishing, trapping, firewood gathering, berry picking, and gathering of other plant materials while harvesting trees for house building. These uses also include motorboat access and other means of surface transportation traditionally employed for such subsistence purposes, as allowed under ANILCA section 811.

According to 50 CFR, 36.15, "Notwithstanding any other provision of this part, the cutting of live standing timber by local rural residents for appropriate subsistence uses, such as firewood or house logs, may be permitted in Alaska National Wildlife Refuges as follows: For live standing timber greater than six inches diameter at breast height (4 ½ feet above ground level), the Refuge manager may allow cutting in accordance with the specifications of a special use permit if such cutting is determined to be compatible with the purposes for which the refuge was established." In addition, 50 CFR 36.15 indicates that a special use permit is not needed to harvest fewer than 20 trees of live standing timber between three and six inches diameter at breast height (dbh). Harvest of over 20 trees between three and six inches dbh would need a special use permit and would be subject to the same stipulations as other timber harvest permits.

Residents of communities near the Refuge boundary have lifestyles and economies that depend on subsistence resources. Subsistence activities described here focus primarily on the cutting of timber for house logs and/or firewood greater than six inches dbh or requests for greater than 20 trees between three and six inches dbh. Cutting of timber has primarily been used to build, replace, or repair subsistence or trapping cabins on the Refuge or in the nearby communities. For house logs and firewood timber harvests, requests have been for between 40 and 100 trees. Permit stipulations require permittees to utilize as much of the harvested tree as possible. Each permit application is evaluated on its own merits prior to approval.

Availability of Resources: Adequate Refuge personnel and base operational funds are available to manage subsistence house log harvest activities at existing and projected levels. Management primarily includes surveys and monitoring specifically for the management of house logs and firewood collecting. Surveys will be conducted from the air and from motorboats and will be

used to determine where adequate stands of large white spruce occur and how many trees can be removed while allowing sustainability of riparian spruce stands. It is anticipated that management of these permits will require one to two week of staff time annually.

Anticipated Impacts of Use(s): White spruce is the favored timber species for logging. It occurs throughout central Alaska on well-drained floodplain soils, uplands, and south facing slopes where seasonal thaw of soils is deep. Most white spruce stands in floodplains and on uplands consist of trees 40–50 feet tall and 8–16 inches in diameter. Harvest of white spruce would probably occur only in areas accessible to village communities. The nearest study aimed at examining sustainability of white spruce logging was about 390 miles southwest on Nowitna National Wildlife Refuge, where Lambrecht (2004) estimated a sustainable harvest of one house log per 2.5 acres per year in ideal riparian white spruce habitat on islands along the Yukon River. Any tree harvest on the Refuge will be based on sustainability recommendations adopted from Koyukuk and Nowitna Refuges and regulated by permit special conditions. If cutting requests increase substantially above current low levels, Refuge staff will need to re-evaluate the adopted harvest recommendations to ensure they are sustainable.

Impacts to habitat caused by supporting boats, snowmobiles, and foot travel are generally believed to be minimal. Much of the access by subsistence users is by boat (spring and summer) or snowmobile (winter) during adequate snow cover. Temporary displacement and/or disturbance to wildlife can occur, but impacts would likely be short-term and minimal. Impacts to the wilderness characteristics of the Refuge will be minimized through special conditions limiting the number of trees that can be taken within 50 feet of riverbanks. The introduction of invasive plant species, perhaps from seeds carried on boats, snowmobiles, or dog sleds, could affect Refuge resources, although it is not known to have occurred on the Refuge to date. Logging sites may be vulnerable to establishment of non-native weeds if bare soil is exposed. This is not likely during selective logging of a few trees per acre.

Public Review and Comment: Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge's Revised Comprehensive Conservation Plan (Revised Plan, Plan) and environmental impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan, which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on the Refuge's web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. We received one specific comment on this compatibility determination.

The Gwich'in Steering Committee commented that the proposed stipulations for harvest of house logs are overly specific and too prescriptive for the environment (near Arctic Village) where stands (of trees) are variable. They also felt that the proposed system of permits and reports are entirely unnecessary and inappropriate and requested that we simply trust the people who are cutting wood to know what they are doing. Currently, there is no limit on the amount of standing dead or down timber a subsistence user may collect for their household needs, and no permit is required for that harvest. The number and size of live trees allowed

without a permit is specified, as is the permit process for exceeding that number. No fees are charged for subsistence use permits. These regulations have been in place for several decades, and we believe they are reasonable in providing for the subsistence use of timber resources. However, we will conduct a thorough review of these regulations to ensure they provide for a continued subsistence opportunity and for the conservation of habitats in their natural diversity consistent with sound management principles. Any proposed changes to these regulations will be done in full consultation with tribal governments, Native organizations, and local residents.

No changes were made to the compatibility determination as a result of public comments.

Refuge Determination (check one below):

☐ Use is not compatible

☒ Use is compatible

Stipulations Necessary to Ensure Compatibility:

A special use permit with the following stipulations is required for subsistence harvest of house logs or firewood greater than six inches dbh or exceeding 20 trees between three and six inches dbh. These stipulations are intended to minimize impacts and ensure compatibility. Refuge permits may also include other special conditions as necessary or appropriate for the specific operations or activities that are proposed. These stipulations will be updated periodically to reflect management needs or policy changes.

1. Failure to abide by any part of this special use permit; violation of any refuge related provision in Titles 43 (Part 36) or 50 (sub-chapters B and C), Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will, with due process, be considered grounds for revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., research assistants). Appeals of decisions relative to permits are handled in accordance with Title 50 Code of Federal Regulations Part 36.41.
2. The permittee is responsible for ensuring that all employees, party members, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of the permit.
3. A copy of this permit must be in the permittee's or field party chief's possession at all times while exercising the privileges of the permit.
4. This permit may be cancelled or revised at any time by the Refuge manager in case of emergency (e.g., high fire danger, flooding, unusual resource problems, etc.).
5. The permittee must notify the Refuge manager during Refuge working hours in person or by telephone before beginning and upon completion of annual activities allowed by this permit.
6. Prior to beginning any activities allowed by this permit, the permittee must provide the Refuge manager with: (1) the name(s) and method of contact for the lead field guide(s); (2) aircraft and other vehicle types to be used and identification information

for these vehicles; (3) names of assistant guides and helpers; and (4) any changes in information provided in the original permit application.

7. The Refuge manager or designee, upon request, shall be afforded the opportunity and logistical support from the nearest commercial transportation site to accompany the permittee for the purpose of inspection and monitoring permittee activities. A final inspection trip provided by the permittee of the areas of use may be required by the Refuge manager to determine compliance with the terms of this permit.
8. This permit authorizes use only on Arctic Refuge lands. Use of land selected by or conveyed to the State of Alaska or North Slope Borough; or a Native corporation or an individual is not authorized by this permit.
9. The permittee and permittee's employees, coworkers, or contractors do not have the exclusive use of the site(s) or lands covered by this permit.
10. The permittee must take no action that interferes with subsistence activities of rural users or restricts the reasonable access of subsistence users to Refuge lands. This may include but is not limited to disturbance of wildlife and their movements near subsistence hunters, and damage to cabins, trails, traditional campsites, or caches used by subsistence users.
11. Any action by a permittee or the permittee's employees which unduly interferes with or harasses other Refuge visitors or impedes access to any site is strictly prohibited. Examples of prohibited acts include but are not limited to low flights over camps or persons at less than 500 feet (unless landing) and parking aircraft or placing other objects (rocks, tents, etc.) on any landable area so as to restrict use by other aircraft or persons.
12. In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470 ee), no person may excavate, remove, damage or otherwise alter or deface, or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands unless permitted or exempted (see 16 U.S.C 470cc for permit or exception guidance). No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange any archaeological resource if such resource was excavated or removed from public lands.
13. The permittee shall provide the Refuge manager with a report that includes the number of trees harvested, estimate of size (length and diameter) of logs, and which area(s) logs were harvested under this permit within 30 days of permit expiration.
14. Collection of logs is limited to permitted area.
15. The permit authorizes the harvest of logs only for permittee's personal use for construction of subsistence cabins, houses, for firewood. Harvest of logs for commercial use is prohibited.
16. The permittee is not authorized to clear cut or group harvest an area, and is required to follow selective cutting procedures when harvesting trees (e.g., after harvesting one tree, the next tree harvested must be a minimum of 100 feet away from a previously cut tree). No cutting of timber may be done within 50 feet of a stream, lake, or river and no more than one tree in five (20 percent) may be cut in any specific stand.

17. The permittee is required to lop and scatter all slash (i.e., all branches must be cut off the bole, with the remaining bole cut every four feet). Cut limbs may not be concentrated on the site; all tree harvest debris must be scattered to avoid fuel accumulations and eliminate potential spruce bark beetle habitat.
18. The permittee is required to utilize as much of the harvested tree as possible.
19. The operation of vehicles resulting in herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for take-off and landing, and as necessary for safety, shall maintain a minimum altitude of 2,000 feet above ground level.
20. Unauthorized caches of fuel or other supplies are prohibited. Fuel storage, if any, will be as outlined in the operations plan, pre-approved by the manager, and in compliance with regional Service fuel storage policy.
21. The construction of landing areas or pads is prohibited. Incidental hand removal of rocks and other minor obstructions may be permitted.
22. Snowmobiles, dog teams, watercraft, and other means of transportation shall be operated in such a manner as to prevent the herding, harassment, hazing, or driving of wildlife for viewing or other purposes.
23. The use of off-road vehicles (except snowmobiles with adequate snow cover) is prohibited. The use of snowmobiles, dog teams, and other means of surface transportation may only be used when adequate snow cover is present and in such a manner as to prevent waste or damage to the Refuge. The phrase “adequate snow cover” means snow is of a depth to protect the underlying vegetation and soil.
24. Any human-wildlife interactions that have resulted in animals obtaining food, destroying property, or posing a threat to human safety must be reported to the Refuge manager immediately at (907) 456-0250, as soon as communication becomes available. You are required to submit a written report within 30 days to the Refuge manager for all interactions with grizzly bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a grizzly bear so that this data can be used to help prevent future human-bear conflicts. You may use the Bear Incident Report form (Service 2008). Animals taken in defense of life or property must be reported to the Refuge manager immediately, and to the Alaska State Troopers at (907) 451-5350, and salvaged in accordance with State regulations.
25. Construction of cabins, platforms, or other permanent structures is prohibited. Wall tents with floors that are completely removed from the Refuge at the end of field season are allowed.
26. Permittees shall maintain their use areas in a neat and sanitary condition. All garbage, litter, and debris must be removed from the Refuge. Food, garbage, and other materials must be stored to minimize attraction to bears and other wildlife. All evidence of your camp must be obliterated prior to your departure from the site. Equipment and other property must be removed from the Refuge upon completion of the permitted activities.
27. Human waste must not be left less than 200 feet from springs, lakes, and streams. Bury waste under soil (or under snow at the ground level during periods when the

ground is frozen). Paper toilet tissue, if used, must be packed out or burned completely to ash. Moist towelettes or sanitary products must be removed as trash.

28. The preeminent value of Arctic Refuge lies in its wilderness condition. The permit holder shall ensure that all employees and clients seek to minimize the effect of their activities on the wilderness characteristics of the land, wildlife, and the unique experience available here.

Justification: The definition of “subsistence uses” found in Section 803 of ANILCA includes the use of logs for the construction of shelter (i.e., homes), and U.S. Fish and Wildlife Service (Service) regulations at 50 CFR 36.15 allow this use on Alaska refuges. These regulations specify that a refuge permit is required to cut trees greater than six inches in diameter dbh or for harvest of more than 20 trees between three and six inches dbh. Residents of the nearby village communities have lifestyles and economies that depend on subsistence resources. Manufactured building materials are not available at a reasonable cost to these subsistence users. After fully considering the impacts of this activity, as described previously in the “Anticipated Impacts of Use(s)” section of this document, it is my determination that this subsistence activity in the Refuge does not materially interfere with or detract from the purposes of the Refuge or the mission of the Refuge System.

Supporting Documents:

- Lambrecht, R. 2004. Forest Inventory - Nowitna NWR Islands. Unpubl. report in files, U.S. Fish and Wildlife Service. Galena, Alaska. 4pp.
- U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.
- U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.
- U.S. Fish and Wildlife Service. 2011. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.

Refuge Determination:

Refuge Manager/

Project Leader Approval

/signed/ Richard Voss

August 4, 2012

Date

Concurrence:

Regional Chief
National Wildlife
Refuge System

/signed/ Mike Boylan (acting)

August 15, 2012

Date

Mandatory 10-year Re-Evaluation Date: 2022

Mandatory 15-year Re-Evaluation Date (for priority public uses): 2027

NEPA Compliance for Refuge Use Decision:

 Categorical Exclusion without Environmental Action Memorandum

 Categorical Exclusion and Environmental Action Memorandum

 Environmental Assessment and Finding of No Significant Impact

 X Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Subsistence Activities

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

The Wilderness Act of 1964 (Public Law 88-577) creates the following additional purposes for the designated Wilderness area in the Refuge’s boundaries; these purposes are within and supplemental to the Refuge’s ANILCA and Range purposes: secure an enduring resource of

Wilderness; protect and preserve the Wilderness character of areas in the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): This is a re-evaluation of the compatibility of subsistence uses of Federal lands in Arctic National Wildlife Refuge. Subsistence was originally found to be a compatible use during the development of the Refuge's Comprehensive Conservation Plan in 1988. Subsistence was again determined to be compatible, subject to reasonable regulation, in 1994. Subsistence activities addressed in this determination include hunting, fishing, trapping, firewood gathering (dead and down trees), berry picking, and gathering of other plant materials. The subsistence use of house logs and cutting of firewood is addressed in a separate compatibility determination.

These activities are supported by various methods of access on the entire Refuge, though certain areas have traditionally been used more frequently. Snowmobiles and motorboats are the primary means of surface transportation traditionally employed for such purposes, as allowed under ANILCA Section 811 and refuge regulations (50 CFR 36). Subsistence has also been historically supported by the occasional use of airplanes for access to remote locations surrounding some communities.

Hunting and fishing occur during various periods of the year. Berry picking occurs in late summer and early fall, and trapping occurs during the winter and spring. Firewood collection occurs throughout the winter and spring.

Rural residents conduct subsistence activities as authorized by State and Federal regulations. Consumptive uses of fish and game are generally regulated by State regulations (5AAC) or Federal subsistence regulations (50 CFR Part 100). Gathering of plant materials, including firewood, on the Refuge, is regulated by 50 CFR Part 36.

Residents of rural communities located in or near the Refuge have lifestyles and economies that depend on subsistence resources, including resources in the Refuge. Subsistence activities are not just a way of obtaining food; they are an important mechanism for maintaining cultural values such as kinship, community, respect for elders, hospitality, sharing resources, and the passing of values to younger generations. In addition, many residents in the area simply prefer the taste of traditional wild foods to that of commercially purchased foods. Mainstay subsistence foods for these residents are fish, whales, moose, and caribou (Jacobson and Wentworth 1982, Arctic Borderlands Ecological Knowledge Society 2009). Waterfowl; black, grizzly, and polar bears; and small game, including grouse, snowshoe hare, beaver, and furbearers, are at times important to local residents for food, fur, and traditional crafts.

Berries and other plant materials such as firewood, house logs, and birch bark are also frequently gathered (Wolfe et al. 2001). A detailed description of subsistence uses and harvest can also be found in the Refuge Comprehensive Conservation Plan. Only recently have we received requests for timber harvests to supply firewood to local residences in Arctic Village. We expect these requests to increase because rising fuel prices will compel some residents to utilize local timber as a heating source to augment the use of heating fuel. For house logs and firewood timber harvests, requests have been for between 40 and 100 trees. Permit stipulations require permittees to utilize as much of the harvested tree as possible. Each permit application is evaluated on its own merits prior to approval.

Trappers operate in the Refuge, harvesting marten, lynx, fox, wolves, beaver, river otter, and other small furbearers. The sale of these furs provides supplemental income to residents depending on a subsistence lifestyle. Trapping is considered a subsistence activity when practiced by qualified subsistence users. The compatibility of non-subsistence trapping as a Refuge use is considered under a separate compatibility determination.

Availability of Resources: Adequate Refuge personnel (some shared with Yukon Flats National Wildlife Refuge) and base operational funds are available to manage subsistence activities at existing and projected levels. Management primarily includes the inventory and monitoring of fish and wildlife subsistence species; surveys of public use and subsistence harvest in local communities; environmental education, such as steel shot clinics or other efforts aimed at improving public understanding of major conservation issues; and law enforcement patrols. During such patrols, Refuge staff members opportunistically conduct outreach to increase subsistence user awareness of the status of local fish and wildlife populations, the relationship of regulations to sustainable yield, and the importance of knowing land ownership and regulatory boundaries where subsistence activities take place. Refuge staff members spend considerable time participating in and supporting the regulatory development process with the Federal Subsistence Board and the Alaska Boards of Fish and Game to ensure that harvest levels are sustainable. It is estimated that it will take six months of staff time per year for these activities.

Anticipated Impacts of Use(s): Fish and wildlife harvested by subsistence users at current and projected levels—in accordance with established State and Federal regulations pertaining to season, bag limits, and methods of harvest—are not expected to have long-term impacts on the overall populations of fish and wildlife resources in the Refuge. State and Federal biologists monitor fish and game populations, and State and Federal regulatory bodies continually respond to management needs by adopting regulations to ensure the continued health of fish and wildlife populations. The combination of Alaska State hunting regulations (5AAC) and the Federal Subsistence Regulations (50 CFR Part 100) are intended to provide a sustainable harvest over the long term. It is possible that localized or short-term population reductions may occur due to unanticipated changes in physical condition of animals, environmental conditions, distribution, predation, and harvest pressure.

Refuge staff will continue to monitor populations to avoid depletion of subsistence resources by overharvesting and to monitor subsistence harvest levels through surveys. Impacts to the resources from berry picking, firewood gathering, and other plant harvesting activities, at low intensity, are relatively insignificant. Impacts to habitat caused by aircraft, boats, and foot

travel are generally minimal. Much of the access by subsistence users is by boat or snowmobile (in winter during adequate snow cover). Refuge staff members have observed that, to date, these activities have caused very little impact to habitats. The introduction of invasive plant species, perhaps from seeds carried on boats, snowmobiles, or dog mushing equipment, could affect Refuge resources, although it is not known to have occurred yet. The U.S. Fish and Wildlife Service (Service) will continue monitor such introductions.

Refuge staff will monitor subsistence use levels to determine if changes in conditions or intensity have the potential to affect Refuge resources. If snowmobile or motorboat use on the Refuge were to increase substantially, disturbance to important subsistence species (including moose and caribou) could occur (McTaggart-Cowan 1981, Creel et al. 2002). Denning bears are most susceptible to snowmobile disturbance. Ill-advised or uninformed snowmobile use could cause bears to abandon dens and harm newborn cubs incapable of travel (Jonkel 1980). Noise disturbance could also affect moose and caribou energy budgets, reproductive success, and long-term survival (Calef et al. 1976, Olliff et al. 1999). Snowmobile use is only allowed during periods of adequate snow cover, and the Refuge manager has authority to announce when conditions are or are not adequate for snowmobile use on the Refuge based on resource conditions per 43 CFR 36.11. Refuge staff will monitor use levels to determine if intensity in this area has the potential to affect Refuge resources.

Public Review and Comment: Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge's Revised Comprehensive Conservation Plan (Revised Plan, Plan) and environmental impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan, which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on the Refuge's web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. We received no specific comments on this compatibility determination.

Many general commenters objected to the proposed requirement that Refuge users, including subsistence users, apply for and receive a Special Use Permit for temporary facilities related to the taking of fish and wildlife in designated Wilderness. This proposal was removed and temporary facilities will be treated the same in Wilderness and Minimal Management lands as they have since the 1988 Plan was implemented. Subsistence users in the southern region of the Refuge wanted to ensure they had reasonable access and use of timber resources for firewood and cabin construction. Many local residents and Native organizations felt there was increasing competition for wildlife resources from nonlocal users and were concerned about proper use and care of harvested wildlife.

Generally, commenters requested greater presence and protection of resources on the Refuge by Service officers. Most tribal governments and Native organizations requested more formal and informal consultation on proposed actions that could have implications for Native subsistence users and tribes. Most importantly, we recognize that local residents have traditional knowledge and expertise that could directly benefit Refuge management, and the Refuge has an obligation to formally consult with tribes on a broad range of management and resource concerns.

All villages within and adjacent to the Refuge wanted to see more full-time positions and seasonal job opportunities with Refuge programs. In response, we strengthened the Plan's objective maintaining our commitment to the Refuge Information Technician (RIT) program in Arctic Village and Kaktovik by seeking funding for hiring additional RITs in Venetie and Fort Yukon in collaboration with the Yukon Flats National Wildlife Refuge.

In response to various public comments recommending increased cultural and natural resource protection to ensure subsistence opportunities, we strengthened various objectives in the Revised Plan, including those pertaining to cultural resource management, monitoring and law enforcement efforts, and partnering to improve resource protection. The coordinated objectives will benefit subsistence and resource protection on the Refuge.

Many general commenters wanted to ensure that traditional subsistence access (ANILCA Title VIII subsistence access) to resources would continue while ensuring that the Refuge's natural and cultural resources would not be impacted or degraded by these means of access. We will continue to manage subsistence access under current laws and regulations and will conduct an historical access study in the future.

Changes were made to the compatibility determination in response to the general comments received. Additionally, several changes were made to the Revised Plan's goals, objectives, management policies, and guidelines related to subsistence as a result of general comments.

Refuge Determination (check one below):

☐ Use is not compatible

☒ Use is compatible

Stipulations Necessary to Ensure Compatibility: Special use permits are not required for these non-wildlife-dependent recreational activities, so there are no associated stipulations. However, visitors will be required to comply with existing State and Federal subsistence regulations. The Refuge provides information on Leave No Trace principles, or other minimal impact techniques, and other means to minimize impacts to Refuge resources.

Justification: One of the purposes of the Refuge is to provide opportunities for continued subsistence uses by local residents, consistent with the other Refuge purposes. ANILCA recognized that the continued opportunity for subsistence uses of public lands is critical to the physical, economic, traditional, social, and cultural existence of rural residents of Alaska. ANILCA established a preference for subsistence users, stating that the taking of fish and wildlife on public lands for non-wasteful subsistence use is given priority over other consumptive uses in times of scarcity. Section 811 of ANILCA ensures that subsistence users can access public lands by snowmobile, motorboat, and other traditionally used means of surface transportation, subject to reasonable regulation. After fully considering the impacts of this activity, as described previously in the "Anticipated Impacts of Use(s)" section of this document, it is my determination that subsistence activities in the Refuge will not materially interfere with or detract from the purposes of the Refuge, including Wilderness Act purposes for the Refuge Wilderness area and fulfillment of the Refuge System mission.

Supporting Documents:

- Arctic Borderlands Ecological Knowledge Society. 2009. Arctic Borderlands Ecological Knowledge Co-op Community Reports 2008-2009. Whitehorse, Yukon. 57pp.
- Calef, G.W., E.A. DeBock, and G.M. Lortie. 1976. The reaction of barren-ground caribou to aircraft. *Arctic* 29(4):201-212.
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- Jacobson, M.J. and C. Wentworth. 1982. Kaktovik Subsistence: Land use values through time in the Arctic National Wildlife Refuge area. U.S. Fish and Wildlife Service. Fairbanks, Alaska. 142 pp.
- Jonkel, C. J. 1980. Black, brown, and polar bears. Pages 227–228 *in* Big game of North America: ecology and management. J. L. Schmidt and D.L. Gilbert, *eds.* Harrisburg, Pennsylvania: Stackpole Books.
- McTaggart-Cowan, I. 1981. Wildlife conservation issues in northern Canada. Canadian Environmental Advisory Council report, no. 11. University of Calgary, Canada.
- Olliff, T., K. Legg, and B. Kaeding, editors. 1999. Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Wyoming. 315 pages.
- U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.
- U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.
- U.S. Fish and Wildlife Service. 2011. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.
- Wolfe, R.J., S. Pedersen, C. Scott, and R.A. Caulfield. 2001. Subsistence Economies and Oil Development: Case Studies from Nuiqsut and Kaktovik, Alaska and Subsistence Harvest Variability in Alaska Native Communities. Alaska Department of Fish and Game. Fairbanks, Alaska. 37 pp.

Refuge Determination:

Refuge Manager/

Project Leader Approval

/signed/ Richard VossAugust 4, 2012

Date

Concurrence:

Regional Chief
National Wildlife
Refuge System

/signed/ Mike Boylan (acting)

August 15, 2012

Date

Mandatory 10-year Re-Evaluation Date: 2022

Mandatory 15-year Re-Evaluation Date (for priority public uses): 2027

NEPA Compliance for Refuge Use Decision:

 Categorical Exclusion without Environmental Action Memorandum

 Categorical Exclusion and Environmental Action Memorandum

 Environmental Assessment and Finding of No Significant Impact

 X Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Waste Cleanup and Site Remediation

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

The Wilderness Act of 1964 (Public Law 88-577) creates the following additional purposes for the designated Wilderness area in the Refuge’s boundaries; these purposes are within and supplemental to the Refuge’s ANILCA and Range purposes: secure an enduring resource of

Wilderness; protect and preserve the Wilderness character of areas in the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): The Department of Defense established several Distant Early Warning stations in the 1950s in the area that later became Arctic Refuge. These sites were maintained for years until being abandoned. In recent years, the U.S. Army Corps of Engineers has begun planning for and/or actual removal of debris and contaminant wastes from these sites. Investigation and removal activities are authorized with a special use permit, and special conditions are devised to avoid impacts to Refuge resources and disruption to subsistence users and visitors. These activities can involve the use of helicopter landings, generators, barges, staging equipment, and tracked vehicles to facilitate the excavation, remediation, and removal of waste. The use of excavation equipment can be authorized for sites adjacent to the coast, but travel on land is severely restricted to the immediate area of excavation and removal, while travel across land is not authorized. Large equipment could be limited to winter activities only. Excavations range from less than a one-cubic-meter removal by hand tools to 35-cubic-meter removals by larger equipment. Excavated sites are backfilled per Alaska Department of Environmental Conservation (ADEC) requirements and naturalized by removing mounded soil or debris deposited around the site and smoothing jagged edges of the site. Actions may occur at any time of the year depending on the desired outcome and logistical needs. These activities are overseen by the U.S. Fish and Wildlife Service (Service) and ADEC.

All activities within 25 miles of the coast require Marine Mammal Protection Act and/or Section 7 Endangered Species Act consultation to ensure that activities do not adversely affect polar bears, other threatened or endangered species, and/or their critical habitats. Cleanup activities in designated Wilderness are subject to Minimum Requirement Analysis.

Availability of Resources: Adequate Refuge personnel and base operational funds are available to manage activities at existing and projected levels. Administrative staff time (as many as five staff days per year) primarily involves phone conversations, written correspondence, formal or informal consultations with outside Service personnel, and personal interaction with permittees regarding ongoing activities. Field work associated with administering the program primarily involves monitoring (when applicable) activities to ensure all activities remain compatible.

Anticipated Impacts of Use(s): We anticipate moderate, localized, short-term impacts to fish and wildlife resources, other Refuge resources, or other Refuge users, mainly due to increased human activity during cleanup operations. The Refuge's administrative oversight of the activity and comprehensive State and Federal regulations continually evolve to respond to management needs. Compliance with regulations and permit conditions will be routinely checked by Refuge staff. Refuge law enforcement personnel will also help minimize direct impacts from recreational guide services by enforcing compliance with special use conditions. Consultation under Section 7 of the Endangered Species Act and Marine Mammal Protection Act ensure that polar bear and polar bear critical habitat is not adversely affected by placing stipulations upon the permittee to avoid polar bear denning habitat, reduce the potential for interactions, and minimize impacts when interactions occur. Endangered Species Act consultations are also initiated for other endangered or threatened species that occur on the Refuge.

Habitat impacts associated with access will be minimal and transitory because access would mainly be by barge, aircraft landing on a previous military landing strip, or sea ice. Operations on vegetated lowland tundra and disturbance to vegetation would be localized and limited under the stipulations of the special use permit. Excavation activities will have moderate, long-term, site-specific impacts on vegetation and soil at the excavation site. Winter operations would likely have less impact to surrounding soils and vegetation because activity would occur on frozen ground, covered with a layer of protective snow. The introduction of invasive species could affect Refuge resources, although it is not known to have occurred by this activity in the Refuge to date. Refuge staff will survey the site for non-native plants the year after project completion. Temporary displacement and/or disturbance to wildlife can occur. Impacts would likely be minimal and transitory. Impacts to endangered or threatened species would also likely be minimal and transitory because of preventative measures put in place by permit conditions and Endangered Species Act and/or Marine Mammal Protection Act consultations.

Additional impacts will have positive effects on Refuge resources, wildlife, and Refuge users. Considerable amounts of contaminated soil, debris, and substrates will be removed, thus reducing overall contamination of the site(s) and contamination spread from the site(s). Surface exposure to contaminated soil or debris will be eliminated or reduced, lessening the probability that humans and animals will contact hazardous material. Aesthetic appearance and wilderness values will be increased by the removal of contaminated debris, such as fuel drums found above ground.

Public Review and Comment: Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge's Revised Comprehensive Conservation Plan (Revised Plan, Plan) and environmental impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan, which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on the Refuge's web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. We received no specific comments on this compatibility determination and no changes were made.

Refuge Determination (check one below):☐ Use is not compatible☒ Use is compatible

Stipulations Necessary to Ensure Compatibility: A special use permit with the following stipulations is required for waste cleanup and site remediation. These stipulations are intended to minimize impacts and ensure compatibility. Refuge permits may also include other special conditions as necessary or appropriate for the specific operations or activities that are proposed. These stipulations will be updated periodically to reflect management needs or policy changes.

1. Failure to abide by any part of this special use permit; violation of any refuge related provision in Titles 43 (Part 36) or 50 (sub-chapters B and C), Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will, with due process, be considered grounds for revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., research assistants). Appeals of decisions relative to permits are handled in accordance with Title 50 Code of Federal Regulations Part 36.41.
2. The permittee is responsible for ensuring that all employees, party members, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of the permit.
3. A copy of this permit must be in the permittee's or field party chief's possession at all times while exercising the privileges of the permit.
4. This permit may be cancelled or revised at any time by the Refuge manager in case of emergency (e.g., high fire danger, flooding, unusual resource problems, etc.).
5. The permittee must notify the Refuge manager during Refuge working hours in person or by telephone before beginning and upon completion of annual activities allowed by this permit.
6. Prior to beginning any activities allowed by this permit, the permittee must provide the Refuge manager with: (1) the name(s) and method of contact for the lead field guide(s); (2) aircraft and other vehicle types to be used and identification information for these vehicles; (3) names of assistant guides and helpers; and (4) any changes in information provided in the original permit application.
7. The Refuge manager or designee, upon request, shall be afforded the opportunity and logistical support from the nearest commercial transportation site to accompany the permittee for the purpose of inspection and monitoring permittee activities. A final inspection trip provided by the permittee of the areas of use may be required by the Refuge manager to determine compliance with the terms of this permit.
8. This permit authorizes use only on Arctic Refuge lands. Use of land selected by or conveyed to the State of Alaska or North Slope Borough; or a Native corporation or an individual is not authorized by this permit.
9. The permittee and permittee's employees, coworkers, or contractors do not have the exclusive use of the site(s) or lands covered by this permit.

10. An annual report of activities conducted on the Refuge shall be provided to the Refuge manager within 30 days of the permit expiration (normally 1-2 pages). Copies of all final reports will be forwarded to the Refuge manager. If helicopters are used, the activity report must include a detailed summary of activities for inclusion in the Refuge helicopter landing database. The summary must include:
 - a. aircraft model,
 - b. operator company or ownership,
 - c. Arctic Refuge-issued Special Use Permit number of operator,
 - d. date and time of flights,
 - e. number of hours flown,
 - f. landing locations with GPS coordinates in decimal degrees, and
 - g. date and time of each landing.
11. The permittee must take no action that interferes with subsistence activities of rural users or restricts the reasonable access of subsistence users to Refuge lands. This may include but is not limited to disturbance of wildlife and their movements near subsistence hunters, and damage to cabins, trails, traditional campsites, or caches used by subsistence users.
12. Any action by a permittee or the permittee's employees which unduly interferes with or harasses other Refuge visitors or impedes access to any site is strictly prohibited. Examples of prohibited acts include but are not limited to low flights over camps or persons at less than 500 feet (unless landing) and parking aircraft or placing other objects (rocks, tents, etc.) on any landable area so as to restrict use by other aircraft or persons.
13. In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470 ee), no person may excavate, remove, damage or otherwise alter or deface, or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands unless permitted or exempted (see 16 U.S.C 470cc for permit or exception guidance). No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange any archaeological resource if such resource was excavated or removed from public lands.
14. The operation of vehicles resulting in herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for take-off and landing, and as necessary for safety, shall maintain a minimum altitude of 2,000 feet above ground level.
15. Helicopter use may be authorized in some instances. Those authorized with helicopter access must comply with the following:
 - a. Landing is prohibited except for the direct support of the activity covered by this permit and emergencies. No recreational use of helicopters is permitted. The following site is authorized: (name and site coordinates)
 - b. Overnight stays must be authorized.
 - c. Personnel transported are restricted to only those necessary to accomplish the authorized activity.

16. Unauthorized caches of fuel or other supplies are prohibited. Fuel storage, if any, will be as outlined in the operations plan, pre-approved by the manager, and in compliance with regional Service fuel storage policy.
17. All fuel containers with a storage capacity greater than 55 gallons shall be of double-wall construction. All fuel containers, including those emptied, shall be capped when not in actual use.
18. The construction of landing areas or pads is prohibited. Incidental hand removal of rocks and other minor obstructions may be permitted.
19. Snowmobiles, dog teams, watercraft, and other means of transportation shall be operated in such a manner as to prevent the herding, harassment, hazing, or driving of wildlife for viewing or other purposes.
20. The use of off-road vehicles (except snowmobiles with adequate snow cover) is prohibited. The use of snowmobiles, dog teams, and other means of surface transportation may only be used when adequate snow cover is present and in such a manner as to prevent waste or damage to the Refuge. The phrase “adequate snow cover” means snow is of a depth to protect the underlying vegetation and soil.
21. Crossing barrier islands or overland travel with surface vehicles on Refuge lands is prohibited. Entry on Refuge lands is permitted only to ensure personnel and equipment safety. Vehicle travel will cease once safety is reached. The Refuge manager will be immediately notified.
22. Movement of equipment onto Refuge lands will be outlined in a work plan and pre-approved by the manager. If approved, operation of removal equipment at site will be minimized to reduce damage to surrounding vegetation. Use of equipment for overland travel is not authorized.
23. Any human-wildlife interactions that have resulted in animals obtaining food, destroying property, or posing a threat to human safety must be reported to the Refuge manager immediately at (907) 456-0250, as soon as communication becomes available. You are required to submit a written report within 30 days to the Refuge manager for all interactions with grizzly bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a grizzly bear so that this data can be used to help prevent future human-bear conflicts. You may use the Bear Incident Report form (Service 2008). Animals taken in defense of life or property must be reported to the Refuge manager immediately, and to the Alaska State Troopers at (907) 451-5350, and salvaged in accordance with State regulations.
24. In general and where possible, camps must be located on durable surfaces (snow, sand, gravel, or sea ice). Camps located on vegetation must be relocated at intervals adequate to prevent site impacts. Sites at popular aircraft access points that are already heavily impacted can continue to be used. Along high use rivers and lakes, camps must not be located on vegetated sites that show human caused scuffing or matting of vegetation.
25. Construction of cabins, platforms, or other permanent structures is prohibited. Wall tents with floors that are completely removed from the Refuge at the end of field season are allowed.

26. Permittees shall maintain their use areas in a neat and sanitary condition. All garbage, litter, and debris must be removed from the Refuge. Food, garbage, and other materials must be stored to minimize attraction to bears and other wildlife. All evidence of your camp must be obliterated prior to your departure from the site. Equipment and other property must be removed from the Refuge upon completion of the permitted activities.
27. No discharge of petroleum products or toxic materials shall be made within the Refuge. All hazardous substance utilized and/or generated by permitted activity shall be contained, controlled, and cleaned up. Such measures shall take precedence over all other matters except human safety. All spills or leakage of petroleum products or toxic materials, fires, fatalities, and any other conditions that threaten resources in the Refuge, the environment, or human safety shall be reported by the permittee to the Refuge manager immediately or as soon as communication can be established.
28. For long-term base camps, the permittee must develop and submit a human waste management plan for approval by the Refuge manager. Otherwise, human waste must not be left less than 200 feet from springs, lakes, and streams. Bury waste under soil (or under snow at the ground level during periods when the ground is frozen). Paper toilet tissue, if used, must be packed out or burned completely to ash. Moist towelettes or sanitary products must be removed as trash.
29. The preeminent value of Arctic Refuge lies in its wilderness condition. The permit holder shall ensure that all employees and clients seek to minimize the effect of their activities on the wilderness characteristics of the land, wildlife, and the unique experience available here.

All permitted activities that occur within 25 miles of the Beaufort Sea coastline will have the following additional condition:

- The permittee must read the Polar Bear Interaction Guidelines (Guidelines) (Arctic Refuge 2010) to these permit Special Conditions. The Guidelines must also be distributed to all employees and clients of the permittee before engaging in any activities on the Refuge. In addition, the following conditions shall be met:
 - Protection of den sites and minimizing disturbance to sows with small cubs is of critical importance. Guides operating under this permit must become knowledgeable of the signs and behaviors indicating the presence of a den and avoid those areas. No person shall approach or remain within one mile of a polar bear den or of a sow with small cubs. If, at any time, the permittee becomes aware of signs indicating close proximity to a polar bear den or encounters a sow with small cubs, all members of the guided party must immediately retreat to a distance of at least one mile. If, at any time, the location of a den becomes known to the permittee, no approach shall be made closer than one mile. When operating within 25 miles of the Beaufort Sea coastline, the permittee will store attractants (human food, dog food, garbage, etc.) in “bear-resistant” containers to minimize attracting polar bears and avoid conditioning bears to human food. Containers must be approved as “bear-resistant.” Information about certified “bear resistant” containers can be found at www.igbconline.org/html/container.html.
 - Legal take and harassment of polar bears is limited to defense of life or subsistence harvest by coastal-dwelling Native Alaskan situations only. Any killing or

harassment of a polar bear in defense of life must be reported to the Refuge manager and to the U.S. Fish and Wildlife Service Office of Law Enforcement at (907) 456-2335 immediately, as soon as communication becomes available. You are also required to submit a completed copy of the Bear Incident Report form (Service 2008) to the Refuge manager for all interactions with polar bears that have resulted in bears obtaining food, destroying property, or posing a threat to human safety; or the death of a polar bear so that this data can be used to help prevent future human-bear conflicts.

Justification: Cleaning up these contaminated sites supports the purposes of the Refuge and safety of Refuge staff, subsistence users, other visitors, and wildlife. The use is conducted in accordance with a Refuge special use permit with the appropriate conditions and, when applicable, guidance under Endangered Species Act and/or Marine Mammal Protection Act to protect Refuge resources. After fully considering the impacts of this activity, as described previously in the “Anticipated Impacts of Use(s)” section of this document, it is my determination that scientific research activities in the Refuge do not materially interfere with or detract from the purposes of the Refuge or the mission of the Refuge System.

Supporting Documents:

- Arctic National Wildlife Refuge. 2010. Polar bear interaction guidelines. U.S. Fish and Wildlife Service, Fairbanks, Alaska. Unpublished. 3pp.
- Interagency Grizzly Bear Committee. IBG Certified bear resistant products webpage. <http://www.igbconline.org/html/container.html>, Accessed August 23, 2012.
- U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.
- U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.
- U.S. Fish and Wildlife Service. 2008. Region 7: Bear awareness and firearms safety training policy, Appendix F. U.S. Fish and Wildlife Service. Anchorage, Alaska. Unpublished. 36 pp.
- U.S. Fish and Wildlife Service. 2011. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.

Refuge Determination:

Refuge Manager/

Project Leader Approval

/signed/ Richard VossAugust 4, 2012

Date

Concurrence:

Regional Chief

National Wildlife

Refuge System

/signed/ Mike Boylan (acting)August 15, 2012

Date

Mandatory 10-year Re-Evaluation Date: 2022***Mandatory 15-year Re-Evaluation Date*** (for priority public uses): 2027***NEPA Compliance for Refuge Use Decision:***☐ Categorical Exclusion without Environmental Action Memorandum☐ Categorical Exclusion and Environmental Action Memorandum☐ Environmental Assessment and Finding of No Significant Impact☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Wildlife Observation, Wildlife Photography, Environmental Education, and Interpretation

Refuge Name: Arctic National Wildlife Refuge

Establishment and Acquisition Authority: The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) was established by the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487 Stat. 2371) on December 2, 1980. The Refuge boundary encompassed 19.64 million acres of land, including the 8.83-million acre Arctic National Wildlife Range (Range), which was established on December 6, 1960, by Public Land Order 2214. ANILCA re-designated the Range as part of Arctic Refuge, designated 7.16 million acres of the Refuge as Wilderness, and designated three wild rivers. In 1988, Public Law 100-395 added 325,000 acres of lands managed by the Bureau of Land Management (BLM) to the Refuge. An additional 1.3 million acres of land, originally selected by the State of Alaska under the Alaska Statehood Act (Public Law 85-508) but later relinquished, was added to the Refuge in two actions occurring in 1983 and 1985. Both these additions were of lands already within the boundaries of the Refuge.

Refuge Purposes: ANILCA established four purposes for the Refuge (including lands and waters in the original Range):

- i. *to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall's sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;*
- ii. *to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;*
- iii. *to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and*
- iv. *to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.*

Public Land Order 2214 established the original Arctic National Wildlife Range “for the purpose of preserving unique wildlife, wilderness and recreational values....” These pre-ANILCA purposes apply only to those lands and waters in the original Range, and they remain in force and effect only to the extent they are not inconsistent with ANILCA or the Alaska Native Claims Settlement Act (ANILCA Section 305; 603 FW 2.8).

The Wilderness Act of 1964 (Public Law 88-577) creates the following additional purposes for the designated Wilderness area in the Refuge’s boundaries; these purposes are within and

supplemental to the Refuge's ANILCA and Range purposes: secure an enduring resource of Wilderness; protect and preserve the Wilderness character of areas in the National Wilderness Preservation System (NWPS); administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as Wilderness; and gather and disseminate information regarding the use and enjoyment of Wilderness areas.

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): This determination re-evaluates the following non-guided (non-commercial) wildlife-dependent activities: wildlife observation, wildlife photography and/or videography, environmental education, and interpretation. These uses were found to be compatible under the original Comprehensive Conservation Plan in 1988 and were again determined to be compatible in 1994. While some visitors come to the Refuge specifically to engage in one or more of these non-consumptive activities, many visitors also include these activities as part of a Refuge hunting or fishing trip. (Compatibility of general non-commercially-guided hunting and fishing is evaluated separately). Associated activities, such as camping, backpacking, and hiking, support these wildlife-dependent activities for the purposes of this evaluation. Of these priority public uses, wildlife observation and photography are by far the most widespread.

Interpretive and educational efforts occur primarily at the airports in the communities of Arctic Village and Kaktovik, which are launching off areas for Refuge trips, and at the Arctic Interagency Visitor Center in the Dalton Highway Corridor rather than on the Refuge. Limited, informal interpretive and environmental education services are provided during contacts with visitors on the Refuge by staff on routine patrol. No formal environmental education or interpretive programs are regularly conducted on the Refuge nor are any formal on-site programs planned under the Revised Comprehensive Conservation Plan.

Visitors take advantage of opportunities to view and photograph wildlife, plants, and landscapes in the Refuge. Use is concentrated in areas that are accessible to rivers or larger lakes. These areas generally provide reliable opportunities for wildlife observation, especially along major rivers including the Canning, Chandalar, Hulahula, Kongakut, Sheenjek, and Wind Rivers.

Refuge visitors usually camp on the Refuge for several days while engaging in the above activities. Campers use tents ranging from small backpacking tents to larger multi-person tents. People can visit the Refuge year-round, but most of the activities occur during the warmer months.

Most of these activities predate the establishment of the Refuge in 1960 and expansion in 1980. Recreational settings on the Refuge are remote. Typical forms of access for all areas of the Refuge include fixed-wing airplanes, motorboats, non-motorized boats, hiking, snowshoeing, snowmobiles, cross-country skiing, and other non-motorized means. However, most non-local

visitors access the Refuge by commercial air transportation services from Arctic Village, Coldfoot, Fairbanks, Galbraith Lake, Happy Valley, Kavik, or Kaktovik. Private boats and airplanes are the most common means of access for local rural residents or the relatively few visitors not using commercial transporters. Day trips to remote areas of the Refuge are uncommon for visitors interested in wildlife observation, wildlife photography, and sightseeing. However, day trips are noticeably increasing in areas near the Dalton Highway Corridor.

Availability of Resources: Adequate Refuge personnel and base operational funds are available to manage these wildlife-dependent recreational activities. Administrative staff time primarily involves phone conversations, written correspondence, public use surveys, and interaction with visitors at the visitor center. Staff will also be involved with any subsequent step-down planning (visitor use management) or for monitoring recreational activities.

Field work associated with administering this use primarily involves conducting patrols to increase visitor compliance with State and Federal regulations. Refuge staff members opportunistically conduct outreach with visitors to minimize the impacts of camping, improve understanding of local residents' subsistence activities, and increase awareness of private inholdings and property. Outreach efforts at the Arctic Interagency Visitor Center in Coldfoot emphasize Leave No Trace or other minimal impact camping and hiking practices. Estimated staff time to annually monitor these activities is 1-20 days per year.

Anticipated Impacts of Use(s): These activities are anticipated to have negligible to minor effects on most Refuge resources. Possible localized adverse impacts to some plant and wildlife species could occur, but the activities would not have any long-term population-level impacts on Refuge plants and wildlife. Positive effects on the local economy, though small, are anticipated from these uses.

During peak visitation, limited landing areas in some drainages may contribute to perceived crowding and user conflicts. Additionally, some localized vegetation damage caused by landing aircraft or camping on non-durable surfaces has been reported. These are emerging issues that need to be further monitored and evaluated. Future actions may be needed to address these concerns.

Other impacts associated with these activities could be seen. Disturbance to vegetation is site specific, minor, and long-term and would likely be restricted to campsites that receive repetitive use and to aircraft landings on non-durable surfaces. Landing aircraft on non-durable surfaces can cause minor to moderate site-specific and long-term effects to Refuge habitats and vegetation. In several areas, soil compaction, scarring, and occasionally rutting have been documented. This is not a problem where aircraft land on durable surfaces such as gravel and sand bars, water, ice and snow, and certain other durable or resistant surfaces. These effects can be minimized or prevented by limitations, including temporal limits, on where aircraft can land or under what conditions, including aircraft weight or tire configuration. Although not known to occur on the Refuge, landing aircraft could introduce invasive species that could impact resources in the Refuge. We will continue to monitor for such occurrences. Low overflights, and sometimes landings and take-offs, can disturb or displace wildlife and bother visitors, although the effects are brief and usually minor.

Landings on vegetated lowland tundra and disturbance to vegetation outside established landing areas have been limited in the Kongakut drainage under the stipulations of the special use permit. Access to the Refuge during summer months would be by landing aircraft primarily on gravel bars. Winter access would be by “ski-equipped” aircraft. Although non-commercial aircraft are not required to acquire a special use permit, when possible through outreach, we encourage those operators to land on durable surfaces such as gravel bars and to avoid vegetated tundra or soft surfaces.

Public Review and Comment: Public comments on compatibility determinations were solicited concurrently with the draft of the Refuge’s Revised Comprehensive Conservation Plan (Revised Plan, Plan) and environmental impact statement. Public comments on compatibility determinations were accepted during the public review period for the draft Plan, which was announced in the Federal Register, on local radio stations, and in local newspapers. The 90-day public comment period began on August 15, 2011, and ended on November 15, 2011. We mailed the full draft Plan, and a summary of the Plan, to the individuals and organizations on our mailing list and posted both on the Refuge’s web site. Six public hearings were held in Anchorage, Arctic Village, Fairbanks, Fort Yukon, Kaktovik, and Venetie, during which the Service received comments on the draft Plan. We received one specific comment from an individual on this compatibility determination.

The individual suggested that we combine all recreational uses into a single compatibility determination titled “Visitor Use.” The Service agrees that this is one way that compatibility determinations could be organized, and our policy allows for consideration of uses either independently or as a group of related issues. We feel that analyzing the commercial recreational uses individually and separate from the non-commercial uses serves us better for several reasons; the uses are not dependent upon one another, and we can better analyze the use and its potential to impact Refuge purposes, and propose stipulations that apply specifically to each type of use and to commercial users in the permit process when the uses are considered individually.

General comments were favorable to the quality of the Refuge’s environmental education and interpretation programs and the information the Refuge supplies to the public. Several commenters wanted the Refuge to give a more formal orientation to Refuge visitors and make it a requirement so that people were informed about wilderness values and low-impact camping techniques. Partnering with guides was suggested as a way to improve communication. Other commenters felt that giving out specific information, or more than is currently available, would be “marketing the Refuge,” and they were not in favor of it. One commenter thought that not allowing signs and kiosks on the Refuge was compromising resource protection at the expense of a high quality wilderness experience. Some commenters from Kaktovik stated the Refuge needed to increase their efforts in the village. One person commented the Refuge should continue to support a reputable polar bear viewing program in partnership with local guides and the community of Kaktovik.

No changes were made to the compatibility determination as a result of public comments except that we updated information on the related (supporting use) issue of aircraft impacts, as in other compatibility determinations.

Refuge Determination (check one below):

☐ Use is not compatible

☒ Use is compatible

Stipulations Necessary to Ensure Compatibility: Special use permits are not required for these wildlife-dependent recreational activities, so there are no associated stipulations. However, visitors will be required to comply with existing State and Federal regulations. The Refuge provides information on Leave No Trace principles, or other minimal impact techniques, and other means to minimize impacts to Refuge resources.

Justification: Wildlife observation, wildlife photography, environmental education, and interpretation are four of the six (the other two are hunting and fishing) priority wildlife-dependent uses of national wildlife refuges (605 FW 1). Other uses, such as camping, backpacking, and hiking, support these wildlife-dependent uses. Emerging issues will be further monitored and, if needed, regulated to ensure Refuge resources and visitor experiences are protected. When conducted in accordance with U.S. Fish and Wildlife Service (Service) regulations, I find that these uses will not materially interfere with or detract from the purposes for which the Refuge was created, including Wilderness Act purposes for the Refuge Wilderness area and fulfillment of the mission of the Refuge System.

Supporting Documents:

U.S. Fish and Wildlife Service. 1988a. Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service. Anchorage, Alaska. 609 pp.

U.S. Fish and Wildlife Service. 1988b. Record of Decision: Arctic National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, and Wild River Plans. U.S. Fish and Wildlife Service, November 10, 1988. Anchorage, Alaska, USA.

U.S. Fish and Wildlife Service. 2011. Arctic National Wildlife Refuge Draft Revised Comprehensive Conservation Plan, Draft Environmental Impact Statement, Wilderness Review, and Wild and Scenic River Review. U.S. Fish and Wildlife Service, June 2011. Anchorage, Alaska, USA.

Refuge Determination:

Refuge Manager/

Project Leader Approval

/signed/ Richard Voss

August 4, 2012

Date

Concurrence:

Regional Chief
National Wildlife
Refuge System

/signed/ Mike Boylan (acting)

August 15, 2012

Date

Mandatory 10-year Re-Evaluation Date: 2022

Mandatory 15-year Re-Evaluation Date (for priority public uses): 2027

NEPA Compliance for Refuge Use Decision:

 Categorical Exclusion without Environmental Action Memorandum

 Categorical Exclusion and Environmental Action Memorandum

 Environmental Assessment and Finding of No Significant Impact

 X Environmental Impact Statement and Record of Decision

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Appendix H

Wilderness Review

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H. Wilderness Review

H.1 Introduction

The purpose of a wilderness review is to identify and recommend to Congress lands and waters of the National Wildlife Refuge System (Refuge System) that merit inclusion in the National Wilderness Preservation System (NWPS). By Refuge System policy, wilderness reviews are elements of comprehensive conservation plans, and a recent director's memorandum (Hamilton 2010) directs refuges to conduct wilderness reviews during the planning process. Wilderness reviews require compliance with the National Environmental Policy Act (NEPA), interagency and tribal coordination, and public involvement.

The current review was initiated in compliance with the refuge planning process outlined in U.S. Fish and Wildlife Service (Service) Manual (602 FW 3 and 4) and is conducted in accordance with Service Manual (610 FW 3, 4, and 5).¹ It includes all areas of Arctic National Wildlife Refuge (Arctic Refuge, Refuge) not designated as Wilderness (about 60 percent of the Refuge) and incorporates recent information on the Refuge's resources, uses, and management concerns. Past wilderness reviews of Refuge lands, including those that pre-date ANILCA, are summarized in the appendix attached to this review.

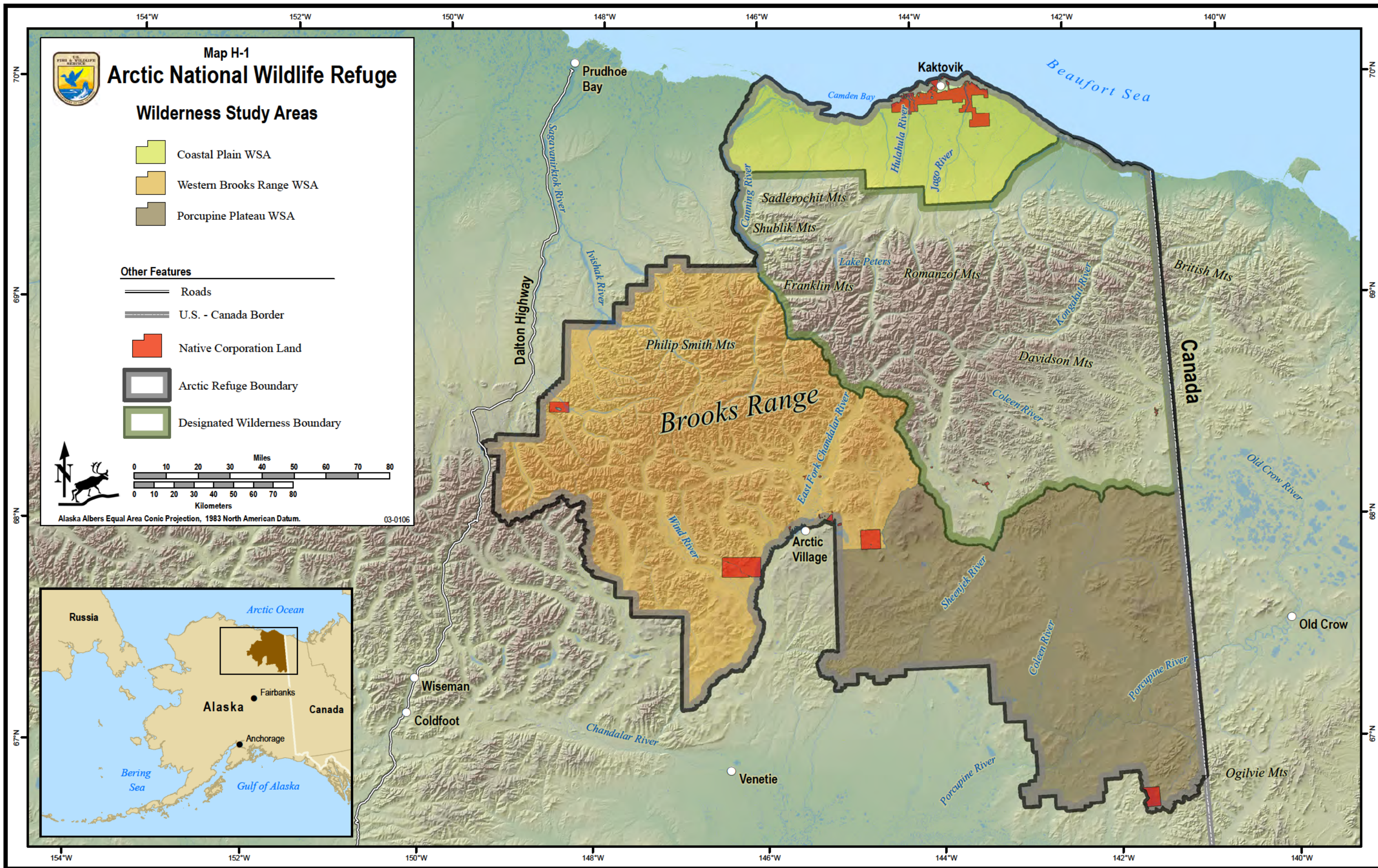
The wilderness review process has three phases, all of which consider public input:

1. **Inventory:** Identify lands and waters that meet the minimum criteria for Wilderness. These are called Wilderness Study Areas (WSAs).
2. **Study:** Evaluate WSAs to determine if they are suitable for Wilderness designation. In this phase, values, resources, public uses, and Refuge management activities are considered to compare the benefits and impacts of managing an entire WSA, a portion of the WSA, or none of the WSA as a designated Wilderness. The study also evaluates how designation would achieve refuge purposes and purposes of the NWPS.
3. **Recommendation:** Findings of each WSA study are used to determine if we will make a Wilderness recommendation. In addition, each WSA is included in two or more of the draft Plan alternatives. Any recommendation(s) included in the Revised Plan will be forwarded by the director of the Service to the Secretary of Interior. The Secretary may forward the recommendation(s) to the President, who may transmit them to Congress. Only Congress can designate Wilderness.

H.1.1 Wilderness Study Areas

This review divided the Refuge's non-Wilderness lands into three WSAs: Brooks Range, Porcupine Plateau, and Coastal Plain (Map H-1).

¹ Part 610 of the Service Manual is also described as the Wilderness Stewardship Policy.



H.2 Inventory Phase

Three criteria derived from the Wilderness Act of 1964 and described in the Service Manual (610 FW 4) were used to determine whether the Refuge's three WSAs meet the minimum criteria of Wilderness. The criteria are size, natural condition, and opportunities for solitude or primitive recreation. The following is a summary description of these criteria:

1. **Size:** Section 2(c) of the Wilderness Act defines Wilderness as an area that "... has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition . . ."
2. **Natural condition²:** Section 2(c) of the Wilderness Act requires that an area qualified for designation "... generally appears to have been affected primarily by the forces of nature with the imprint of man's work substantially unnoticeable." It also states that Wilderness is "... an area where the earth and its community of life are untrammelled by man . . ." and that it retains its "primeval character and influence." This does not disqualify areas that are not pristine, if alterations are not major and natural processes can largely be restored after designation. Generally, the natural condition criteria is met if the works of humans are substantially unnoticeable in the unit as a whole.
3. **Opportunities for solitude or primitive recreation:** Section 2(c) of the Wilderness Act defines Wilderness as an area that "...has outstanding opportunities for solitude or a primitive and unconfined type of recreation." An area does not need to have outstanding opportunities for both elements and does not need to have outstanding opportunities on every acre. The solitude condition is met in areas where visitors can experience nature largely free of modern artifacts, managerial presence, and other reminders of society, and where they can find a high degree of privacy and isolation (610 FW 1.5(BB)). The primitive recreation condition is met in areas that provide dispersed, undeveloped recreation, generally without permanent facilities (610 FW 1.5 (R)).

The Wilderness Act specifies that Wilderness may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value. While the qualification of a WSA does not depend on the existence of such supplemental values, their presence is considered in deciding whether or not a qualified WSA should be recommended for Wilderness designation.

H.2.1 Inventory of the Brooks Range Wilderness Study Area

The Brooks Range WSA (Map H-1) is a large area of rugged relief that straddles the Continental Divide on the western side of the Refuge. It extends from the western boundary of the Refuge near the Dalton Highway to the existing Refuge Wilderness, just past the East Fork of the Chandalar River. Mountain peaks and elongated ridges reach up to elevations between 6,000 and 7,500 feet (approximately 1,850 to 2,300 meters). Small glaciers are found along the divide, and many empty cirques are evidence of recent glacial retreat. The WSA contains the headwaters of the majority of rivers occurring in the western half of the Refuge, including the Ivishak and Wind rivers that are designated as wild rivers under the Wild and Scenic Rivers Act. The river valleys are deeply scoured glacial troughs with flanking walls as high as 3,000 feet (915 meters).

² "Natural Condition" is referred to as "naturalness" in the Service Manual

This WSA, and particularly its river valleys and northern and southern foothills, possesses high wildlife values. Wilderness-dependent species include brown bear, wolf, wolverine, Dall's sheep, and gyrfalcon. Moose are found along riparian areas. Much of the Central Arctic caribou herd seasonally inhabits the area north of the Continental Divide, while the valleys south of the divide provide important wintering habitat for both the Porcupine caribou herd and the Central Arctic herd. South flowing drainages support populations of chum and Chinook salmon while lake trout, Dolly Varden, Arctic char, burbot, Arctic grayling, northern pike, and several species of whitefish are found in the area. The WSA's ecological integrity enables all native species to maintain their natural behavior, interactions, cycles, and ecological roles.

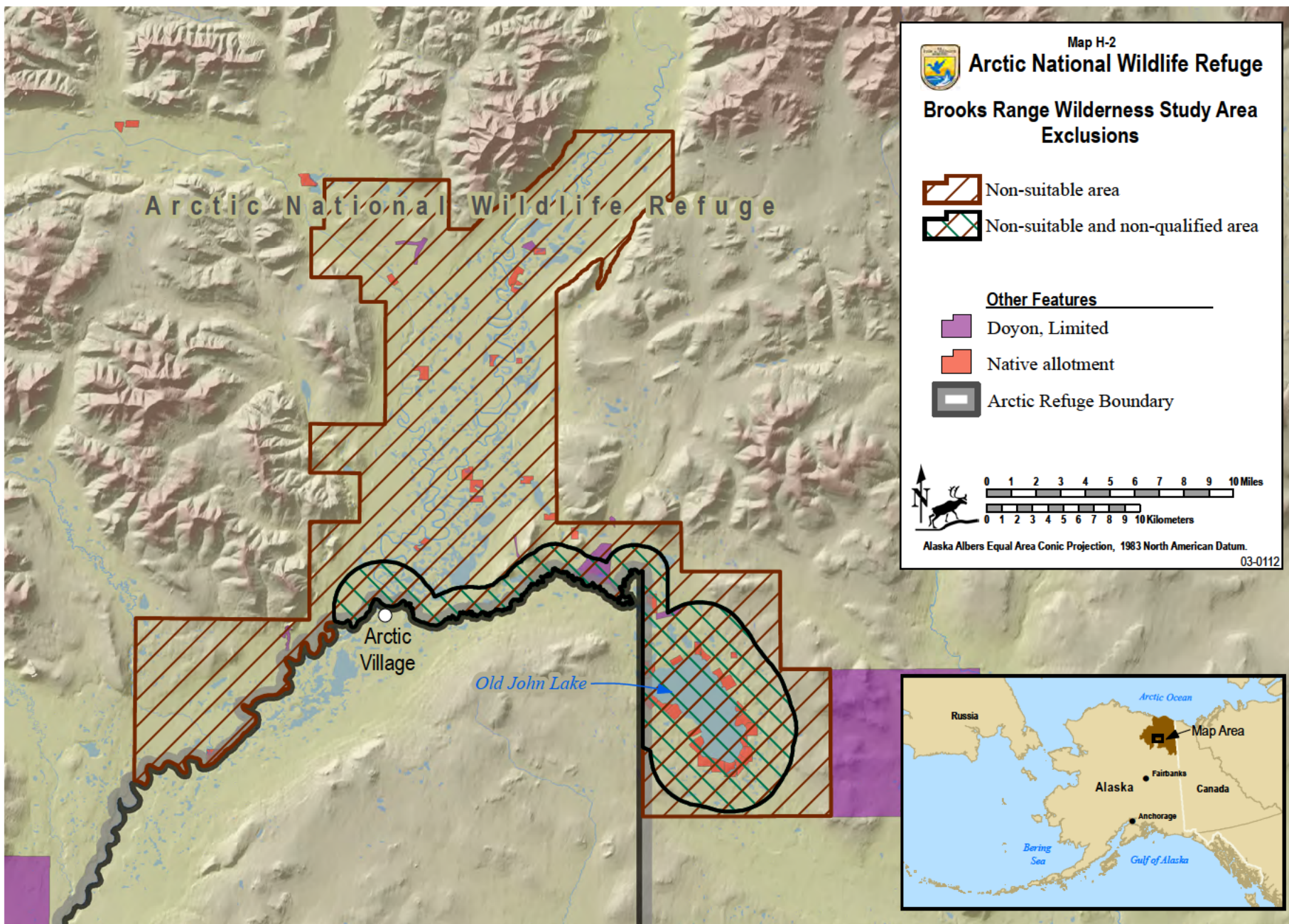
H.2.1.1 Wilderness Criteria

Size – The Brooks Range WSA meets the Wilderness size criteria. It encompasses 5.91 million acres³, comprising 30 percent of the Refuge. Within its boundaries are 29 conveyed Native allotments totaling 3,658.92 acres. There are also four Doyon Limited Native corporation inholdings containing 6,333.55 acres of conveyed land and two Doyon selections containing 980 acres. Additionally, there are two Arctic Slope Regional Corporation inholdings containing 11,088.00 acres of conveyed land. The Brooks Range WSA is roadless.

Natural condition – This WSA meets the natural condition criteria, exhibiting high levels of both apparent natural qualities and ecological integrity. Arctic Village borders the WSA, and the western boundary comes within one-half mile of the Dalton Highway; however, there are no roads or permanent inhabitants within the WSA. The Old John Lake area has a concentration of 20 Native allotments, several of which have cabins. There are a few cabins on other scattered Native allotments. The Refuge maintains two cabins on Big Ram Lake that are infrequently used for administrative purposes. Subsistence and recreational activities are the primary uses of the WSA, neither of which has affected its natural condition.

Opportunities for solitude or primitive recreation – The Brooks Range WSA provides outstanding opportunities for both solitude and primitive recreation. The WSA's remoteness and vast size enables visitors to travel for days or weeks without encountering other people or substantial evidence of the modern world, other than an occasional brief sighting of aircraft overhead. There are no recreational developments, bridges, established trails, or signs in the WSA. The WSA provides unsurpassed opportunities for adventurous trips and the experience of challenge, exploration, isolation, self-reliance, and independence. However, Refuge lands within two miles of Old John Lake and Arctic Village, including the village's airport, generator complex, and daily use areas, lack the qualities of solitude and primitive recreation. No real sense of these qualities can be experienced in such close proximity to an active community. At the extreme western edge of the WSA, visitors can hear and see vehicles on the Dalton Highway and see the Trans-Alaska Pipeline. These effects are not disqualifying.

³ Acreages in this Plan are derived from many sources and may not agree with previously published values, including in the draft Plan. For more information, please refer to "A Note about Acreages" in the front pages of this volume.



Supplemental values – The Brooks Range offers dramatic alpine scenery, sheer walls of folded and faulted rock, broad valleys, waterfalls, expansive aufeis fields, and innumerable other features that await the visiting explorer. Features of particular note include the Atigun Gorge, an eight-mile-long scenic canyon. Atigun Gorge is accessible from the Dalton Highway and has become one of the most popular recreational use areas in the Brooks Range. Two designated wild rivers, the Ivishak and Wind, begin and flow through this WSA. This WSA encompasses much of the traditional homeland and contemporary subsistence use area of Gwich'in people residing in Arctic Village and Venetie.

H.2.1.2 Brooks Range Wilderness Study Area Conclusion

With the exception of a 41,000-acre area (36,000 acres of Refuge land and 5,000 acres of private lands) in the vicinity of Arctic Village, Old John Lake, and a travel corridor between them (Map H-2), all Refuge lands and waters within the Brooks Range WSA are exemplary in the degree to which they meet Wilderness Act criteria. The WSA also possesses many supplemental values. Wilderness characteristics of this WSA will be maintained through the Minimal Management category of the 1988 Plan or, upon approval, the Revised Plan (see Chapter 2). If Congress designates the WSA, then it will be managed through the Wilderness Management category of the Revised Plan and according to the provisions of the Service's Wilderness Stewardship Policy (FW 610 1.2).

H.2.2 Inventory of the Porcupine Plateau Wilderness Study Area

The Porcupine Plateau WSA (Map H-1) is located south of the Brooks Range and extends from just east of the East Fork of the Chandalar River to the Canadian border. It is an area of scattered mountains and rolling hills. Northern and higher elevation taiga areas include expanses of alpine tundra and stands of scattered spruce. The WSA is dominated by broad valleys with extensive stands of spruce and broadleaf forest and riverine communities dotted



with shallow lakes and wetlands. The Sheenjek (a designated wild river), Coleen, Rapid, and Salmon Trout rivers are major tributaries draining into the Porcupine River.

The Porcupine Plateau WSA provides vast, unaltered habitat for brown and black bears, moose, and many species of furbearers, including wolf, wolverine, and marten. It is particularly important to the Porcupine caribou herd as a wintering area and as a spring and fall migratory route. This WSA provides some of the best nesting areas for the American peregrine falcon in Alaska. The Porcupine River is an important migratory corridor for salmon between the Yukon River and spawning grounds in Canada. Each year, a large run of fall chum salmon and smaller runs of coho and Chinook salmon move through this pathway. The Porcupine River and at least three of its tributaries provide salmon spawning habitat within the WSA. The WSA's ecological integrity enables all native species to maintain their natural behavior, interactions, cycles, and ecological roles.

H.2.2.1 Wilderness Criteria

Size – The Porcupine Plateau WSA meets the Wilderness size criteria. It is a roadless expanse of 4.95 million acres, comprising 25 percent of the Refuge. Within its boundaries are 15,465.69 acres of mostly Native-owned private land. These inholdings include 12 conveyed Native allotments totaling 1,079.62 acres, one conveyed Native corporation parcel of 14,356.21 acres, the 29.86-acre Canyon Village town site, and 56 acres of a 100-acre military site.

Natural condition – This WSA meets the natural condition criteria, exhibiting high levels of both apparent natural condition and ecological integrity. Several Native allotments have cabins that are used seasonally or intermittently. On Refuge lands, there are 13 permitted cabins used in support of the trapping activities of six trappers. One couple, whose occupancy predates ANILCA, permanently resides in this WSA and uses five of the permitted cabins. Cabins in this WSA are of log construction, widely dispersed, and mostly hidden from view by forest cover; they do not substantially affect the area's natural condition. Along the area's southwest boundary is an unoccupied 100-acre military site. It consists of five 500-square-foot gravel pads, a frame building, several small structures, generators, and several miles of underground seismic cable. A 1950s bulldozer trail parallels a section of the Coleen River before crossing into Canada. It is recovering and becoming less apparent from the ground; however, two abandoned tractor trailers and other heavy debris are found along the trail. While not disqualifying, these are the only visual intrusions that diminish the WSA's apparent natural condition. The Refuge plans to continue to remove debris along the bulldozer trail, which will enhance the natural quality of the WSA.

Opportunities for solitude or primitive recreation – This WSA provides outstanding opportunities for both solitude and primitive recreation. The Sheenjek (a designated wild river), Coleen, and Porcupine rivers provide outstanding opportunities for float trips and hunting, fishing, and hiking in a primitive setting. There are no recreational developments, bridges, established trails, or signs in the WSA. The WSA provides unsurpassed opportunities for adventurous trips and the experience of challenge, exploration, isolation, self-reliance, and independence. Although those floating the Porcupine River, especially during the hunting season, may occasionally encounter a motorboat, those who hunt or hike off the river rarely meet anyone or find evidence of civilization.

Supplemental values – The Porcupine River is an important feature in the WSA. Historically, it was used as a major travel route for prehistoric people and the region's first explorers and

traders. The river is still an important transportation corridor for subsistence hunters and others traveling to and from Canada. The ramparts along the northern section of the river have outstanding geologic and scenic interest. The river has been recognized as one of the State's outstanding scenic complexes and provides particularly important nesting habitat and viewing opportunities for peregrine falcons and golden eagles. The Sheenjek River (a designated wild river) flows through the eastern portion of the WSA.

H.2.2.2 Porcupine Plateau Wilderness Study Area Conclusion

All Refuge lands and waters within the Porcupine Plateau WSA meet the three Wilderness Act criteria. This WSA is exemplary in the degree to which it meets the criteria, with the exception of localized impacts associated with trapping cabins and a 1950s bulldozer trail. Wilderness characteristics of this WSA will be maintained through the Minimal Management category of the 1988 Plan or, upon approval, the Revised Plan (see Chapter 2). If Congress designates the WSA, then it will be managed through the Wilderness Management category of the Revised Plan and according to the provisions of the Service's Wilderness Stewardship Policy (FW 610 1.2).

H.2.3 Inventory of the Coastal Plain Wilderness Study Area

The Coastal Plain WSA (Map H-1) is comprised of the portion of the Arctic Refuge coastal plain not presently designated as Wilderness. The Coastal Plain WSA is sometimes called the "1002 Area" after the section of ANILCA in which it is described. Extending from the northern foothills of the Brooks Range to the Beaufort Sea, the WSA includes 121 miles (79 percent) of the Refuge's coastal habitat. The WSA encompasses bluffs, lagoons, and salt marshes, and extends out to the extreme low water line along beaches, barrier islands, spits, and river deltas at the Refuge's northern boundary. South of the varied coastal ecosystems, the gently rising plain contains a mosaic of tundra habitats, including a scattering of shallow lakes and ponds, and sedge, grass, and low shrub communities. Many clear streams and glacial rivers flow through the WSA, with the Canning and Staines rivers forming its western boundary and the Aichilik River defining its eastern edge.

This WSA is the most biologically productive part of the Refuge and contains important habitats for a great diversity and abundance of life. Terrestrial, aquatic, and estuarine habitats provide an important calving ground for the Porcupine caribou herd; post-calving habitats for the Porcupine and Central Arctic caribou herds; nesting habitats for hundreds of thousands of migratory birds and vital fall staging areas for lesser snow geese, shorebirds, and waterfowl; spawning, rearing, and overwintering habitats for six common resident and anadromous species of fish; migration and feeding areas for at least 19 fish species; and critical feeding (fall) and denning (winter) habitats for polar bears. Other high-interest mammals inhabiting the WSA include muskox, grizzly bear, moose, wolf, wolverine, seals, beluga whales, and occasionally bowhead whales. The WSA's ecological integrity enables all native species to maintain their natural behavior, interactions, cycles, and ecological roles.

H.2.3.1 Wilderness Criteria

Size – The Coastal Plain WSA meets the Wilderness size criteria. It encompasses 1.64 million acres, comprising 8 percent of the Refuge. Private lands within the Coastal Plain WSA include

116,359.82 acres of conveyed and 4,400 acres of selected Native corporation land in the vicinity and south of Kaktovik. There are 28 Native allotments totaling 1,359.55 acres, nine of which lie within the boundaries of Native corporation lands. Most of the others are on the coast or along the Hulahula River.

Natural condition – With the exception of lands and waters near Kaktovik, this roadless WSA meets the natural condition criteria, exhibiting high levels of both apparent natural quality and ecological integrity. Within the area are three types of visual impacts that are relatively minor in the WSA as a whole and thus not disqualifying. Along the coast, structures at the former Camden Bay, Beaufort Lagoon, and Demarcation Point Distant Early Warning Line sites have been removed, but gravel pads and some concrete foundations remain. Scattered sections of seismic trails from the 1984–1985 oil and gas exploration project are visible, mostly from the air; their natural recovery continues. A few structures have been constructed on privately owned Native allotments. Except for the village of Kaktovik, which lies along the Refuge’s northern boundary⁴, there are no permanent inhabitants within the WSA.

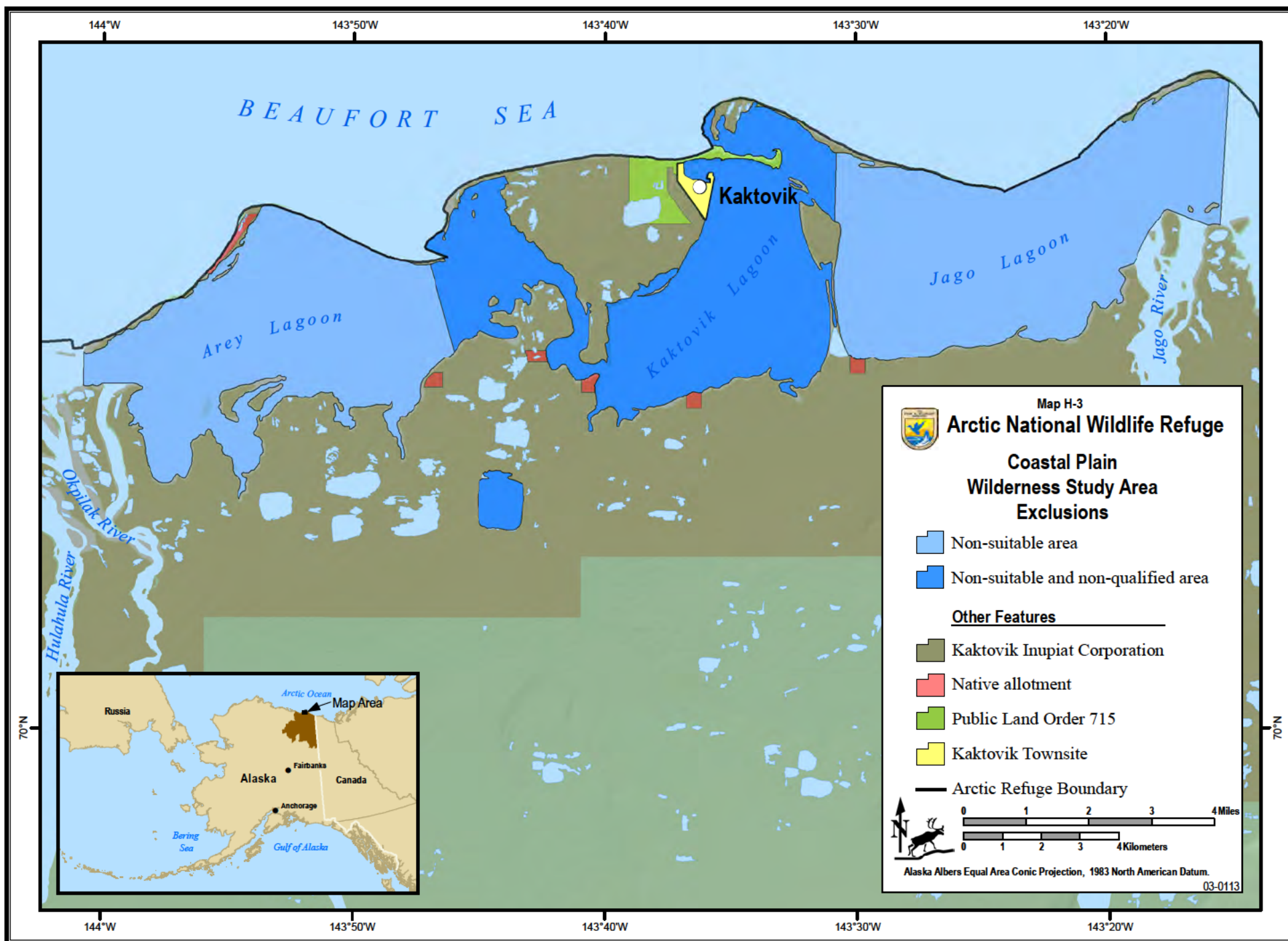
Opportunities for solitude or primitive recreation – This WSA provides outstanding opportunities for both solitude and primitive recreation, with the exception of the lagoon areas within two miles of Kaktovik (Map H-3). This 10,000-acre area is so close to the sights and sounds of the community that no real sense of solitude or primitive recreation is available. Hence, this area is not qualified for consideration of Wilderness status. Otherwise, the WSA’s expansive openness provides inspiring views of the Brooks Range and the Arctic Ocean and exceptional opportunities to view wildlife. Its size and remoteness enables river floaters, sea kayakers, hikers, and campers to go for days without encountering others or substantial evidence of the modern world other than the occasional brief sighting of aircraft. There are no recreational developments, bridges, established trails, or signs in the WSA. The WSA provides unsurpassed opportunities for adventurous trips and the experience of challenge, exploration, isolation, self-reliance, and independence.

Supplemental values – The Sadlerochit Springs on the eastern edge of the Sadlerochit Mountains is notable for its warm water aquifer and unusually lush vegetation. It supports wood ferns and other plants not generally found in the Arctic, including the farthest north stand of balsam poplar in Alaska. This WSA also encompasses much of the traditional homeland and contemporary subsistence use area of the Kaktovik Iñupiat people.

H.2.3.2 Coastal Plain Wilderness Study Area Conclusion

With the exception of the area within two miles of Kaktovik (Map H-3), all lands and waters within the Coastal Plain WSA are exemplary in the degree to which they meet all of the Wilderness Act criteria. The wilderness values of this WSA will be maintained through the Minimal Management category of the 1988 Plan or, upon approval, the Revised Plan (see Chapter 2). If Congress designates the WSA, then it will be managed through the Wilderness Management category of the Revised Plan and according to the provisions of the Service’s Wilderness Stewardship Policy (FW 610 1.2).

⁴ Kaktovik is not part of Arctic Refuge even though the town site is physically inside the boundaries of the Refuge. The Refuge boundary surrounds the town site, creating a “doughnut-hole” within the Refuge.



H.3 Study (Suitability) Phase

Each of the three WSAs meets the minimum criteria for Wilderness with the exception of the identified non-qualified areas adjacent to Arctic Village and Kaktovik. In the study phase, qualified areas in each WSA were evaluated to determine if they are suitable for Wilderness designation and whether they could be practicably managed as Wilderness. To address suitability, Refuge staff examined how Wilderness designation would benefit or impact:

- Achieving the Refuge's purposes
- Achieving the Refuge System mission
- Achieving the purposes of the Wilderness Act and the NWPS
- Maintaining biological integrity, diversity, and environmental health at various landscape levels
- Recreational opportunities
- Refuge operations

The study phase compares the benefits and impacts of designating each WSA as Wilderness to the no-action alternative of maintaining Minimal Management for each WSA. Minimal Management includes most of the same protections for wilderness characteristics as designated Wilderness, and it includes most of the same limitations on public uses and Refuge management activities. With only a few exceptions, lands under Minimal Management and those in designated Wilderness have been managed in much the same manner.

The major difference between Minimal Management and the management of designated Wilderness is that Wilderness designation confers statutory protection. This protection could only be changed by an act of Congress. Because provisions of the Wilderness Act are rooted in law, they are more binding upon the Service than those prescribed by administrative management categories adopted through comprehensive conservation plans. Minimal Management is an administrative category subject to change, and areas currently managed as Minimal Management could become less protective through future revisions to the Plan or a with a Plan amendment. Designated Wilderness and the other Plan management categories are predicated on substantially different time scales. The Plan defines "long-term" as the life of the document (15 years), while the Wilderness Act speaks to "future generations" and "an enduring resource." Thus, designated Wilderness represents a more permanent commitment to perpetuating the Refuge's natural conditions and processes and wilderness-associated recreational opportunities.

Designated Wilderness is managed to a higher standard of Wilderness character and requires more restraint on the part of managers than lands managed under the Minimal Management category. For example, in designated Wilderness, Service field work adheres more stringently to minimum impact principles, and the Refuge more closely scrutinizes commercial operations and their compliance with permit conditions. In addition, Service policy requires a Minimum Requirement Analysis (MRA) (Chapter 2, Section 2.4.20) for all management and research activities in designated Wilderness⁵.

⁵ An MRA is a written decision making process to determine if a Refuge management activity proposed for designated Wilderness is necessary to administer the area as Wilderness and is necessary to accomplish the purposes of the Refuge, including Wilderness Act purposes. If the MRA finds the activity permissible, then tools or techniques are selected to minimize impacts.



In summary, Wilderness designation would provide the most assurance that WSAs would remain undeveloped and untrammelled. It is not possible to know if, or how, Minimal Management might change during the life of the Plan or beyond. Therefore, the analysis in this review can only compare the benefits of designating WSAs as Wilderness to managing them under the Minimal Management provisions described in Chapter 2 of the Plan.

The study includes a description of the beneficial and detrimental effects of Wilderness designation on Refuge purposes. These purposes, described in Chapter 1, include the Refuge's three 1960 purposes applicable to the original 8.83-million-acre Arctic National Wildlife Range and the four 1980 ANILCA purposes that apply to the entire Refuge. Because the wildlife purposes from the Range's establishing order and ANILCA are complementary, this review combines them as a single wildlife purpose.

H.3.1 Suitability of the Brooks Range Wilderness Study Area

H.3.1.1 Achieving Refuge Purposes

Fish, wildlife, and their habitats – The Refuge's wildlife purposes mandate conservation of wildlife and their habitats in their natural diversity. Wildlife includes all indigenous species, with their natural behaviors, interactions, and cycles continuing. Wilderness designation would provide the Brooks Range WSA with greatest long-term assurance that these qualities of the area's wildlife would be perpetuated. Subject to the provisions of management emergencies (Chapter 2, Section 2.4.2), Wilderness designation would essentially preclude alterations of habitats to favor one species over another and would best protect the free-functioning of the ecological

systems and natural processes in which wildlife are embedded. Potential effects of Wilderness designation on wildlife research are discussed under Refuge Operations (Section H.3.1.6).

International treaty obligations – This purpose requires that the area be managed to help fulfill treaty obligations related to the conservation of fish, wildlife, and birds that inhabit Alaska, Canada, and many other nations (Appendix A). Wilderness designation would likely enhance the long-term protection of all indigenous wildlife, including treaty species. As discussed in Refuge Operations (Section H.3.1.6), research on treaty species would be subject to an MRA. The MRA could result in modified research protocols, tools, and techniques to minimize the potential impacts of research on Wilderness character.

Subsistence – The Refuge’s subsistence purpose provides the opportunity for continued subsistence uses by local residents. These uses serve to meet residents’ physical, economic, traditional, and other needs. Wilderness designation would provide further long-term protection for the lands, wildlife, and other resources subsistence users depend on and would serve to perpetuate the natural conditions in which subsistence cultures evolved. Whether the Brooks Range WSA is designated Wilderness or managed under Minimal Management, serious declines in subsistence species could be addressed as a management emergency. However, stronger justification for management actions such as predator control would be required in designated Wilderness (see Chapter 2, Section 2.4.2).

Current methods and patterns of motorized and non-motorized access would not be affected if the Brooks Range WSA were to be designated as Wilderness. The use of temporary structures such as tent camps, tent frames, and fish drying racks would continue. Subsistence use of cabins would continue, although requests for construction or location of new cabins would receive greater scrutiny. Some subsistence users would view the Wilderness overlay on their homeland as complementary to their cultural perspective; others would view Wilderness as a foreign concept and at variance with their traditional beliefs. In general, subsistence uses in Wilderness would continue as they have under Minimal Management, and the subsistence purpose would continue to be met.

Water quality and necessary water quantity – This purpose recognizes that protection of water resources is central to conservation of fish, wildlife, and ecosystems. It establishes a Federal reserved water right for surface waters and groundwater within the area. Wilderness status would provide an additional layer of protection for water resources. As discussed in Refuge Operations (Section H.3.1.6), research related to water resources would be subject to an MRA; some water research protocols, tools, and techniques might need to be modified to minimize the potential impacts of research on Wilderness character.

H.3.1.2 Achieving the Refuge System Mission

The mission of the Refuge System is:

“To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Arctic Refuge has a distinctive role in the Refuge System—exemplifying the qualities of natural condition, wild character, and ecological wholeness. Wilderness designation of this WSA would provide the greatest assurance that the Brooks Range area would remain

unaltered and essentially free of the intent to control or manipulate the land, its creatures, and natural processes, thereby ensuring the area retains its ecological integrity now and for future generations. Designation would achieve the purposes of the Refuge System while expanding the range of landscapes, integrity, and values (tangible and intangible) held within it.

H.3.1.3 Purposes of the Wilderness Act and National Wilderness Preservation System

The Wilderness Act states that the purpose of Wilderness areas and the NWPS is “to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.” The purpose of designation is to protect and preserve an area’s Wilderness character, as described in the Service Manual (610 FW 1.13.). Designation of the Brooks Range WSA would further these purposes by adding an area to the NWPS that exemplifies Wilderness character and the full range of its tangible and intangible qualities and experience opportunities. Wilderness status would provide the greatest assurance that the wilderness-associated benefits the area provides would be enduring and available to future generations.

As with the rest of the Refuge, the Brooks Range WSA holds symbolic and existence values for many people who find satisfaction in just knowing the area exists and will be passed on to future generations. While many such values are not quantifiable, they are nonetheless real for many people. Wilderness designation would confer greater overall long-term protection to the resources underlying these intangible values and increase Refuge management’s recognition and consideration of them.

H.3.1.4 Maintenance of Biological Integrity, Diversity, and Environmental Health

Service policy requires that refuges maintain existing levels of biological integrity, diversity, and environmental health as defined in the Refuge Manual (601 FW 3). Currently, in the Brooks Range WSA, these qualities are unaltered and comparable to historic conditions to an exceptional degree in the Refuge System. Wilderness status, with its mandate for maintaining natural and untrammeled conditions, would complement the policy requirement for maintaining these qualities and would further provide statutory protection for them. Should management actions or public uses be proposed that would affect these qualities, they would be much less likely to be approved if the area were designated.

The Refuge has high scientific value as a “natural laboratory” where largely undisturbed wildlife and natural processes can be studied. Wilderness designation would best assure perpetuation of the conditions central to the Refuge’s scientific value. However, the use of certain research methods and tools could be limited because of designation, and this would lessen the scientific value for some studies.

H.3.1.5 Recreational Opportunities

As with the rest of the Refuge, the Brooks Range WSA provides opportunities for a range of activities in a natural, undeveloped setting. Activities include backpacking, river floating, camping, hunting, fishing, wildlife observation, and photography. Adventure, challenge, exploration, discovery, solitude, independence, and self-reliance are important aspects of

visitor experience. A recent visitor study (Christensen and Christensen 2009) found these dimensions continue to be highly important to visitors.

Wilderness designation would not change the current character of the recreational experience. In accordance with the provisions of ANILCA, current means of access, including motorboat, snowmobile, and aircraft use, would continue. In areas where aircraft landings are causing or may cause damage to sensitive surfaces, protective limitations are more likely to be implemented in Wilderness. Overall, Wilderness designation would provide the best assurance of long-term protection for the recreational setting and experiences valued by visitors. In particular, designation would decrease the likelihood that recreational developments such as bridges or signs would be placed in the area.

Approximately 700 recreationists visit the Brooks Range WSA each year. Although we would not expect this number to change, it is possible that Wilderness designation could attract more visitors. In the medium to long term, protection of natural and experiential conditions could require management intervention, such as placing limits on the number of visitors in areas of concentrated public use (e.g., on some river corridors). Designation could also serve to encourage behaviors that better protect natural conditions, such as minimum impact camping.

H.3.1.6 Refuge Operations

Wilderness designation would have a negligible effect on most Refuge operations in the Brooks Range WSA as currently conducted. If designated, all Refuge management activities in the area would require an MRA, which would take staff time to conduct. However, routine operations, such as public use monitoring, law enforcement, and most fish and wildlife surveys, would only require periodic updating of an initial programmatic MRA; thus, the long-term time commitment would be minimal. Research projects involving intrusive methods or tools need to meet the MRA requirement. In particular, normally prohibited uses, such as structures, installations, temporary roads, motor vehicles, motorized equipment, and helicopters, would be approved only if determined, through an MRA, to be the minimum requirement for administering the area as Wilderness. Wilderness status could increase support and elevate funding priority for management and research projects that address public use impacts or threats such as climate change.

Research projects proposed by the Service, the State, or other cooperators that preserve Wilderness character to the greatest extent possible would be permitted and encouraged. Wilderness designation would not affect the jurisdiction or responsibilities of the State with respect to fish and wildlife management, although activities must be determined through an MRA to be the minimum requirement necessary to manage the area as Wilderness, whether or not a normally prohibited use is being considered.

Wilderness would provide the highest and most permanent level of protection for natural conditions and processes in the Brooks Range WSA, enhancing the scientific value of the area. For some approved projects, the cost of this benefit would be some inconvenience and less efficiency, and the need for more advanced planning, flexibility, and restraint.

H.3.1.7 Evaluation of Manageability for the Brooks Range Wilderness Study Area

To be recommended for designation, the Brooks Range WSA must be capable of being effectively managed as Wilderness. In determining manageability, the Service considers

factors such as land status and Service jurisdiction, existing inholdings and private rights, Refuge management activities, and public uses.

The Service manages over 98 percent of the Brooks Range WSA. Within it are 29 conveyed Native allotments, each 40–160 acres in size, for a total of 3,658.92 acres. Their current and foreseeable use is consistent with Wilderness purposes. Sale to private parties could potentially result in commercial or other development that could detract from the wilderness characteristics of the immediate area. The Service will continue to offer to purchase inholdings from willing sellers when funding is available.

There are no known external threats that would affect this WSA's manageability as Wilderness. Twenty-nine percent (81.2 miles) of the WSA is bounded by Arctic Refuge lands, 37 percent (234 miles) is bounded by State lands, 20.3 percent (128 miles) is bounded by Native-owned lands, and 13.6 percent (85.7 miles) is bounded by Bureau of Land Management (BLM) lands.

Refuge management activities as they relate to Wilderness are described in Refuge Operations (Section H.3.1.6). In general, current and foreseeable actions would not interfere with management of the area as Wilderness, although in some cases, the methods and tools used may require some modification. There are no Revised Statute 2477 rights-of-way claimed for this WSA.

The current public uses are largely wilderness-associated and would not interfere with management of the area as Wilderness. However, a 190,000-acre area around Arctic Village (Map H-2) has been determined to be not suitable for Wilderness designation. This area is in addition to the areas around and between Arctic Village and Old John Lake that were found not qualified for Wilderness status. The area would be difficult to manage as Wilderness because of its proximity to an active village with supporting infrastructure such as a busy airport and the community electrical generation complex. The area also has a high concentration of private inholdings, frequent use of motorized vehicles such as motorboats and snowmachines, and includes the village's high use areas for activities such as firewood and house log cutting. Arctic Village, the nearest community, is 5 to 20 miles from Wilderness-suitable lands, depending on the direction. The qualified and suitable portion of this WSA totals 5.91 million acres, or approximately 30 percent of the Refuge.

In summary, the Brooks Range WSA is sufficiently large, protected, and distant from substantial threats to enable almost all of it to be managed as Wilderness. With the exception of the non-qualified and non-suitable areas identified in MapH-2, this WSA is highly suitable for Wilderness designation.

H.3.1.8 Wilderness Recommendation for the Brooks Range Wilderness Study Area

The Brooks Range WSA has been determined to be suitable and is preliminarily recommended for Wilderness designation. A recommendation is included in three of the draft Plan alternatives. Any recommendations included in the Revised Plan will be forwarded by the director of the Service to the Secretary of Interior. The Secretary may forward the recommendation(s) to the President, who may transmit them to Congress. Only Congress can designate Wilderness.

H.3.2 Suitability of the Porcupine Plateau Wilderness Study Area

H.3.2.1 Achieving Refuge Purposes

Fish, wildlife, and their habitats – The Refuge’s wildlife purposes mandate conservation of wildlife and their habitats in their natural diversity. Wildlife includes all indigenous species, with their natural behavior, interactions, and cycles continuing. Wilderness designation would provide the Porcupine Plateau WSA with greatest long-term assurance that these qualities of the area’s wildlife would be perpetuated. Subject to the provisions of management emergencies (Chapter 2, Section 2.4.2), Wilderness designation would essentially preclude alterations of habitats to favor one species over another and would best protect the free-functioning of the ecological systems and natural processes in which wildlife are embedded. Potential effects of Wilderness designation on wildlife research are discussed in Refuge Operations (Section H.3.2.6).

International treaty obligations – This purpose requires that the area be managed to help fulfill treaty obligations related to the conservation of fish, wildlife, and birds that inhabit Alaska, Canada, and many other nations (Appendix A). Wilderness designation would likely enhance the long-term protection of all indigenous wildlife, including treaty species. As discussed in Refuge Operations (Section H.3.2.6), research on treaty species would be subject to an MRA. The MRA could result in modified research protocols, tools, and techniques in order to minimize the potential impacts of research on Wilderness character.

Subsistence – The Refuge’s subsistence purpose provides the opportunity for continued subsistence uses by local residents. These uses serve to meet residents’ physical, economic, traditional, and other needs. Wilderness designation would provide further long-term protection for the lands, wildlife, and other resources subsistence users depend on and would serve to perpetuate the natural conditions in which their cultures evolved. Whether the Porcupine Plateau WSA is designated Wilderness or managed under Minimal Management,



serious declines in subsistence species could be addressed as a management emergency. However, stronger justification for management actions such as predator control would be required in designated Wilderness (see Chapter 2, Section 2.4.2).

Current methods and patterns of motorized and non-motorized access would not be affected if the Porcupine Plateau WSA were to be designated as Wilderness. The use of temporary structures such as tent camps, tent frames, and fish drying racks would continue. Subsistence use of cabins would continue, although requests for construction or location of new cabins would receive greater scrutiny. Some subsistence users would view the Wilderness overlay on their homeland as complementary to their cultural perspective; others would view Wilderness as a foreign concept and at variance with their traditional beliefs. In general, subsistence uses in designated Wilderness would continue as they have under Minimal Management, and the subsistence purpose would continue to be met.

Water quality and necessary water quantity – This purpose recognizes that protection of water resources is central to conservation of fish, wildlife, and ecosystems. It establishes a Federal reserved water right for surface waters and groundwater within the area. Wilderness status would provide an additional layer of protection for water resources. As discussed in Refuge Operations (Section H.3.2.6), research related to water resources would be subject to an MRA; some water research protocols, tools, and techniques might need to be modified to minimize the potential impacts of research on Wilderness character.

H.3.2.2 Achieving the Refuge System Mission

The mission of the Refuge System is:

“To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Arctic Refuge has a distinctive role in the Refuge System—exemplifying the qualities of natural condition, wild character, and ecological wholeness. Wilderness designation of this WSA would provide the greatest assurance that the Porcupine Plateau area would remain unaltered and essentially free of the intent to control or manipulate the land, its creatures, and natural processes, thereby ensuring the area retains its ecological integrity now and for future generations. Designation would achieve the purposes of the Refuge System while expanding the range of landscapes, integrity, and values (tangible and intangible) held within it.

H.3.2.3 Purposes of the Wilderness Act and National Wilderness Preservation System

The Wilderness Act states that the purpose of Wilderness areas and the NWPS is “to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.” The purpose of designation is to protect and preserve an area’s Wilderness character, as described in the Service Manual (610 FW 1.13.). Designation of the Porcupine Plateau WSA would further these purposes by adding an area to the NWPS that exemplifies Wilderness character and the full range of its tangible and intangible qualities and experience opportunities. Wilderness status would provide the greatest assurance that the wilderness-associated benefits the area provides would be enduring and available to future generations.

As with the rest of the Refuge, the Porcupine Plateau WSA holds symbolic and existence values for many people who find satisfaction in just knowing the area exists and will be passed on to future generations. While many such values are not quantifiable, they are nonetheless real for many people. Wilderness designation would confer greater overall long-term protection to the resources underlying these intangible values and increase Refuge management's recognition and consideration of them.

H.3.2.4 Maintenance of Biological Integrity, Diversity, and Environmental Health

Service policy requires that refuges maintain existing levels of biological integrity, diversity, and environmental health as defined in the Refuge Manual (601 FW 3). Currently, in the Porcupine Plateau WSA, these qualities are unaltered and comparable to historic conditions to an exceptional degree in the Refuge System. Wilderness status, with its mandate for maintaining natural and untrammelled conditions, would complement the policy requirement for maintaining these qualities and would further provide statutory protection for them. Should management actions or public uses be proposed that would affect these qualities, they would be much less likely to be approved if the area were designated.

The Refuge has high scientific value as a “natural laboratory” where largely undisturbed wildlife and natural processes can be studied. Wilderness designation would best assure perpetuation of the conditions central to the Refuge's scientific value. However, the use of certain research methods and tools could be limited because of designation, and this would lessen the scientific value for some studies.

H.3.2.5 Recreational Opportunities

As with the rest of the Refuge, the Porcupine Plateau WSA provides opportunities for a range of activities in a natural, undeveloped setting. Activities include backpacking, river floating, camping, hunting, fishing, wildlife observation, and photography. Adventure, challenge, exploration, discovery, solitude, independence, and self-reliance are important aspects of visitor experience. A recent visitor study (Christensen and Christensen 2009) found that these dimensions continue to be highly important to visitors.

Wilderness designation would not change the current character of the recreational experience. In accordance with the provisions of ANILCA, current means of access, including motorboat, snowmobile, and aircraft use, would continue. In areas where aircraft landings are causing or may cause damage to sensitive surfaces, protective limitations are more likely to be implemented in designated Wilderness. Overall, Wilderness designation would provide the best assurance of long-term protection for the recreational setting and visitor experience dimensions. In particular, designation would decrease the likelihood that recreational developments such as bridges or signs would be placed in the area.

Approximately 160 recreationists visit the Porcupine Plateau WSA each year. Although we would not expect this number to change, it is possible that Wilderness designation could attract more visitors. In the medium to long term, protection of natural and experiential conditions could require management intervention, such as placing limits on the number of visitors in areas of concentrated public use (e.g., on some river corridors). Designation could also serve to encourage behaviors that better protect natural conditions, such as minimum impact camping.

H.3.2.6 Refuge Operations

Wilderness designation would have a negligible effect on most Refuge operations in the Porcupine Plateau WSA as currently conducted. If designated, all Refuge management activities in the area would require an MRA, which would take staff time to conduct. However, routine operations, such as public use monitoring, law enforcement, and most fish and wildlife surveys, would only require periodic updating of an initial programmatic MRA, thus the long-term time commitment would be minimal. Research projects involving intrusive methods or tools need to meet the MRA requirement. In particular, normally prohibited uses, such as structures, installations, temporary roads, motor vehicles, motorized equipment, and helicopters would be approved only if determined, through an MRA, to be the minimum requirement for administering the area as Wilderness. Wilderness status could increase support and elevate funding priority for management and research projects that address public use impacts or threats such as climate change.

Research projects proposed by the Service, the State, or other cooperators would be permitted and encouraged, provided they use the minimum tools or techniques to accomplish their intent and they are necessary to protect Refuge resources, including the wilderness resource. Wilderness designation would not affect the jurisdiction or responsibilities of the State with respect to wildlife, although actions would need to be consistent with maintaining Wilderness character; for some activities, an MRA may be required. Wilderness designation would provide the highest and most permanent level of protection for natural conditions and processes in the Porcupine Plateau WSA, enhancing the scientific value of the area. For some approved projects, the cost of this benefit would be some inconvenience and less efficiency, and the need for more advanced planning, flexibility, and restraint.

H.3.2.7 Evaluation of Manageability for the Porcupine Plateau Wilderness Study Area

To be recommended for designation, the Porcupine Plateau WSA must be capable of being effectively managed as Wilderness. In determining manageability, the Service considers factors such as land status and Service jurisdiction, existing inholdings and private rights, Refuge management activities, and public uses.

The Service manages over 99 percent of the Porcupine Plateau WSA. Within it are 12 Native allotments, each 40–160 acres in size, for a total of 1,080 acres. Their current and foreseeable use is consistent with Wilderness purposes. Sale to private parties could potentially result in commercial or other development that could detract from the wilderness characteristics of the immediate area. The Service will continue to offer to purchase inholdings from willing sellers when funding is available.

There are no known external threats that would affect this remote area's manageability as Wilderness. The nearest community, Chalkyitsik, is 21 miles from the WSA. Along the area's southwest boundary is an unoccupied 100-acre military site. It consists of five 500-square-foot gravel pads, a frame building, several small structures, generators, and several miles of underground seismic cable. Its presence and infrequent servicing does not affect manageability of the area. Thirty-five percent (206.3 miles) of the WSA is bounded by Arctic Refuge lands, 28.7 percent (167.3 miles) is bordered by Yukon Flats Refuge lands, 15.3 percent (89.3 miles) is bordered by Canada, 12.2 percent (71.2 miles) is bordered by Native-owned lands, and 8.5 percent (89.3 miles) is bordered by BLM lands.

Refuge management activities as they relate to designated Wilderness are described in Refuge Operations (Section H.3.2.6). In general, current and foreseeable actions would not interfere with management of the area as Wilderness, although in some cases, the methods and tools used may require some modification.

The State of Alaska has identified four travel routes in this WSA that it believes may be claimed as highway rights-of-way under Revised Statute 2477 (Appendix E). These are approximately 91 miles, 50 miles, 23 miles, and 11 miles in length. Should these routes be determined valid and developed as roads, their use by motorized vehicles would affect the wilderness values of adjacent lands. In the unlikely event that a permanent road is developed, the roadway would need to be removed from Wilderness status.

The current public uses are largely wilderness-associated and would not interfere with management of the area as Wilderness.

In summary, the Porcupine Plateau WSA is sufficiently large, protected, and distant from substantial threats to enable it to be managed as Wilderness. This WSA is highly suitable for Wilderness designation.

H.3.2.8 Wilderness Recommendation for the Porcupine Plateau Wilderness Study Area

The Porcupine Plateau WSA has been determined to be suitable and is preliminarily recommended for Wilderness designation. A recommendation is included in two of the draft Plan alternatives. Any recommendations included in the Revised Plan will be forwarded by the director of the Service to the Secretary of Interior. The Secretary may forward the recommendation(s) to the President, who may transmit them to Congress. Only Congress can designate Wilderness.

H.3.3 Suitability of the Coastal Plain Wilderness Study Area

H.3.3.1 Achieving Refuge purposes

Fish, wildlife, and their habitats – The Refuge’s wildlife purposes mandate conservation of wildlife and their habitats in their natural diversity. Wildlife includes all indigenous species, with their natural behaviors, interactions, and cycles continuing. Wilderness designation would provide the Coastal Plain WSA with greatest long-term assurance that these qualities of the area’s wildlife would be perpetuated. Subject to the provisions of management emergencies (Chapter 2, Section 2.4.2), Wilderness designation would essentially preclude alterations of habitats to favor one species over another and would best protect the free-functioning of the ecological systems and natural processes in which wildlife are embedded. Potential effects of Wilderness designation on wildlife research are discussed in Refuge Operations (Section H.3.3.5).

Wilderness – By definition, Wilderness designation preserves wilderness values, including the area’s natural scenic conditions, intact ecological processes, and the inherent wild character of its various life forms. Designation would require Refuge management to be more attentive to these qualities and would likely increase public scrutiny of any proposed actions that might diminish them. Wilderness designation would require the Service to preserve the Wilderness character of the area, including the requirement for conducting an MRA for proposed Refuge management activities, which includes the placement of structures and installations.

The Refuge has high scientific value as a “natural laboratory” where largely undisturbed wildlife and natural processes can be studied. Wilderness designation would best assure perpetuation of the conditions central to the Refuge’s scientific value. However, the use of certain research methods and tools could be limited because of designation, and this would lessen the scientific value for some studies.

As with the rest of the Refuge, the Coastal Plain WSA also holds symbolic and existence values for many people who find satisfaction in just knowing the area exists and will be passed on to future generations. While many such values are not quantifiable, they are nonetheless real for many people. Wilderness designation would confer greater overall long-term protection to the resources underlying these intangible values and increase Refuge management’s recognition and consideration of them.

Recreation – The Refuge’s recreation purpose includes provision for a range of activities in a natural, undeveloped setting. Activities include backpacking, river floating, camping, hunting, fishing, wildlife observation, and photography. Adventure, challenge, exploration, discovery, solitude, independence, and self-reliance are important aspects of visitor experience. A recent visitor study (Christensen and Christensen 2009) found these dimensions continue to be highly important to visitors.

Wilderness designation would not change the current character of the recreational experience. In accordance with the provisions of ANILCA, current means of access, including motorboat, snowmobile, and aircraft use, would continue. In areas where aircraft landings are causing or may cause damage to sensitive surfaces, protective limitations are more likely to be implemented in Wilderness. Overall, Wilderness designation would provide the best assurance of long-term protection for the recreational setting and experience dimensions valued by visitors. In particular, designation would decrease the likelihood that recreational developments such as bridges or signs would be placed in the area.



Approximately 250 recreationists visit the Coastal Plain WSA each year. Although we would not expect this number to change, it is possible that Wilderness designation could attract more visitors. In the medium to long term, protection of natural and experiential conditions could require management intervention, such as placing limits on the number of visitors in areas of concentrated public use (e.g., on some river corridors). Designation could also serve to encourage behaviors that better protect natural conditions, such as minimum impact camping.

International treaty obligations – This purpose requires that the area be managed to help fulfill treaty obligations related to the conservation of fish, wildlife, and birds that inhabit Alaska, Canada, and many nations (Appendix A). Wilderness designation would likely enhance the long-term protection for all indigenous wildlife, including treaty species. As discussed in Refuge Operations (Section H.3.3.5), research on treaty species would be subject to an MRA. The MRA could result in modified research protocols, tools, and techniques in order to minimize the potential impacts of research on Wilderness character.

Subsistence – The Refuge’s subsistence purpose provides the opportunity for continued subsistence uses by local residents. These uses serve to meet residents’ physical, economic, traditional, and other needs. Wilderness designation would provide further long-term protection for the lands, wildlife, and other resources subsistence users depend on and would serve to perpetuate the natural conditions in which their cultures evolved. Whether the Coastal Plain WSA is designated Wilderness or managed under Minimal Management, serious declines in subsistence species could be addressed as a management emergency. However, stronger justification for management actions such as predator control would be required in designated Wilderness (see Chapter 2, Section 2.4.2).

Current methods and patterns of motorized and non-motorized access would not be affected if the Coastal Plain WSA were to be designated as Wilderness. The use of temporary structures such as tent camps, tent frames, and fish drying racks would continue. Subsistence use of cabins would continue, although requests for construction or location of new cabins would receive greater scrutiny. Some subsistence users would view the Wilderness overlay on their homeland as complementary to their cultural perspective; others would view Wilderness as a foreign concept and at variance with their traditional beliefs. In general, subsistence uses in Wilderness would continue as they have under Minimal Management and the subsistence purpose would continue to be met.

Water quality and necessary water quantity – This purpose recognizes that protection of water resources is central to conservation of fish, wildlife, and ecosystems. It establishes a Federal reserved water right for surface waters and groundwater within the area. Wilderness status would provide an additional layer of protection for water resources. As discussed in Refuge Operations (Section H.3.3.5), research related to water resources would be subject to an MRA; water research protocols, tools, and techniques could be modified to minimize the potential impacts of research on Wilderness character.

H.3.3.2 Achieving the Refuge System Mission

The mission of the Refuge System is:

“To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Arctic Refuge has a distinctive role in the Refuge System— exemplifying the qualities of natural condition, wild character, and ecological wholeness. Wilderness designation of this WSA would provide the greatest assurance that the Coastal Plain area would remain unaltered and essentially free of the intent to control or manipulate the land, its creatures, and natural processes, thereby ensuring the area retains its ecological integrity now and for future generations. Designation would achieve the purposes of the Refuge System while expanding the range of landscapes, integrity, and values (tangible and intangible) held within it.

H.3.3.3 Purposes of the Wilderness Act and National Wilderness Preservation System

The Wilderness Act states that the purpose of Wilderness areas and the NWPS is “to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.” The purpose of designation is to protect and preserve an area’s Wilderness character, described in the Service Manual 610 FW1.13. Designation of the Coastal Plain WSA would further these purposes by adding an area to the Refuge System that exemplifies Wilderness character and the full range of its tangible and intangible qualities and experience opportunities. Overall, the contribution of this area to the NWPS would be high. Wilderness status would provide the greatest assurance that the wilderness-associated benefits the area provides would be enduring and available to future generations.

H.3.3.4 Maintenance of Biological Integrity, Diversity, and Environmental Health

Service policy requires that refuges maintain existing levels of biological integrity, diversity, and environmental health as defined in the Refuge Manual (601 FW 3). Currently, in the Coastal Plain WSA, these qualities are unaltered and comparable to historic conditions to an exceptional degree in the Refuge System. Wilderness status, with its mandate for maintaining natural and untrammeled conditions, would complement the policy requirement for maintaining these qualities and would further provide statutory protection for them. Should management actions or public uses be proposed that would affect these qualities, they would be much less likely to be approved if the area was designated.

H.3.3.5 Refuge Operations

Wilderness designation would have a negligible effect on most Refuge operations in the Coastal Plain WSA as currently conducted. If designated, all Refuge management activities in the area would require an MRA, which would take staff time to conduct. However, routine operations, such as public use monitoring, law enforcement, and most fish and wildlife surveys, would only require periodic updating of an initial programmatic MRA, thus the long-term time commitment would be minimal. Research projects involving intrusive methods or tools need to meet the MRA requirement. In particular, normally prohibited uses, such as structures, installations, temporary roads, motor vehicles, motorized equipment, and helicopters would be approved only if determined, through an MRA, to be the minimum requirement for administering the area as Wilderness. Wilderness status could increase support and elevate funding priority for management and research projects that address public use impacts or threats such as climate change.

Research projects proposed by the Service, the State, or other cooperators would be permitted and encouraged provided they use the minimum tools or techniques to accomplish

their intent and they are necessary to protect Refuge resources, including the wilderness resource. Wilderness designation would not affect the jurisdiction or responsibilities of the State with respect to wildlife, although actions would need to be consistent with maintaining Wilderness character; for some activities, an MRA may be required. Wilderness designation would provide the highest and most permanent level of protection for natural conditions and processes in the Coastal Plain WSA, enhancing the scientific value of the area. For some approved projects, the cost of this benefit would be some inconvenience and less efficiency, and the need for more advanced planning, flexibility, and restraint.

H.3.3.6 Evaluation of Manageability for the Coastal Plain Wilderness Study Area

To be recommended for designation, the Coastal Plain WSA must be capable of being effectively managed as Wilderness. In determining manageability, the Service considers factors such as land status and Service jurisdiction, existing inholdings and private rights, Refuge management activities, and public uses.

The Service manages nearly 94 percent of the Coastal Plain WSA. Within it are 28 Native allotments, each 40–160 acres in size, for a total of 1,359.55 acres. Their current and foreseeable use is consistent with Wilderness purposes. Sale to private parties could potentially result in commercial or other development that could detract from the wilderness characteristics of the immediate area. The Service will continue to offer to purchase inholdings from willing sellers when funding is available.

There are no known external threats that would affect the area's manageability as Wilderness, although potential oil development beyond the area's western boundary or nearby in the Beaufort Sea could adversely affect the area's wilderness characteristics for the life of the development. Forty-six percent (126.9 miles) of the area is bordered by the Beaufort Sea, 36 percent is bordered by Arctic Refuge lands, and 17 percent (60.2 miles) is bordered by non-Refuge lands.

Refuge management activities as they relate to designated Wilderness are described in Refuge Operations (Section H.3.3.5). In general, current and foreseeable actions would not interfere with management of the area as Wilderness, although in some cases, the methods and tools used may require some modification.

The State of Alaska has identified three travel routes in this WSA that it believes may be claimed as highway rights-of-way under Revised Statute 2477 (see Appendix E). They are approximately 22 miles, 1.4 miles, and .03 miles in length. Should these routes be determined valid and be developed as roads, their use by motorized vehicles would affect the wilderness values of adjacent lands. In the unlikely event that a permanent road is developed, the roadway would need to be removed from Wilderness status.

The current public uses are largely wilderness-associated and would not interfere with management of the area as Wilderness. However, a 30,000-acre area of lagoon waters near Kaktovik (Map H-3) has been determined to be not suitable for Wilderness designation. This area is in addition to and adjacent to the waters near Kaktovik that were found to be not qualified for Wilderness status. This area is non-suitable because it is heavily used by village residents and is near supporting village infrastructure such as a busy airport, community electrical generation complex, the military Barter Island Long Range Radar Site, and a Borough landfill. A number of Native allotments are located around the lagoon, and motorized vehicles (such as motorboats and snowmachines) are frequently used in and

around the lagoon area. Kaktovik, the only village that uses this WSA, is 6–18 miles from Wilderness-suitable lands.

In summary, the Coastal Plain WSA is sufficiently large, protected, and distant from substantial threats to enable almost all of it to be managed as Wilderness. With the exception of the non-qualified (10,000 acres) and non-suitable areas (30,000 acres) identified in Map H-3, this WSA is highly suitable for Wilderness designation. The qualified and suitable portion of this WSA totals 1.64 million acres, or approximately eight percent of the Refuge.

H.3.3.7 Wilderness Recommendation for the Coastal Plain WSA

The Coastal Plain WSA has been determined to be suitable and is preliminarily recommended for Wilderness designation. A recommendation is included in two of the draft Plan alternatives. Any recommendations included in the Revised Plan will be forwarded by the director of the Service to the Secretary of Interior. The Secretary may forward the recommendation(s) to the President, who may transmit them to Congress. Only Congress can designate Wilderness.

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H.5 Appendix: Previous Wilderness Reviews

Pursuant to the Wilderness Act of 1964, the Service conducted a wilderness review of all lands within the 8.83-million acre Arctic National Wildlife Range (Arctic Range) in the early 1970s. The final report (U.S. Department of the Interior, undated) and the supporting draft environmental impact statement (U.S. Department of the Interior 1978) concluded the entire area had “outstanding wilderness qualities” and was suitable for inclusion within the NWPS with the following exceptions: the land occupied by Kaktovik; an adjacent 4,359-acre military withdrawal; 69,120 acres in the vicinity of Kaktovik that would be selected by Native village and regional corporations; 10 acres surrounding the G. William Holmes Research Station at Lake Peters; and 10-acre, 456-acre, and 420-acre tracts surrounding the former Demarcation Point, Camden Bay, and Beaufort Lagoon former Distant Early Warning Line sites, respectively. (The building complexes at these sites have since been removed.)

Action on the Wilderness proposal was held up—first pending a decision on the route of a proposed arctic gas pipeline, then pending debate on the “(d)(2)” provisions of ANCSA. In the late 1970s, it was decided that pending ANILCA legislation would be the vehicle for determining which areas Congress might designate as Wilderness. In 1980, ANILCA designated all the original Arctic Range as Wilderness, except a portion of the coastal plain (now unofficially called the “1002 Area”). In 1982, an informal wilderness review of the Refuge’s coastal plain was conducted (Wilderness and Wild Rivers Planner 1982), and it concluded the entire area except for the Distant Early Warning Line sites (now largely restored) met the requirements for Wilderness classification.

Wilderness reviews were a major component of the Refuge’s 1988 Plan (Service 1988). That process formally examined all non-Wilderness portions of the Refuge except for the 1002 Area. Consideration of the 1002 Area was deferred to a separate environmental study, as required by Section 1002(h) of ANILCA, resulting in a document known as the Coastal Plain Resource Assessment (Clough et al. 1987). The 1987 assessment analyzed the area’s wilderness qualities, finding that “with the exception of the two abandoned Distant Early Warning Line sites on the coast, the entire 1002 Area meets these [wilderness] criteria.” Although a Wilderness designation alternative was considered, the assessment recommended to Congress a full oil and gas leasing alternative. Since that time, Congress has debated numerous bills that would either open the 1002 Area to oil and gas development or preserve it as Wilderness.

In analyzing the wilderness suitability of non-1002 lands, the 1988 Plan divided the remaining non-Wilderness areas of the Refuge into two areas: Brooks Range and Porcupine Plateau. Seven criteria derived from the Wilderness Act of 1964 were used in evaluating the wilderness qualities of these areas: land ownership, natural integrity, apparent natural condition, opportunities for solitude, opportunities for primitive recreation, size, and the presence of special or unique features.

As a result of this analysis, the 1988 Plan concluded that both units met all seven Wilderness criteria and were suitable for Wilderness designation. However, the record of decision did not recommend either area for designation.

In September 1989, the General Accounting Office issued a report that concluded the Service had used overly restrictive criteria in evaluating potential Wilderness for Alaskan refuges and did not meet congressional intent in regard to ANILCA Section 1317 (wilderness reviews). The report featured Arctic Refuge as a case study, noting that the 1988 comprehensive conservation planning team’s preferred alternative was to recommend 9.7 million acres for

Wilderness designation and that a “vast majority” of public comments favored adding more Wilderness to the Refuge. In response to the General Accounting Office report, Service Director John Turner revisited the issue in January 1991 and revised the Service’s recommendations for new Wilderness designation for seven Alaskan refuges. He recommended to the Department of the Interior an additional 5.2 million acres for Wilderness designation in Arctic Refuge, noting that “the public has been almost unanimous in its support for additional wilderness for the Arctic Refuge” (Turner 1991). That recommendation included the entire Brooks Range review area. The recommendation has not been acted upon.



Appendix I

Wild and Scenic River Review

I. Wild and Scenic River Review

The Arctic National Wildlife Refuge (Arctic Refuge, Refuge) is completing a wild and scenic river review as part of this revision of the Comprehensive Conservation Plan (Plan, Revised Plan). The Wild and Scenic Rivers Act requires that such a study be completed whenever Federal agencies revise their land use plans. The process consists of several steps, including inventory, eligibility evaluation, suitability study, and potential congressional designation.

The first two steps are to inventory the Refuge's rivers, and then determine which of the rivers meet the criteria for eligibility (i.e., that they are free-flowing and contain one or more outstanding river-related values (as defined in the Wild and Scenic Rivers Act). The third step, the suitability study, determines whether each eligible river or river segment would be a worthy addition to the National Wild and Scenic Rivers System.

The findings of the eligibility and suitability studies are presented in this appendix, and preliminary suitability determinations are included for each river evaluated for suitability. The final decision on the suitability of a given river segment will be made in the record of decision for the Revised Plan.

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U.S. Fish & Wildlife Service

Wild and Scenic River Review

Arctic National Wildlife Refuge

Ivishak River - Photo by Larry Bartlett



Fall 2012

U.S. Department of the Interior
U.S. Fish and Wildlife Service
Arctic National Wildlife Refuge
Fairbanks, Alaska

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1. Introduction

The U.S. Fish and Wildlife Service (Service), Arctic National Wildlife Refuge (Arctic Refuge, Refuge), conducted a wild and scenic river review as part of the Revised Comprehensive Conservation Plan (Plan, Revised Plan) planning process. Wild and scenic river considerations are a required element of comprehensive conservation plans and are conducted in accordance with the refuge planning process outlined in 602 FW 3.4C(1)(c) and (d), including public involvement and National Environmental Policy Act (NEPA) compliance.

Section 5(d) of the Wild and Scenic Rivers Act (Public Law 90-542, as amended) establishes a method for providing Federal protection for certain free-flowing rivers and preserving them and their immediate environments for the use and enjoyment of present and future generations.

“In all planning for the use and development of water and related land resources, consideration shall be given by all federal agencies involved to potential national wild, scenic and recreational river areas, and all river basin and project plan reports submitted to the Congress shall consider and discuss any such potential. The Secretary of the Interior and the Secretary of Agriculture shall make specific studies and investigations to determine which additional wild, scenic and recreational river areas within the United States shall be evaluated in planning reports by all federal agencies as potential alternative uses of the water and related land resources involved.”

The purpose of the wild and scenic river review is to inventory and study the rivers and water bodies within the boundary of the Refuge to determine whether they merit inclusion in the National Wild and Scenic Rivers System (NWSRS). This report documents the wild and scenic river review for the Arctic Refuge Revised Plan.

1.1 Wild and Scenic Rivers Act of 1968

The Wild and Scenic Rivers Act (the Act) was enacted by Congress in 1968 with the realization that:

“...the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.”

Section 16(b) of the Act states that rivers that fall under this designation have to meet criteria of being free-flowing, specifically:

“...existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway.”

They must also possess at least one outstandingly remarkable value (ORV): scenic, recreational, geologic, fish, wildlife, historic, cultural, or other. The Act provides protection for designated river segments so that they are:

“...preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.”

Rivers and river segments designated under the Act are protected and managed to maintain and enhance their free-flowing character and the characteristics that led to designation. Section 10 of the Act mandates:

“Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values.”

Protections put in place for designated rivers are intended to protect and/or enhance the river at its current state. If a river or segment is added to the NWSRS, a specific type of step down plan, a Comprehensive River Management Plan (CRMP) would be developed based on the characteristics of the river or segment corridor.

Under the authority of Section 5(a) of the Act, the Act has been amended numerous times to add rivers to the NWSRS and to require study of additional rivers and river segments for potential inclusion in the system. Enacted in 1980, the Alaska National Interest Lands Conservation Act (ANILCA) amended the Act to designate numerous rivers throughout Alaska as wild rivers, including the Ivishak, Sheenjek, and Wind Rivers within Arctic Refuge. ANILCA also required the Porcupine River be studied for potential designation. In 1985, the National Park Service completed an eligibility and suitability report for the Porcupine River and found that although the Porcupine River was eligible for the NWSRS, it was not suitable for inclusion (National Park Service 1984b).

1.2 Overview of the Wild and Scenic River Review Process

The study and designation of watercourses under the Act follows a multi-step process. The first step, evaluation of eligibility, is an objective inventory of river conditions. A river or stream segment must be free-flowing and have at least one outstandingly remarkable value (ORV) to be eligible. For this review, the river area evaluated for ORVs included one-half mile on each side of the river (ANILCA Sections 605 and 606). Eligible river segments are then tentatively classified as wild, scenic, or recreational based on the level of development and access along the river corridor. A "wild" classification denotes minimal access and development. All of the eligible rivers evaluated in this review are classified as wild.

Suitability is an assessment of factors to provide the basis for determining whether to recommend a river be added to the NWSRS. The suitability step considers the question, "Is it worthy to pursue a congressional designation?" The suitability study assesses management factors, social and political considerations, and public comments as part of the analysis process. The final determination of suitability and decision to recommend designation of a given river segment is made in the record of decision (ROD) for the Revised Plan. The recommendation is a preliminary administrative recommendation that will receive further review and possible modification by the Service Director, Secretary of the Interior, and President of the United States. Congress has reserved the authority to make final decisions on designation of rivers as part of the NWSRS.

1.3 Refuge Wild and Scenic Evaluation Team

The interdisciplinary study team is made up of specialists covering resources and programs under the Refuge's jurisdiction. This team compiled the initial inventory list, outlined resource concerns, determined and executed the evaluation process, and assessed ORVs based on knowledge of their assigned resource and/or program. For a list of contributors to the wild and scenic river review, see Appendix H in this review.

Table 1-1. Wild and scenic river review team

Team Member	Title
Heather Bartlett	Law Enforcement Officer/Pilot – Team Leader
Alan Brackney	Wildlife Biologist/GIS Specialist
Greta Burkart	Aquatic Ecologist
Donita Cotter	National Wild and Scenic Rivers Coordinator
Jennifer Reed	Park Ranger/Visitor Services Specialist
Sharon Seim	Natural Resource Planner

1.4 Scope and Methodology of the Wild and Scenic River Review for the Revised Plan

The wild and scenic river review for the Revised Plan does not include a comprehensive evaluation of all rivers in Arctic Refuge and does not represent the last opportunity for consideration for designation. The Wild and Scenic Rivers Act recognizes that river values are not static in time and therefore allows additional reviews to occur either at a particular site or across a conservation unit. Refuge rivers that were not included in the wild and scenic river review for the Revised Plan will be evaluated in future planning efforts as required by Service planning policy and Section 5(d)(1) of the Act. Similarly, additional assessment and study of rivers included in this wild and scenic river review could be incorporated in future planning efforts when new inventory data becomes available or suitability factors, such as public support for designation, become favorable.

The team identified a comprehensive list of all named Refuge rivers and river segments from the U.S. Geological Survey (USGS) Geographic Names Information System and the National Hydrography Dataset (USGS 2010). A total of 160 named rivers and creeks were identified, all of which are free-flowing. Because the lack of existing scientific information precluded a systematic and comprehensive inventory for all 160 of the Refuge's named waterways, the team decided to focus the wild and scenic river review on a subset of Refuge rivers.

A comprehensive conservation plan is a 15-year plan that outlines broad management guidelines for a refuge focused on important issues that require a management decision. Issues can be management opportunities, resource threats, use conflicts, or public concerns. The Wild and Scenic Rivers Act was established to protect free-flowing rivers against threats such as damming, water pollution, and natural resource extraction, but it also provides land managers mechanisms to protect river-related resources and values. Due to the isolated location of the Refuge and the difficulty in accessing the Refuge's lands and

waters, the issue with the greatest potential to affect Refuge's rivers over the 15-year life of the Revised Plan is visitor use.

The Refuge has no formal system to comprehensively track visitor use and recreation trends and no formal methods to document visitors who access the Refuge on their own without the commercial services of a guide or commercial air operator. An unknown number of visitors enter the Refuge each year by private planes and boats or by hiking. However, the Refuge does require permits for all commercial uses. Guides and commercial air operators (including air-taxis and air transporters) are required to submit client use reports as a condition of their permits. The commercial use database is used to estimate how many people use commercial services to access the Refuge each year and provides insights about categories of recreational activities, and visitor access, distribution, and group size. Data on commercially-supported visitor use was utilized, in combination with staff professional knowledge of non-commercially-supported visitor use, to narrow the scope of the review to those rivers with reliable flow, the highest river-related visitor use, and potentially significant management issues.

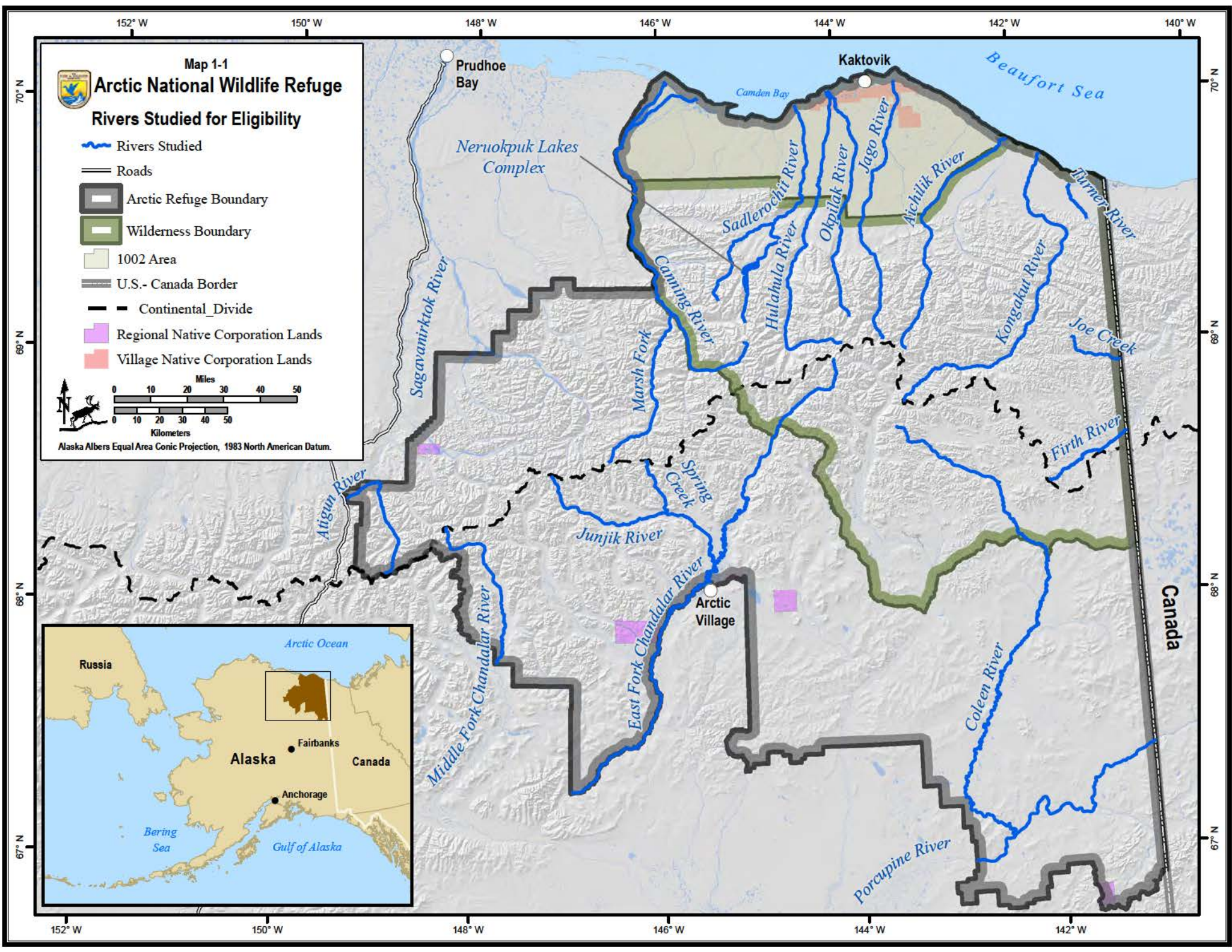
The data identified 32 waters with commercially-supported visitor use, but 12 of those 32 waters receive visitor use that is not river related (e.g., mountaineering access, hunting outside the river corridor, etc.). Because the Act is focused on protection of river-related values, the team decided not to evaluate eligibility for those 12 waters. The interdisciplinary team evaluated the eligibility of the 20 rivers listed in Table 1-2 (see also Map 1-1).

Table 1-2. Arctic Refuge rivers included in the wild and scenic river review

▪ Aichilik River	▪ Joe Creek
▪ Atigun River	▪ Junjik River
▪ Canning River	▪ Spring Creek
▪ Marsh Fork Canning River	▪ Kongakut River
▪ Coleen River	▪ Okpilak River
▪ East Fork Chandalar River	▪ Sadlerochit River
▪ Middle Fork Chandalar River	▪ Neruokpuk Lakes Complex
▪ Firth River	▪ Porcupine Rivers
▪ Hulahula River	▪ Sagavanirktok River
▪ Jago River	▪ Turner River

A river must be free-flowing and have at least one outstandingly remarkable value (ORV) to be eligible for further consideration. The team developed definitions and assessment criteria for each of the river-related values referenced in the Act: scenic, recreational, geologic, fish, wildlife, historic, and cultural. The eligibility criteria, eligibility evaluation process, and results are described in Sections 2 and 3 of this report.

The Refuge decided to proceed with suitability evaluations for eligible rivers because existing data and knowledge of visitor use patterns, resource threats, and potential user conflicts indicated the potential need for management decisions and guidelines over the 15-year life of the Revised Plan. The suitability study and river-specific suitability analyses are described in Sections 4 and 5 of this report.



1.5 Management and Protection of Rivers Included in this Review

The protection afforded a river included in a review pursuant to Section 5(d)(1) of the Wild and Scenic Rivers Act depends on whether the identified river segment has been determined eligible or non-eligible, suitable or non-suitable through the Refuge planning process.

- River segments on Federal lands determined non-eligible or non-suitable will be managed as determined by the applicable underlying Minimal or Wilderness Management category prescribed in the Revised Plan (Chapter 2) and the ROD.
- Rivers determined suitable and recommended for wild and scenic designation in the Revised Plan would be managed to the extent possible under existing legal authorities (e.g., NEPA, the Clean Water Act, Endangered Species Act, and Archaeological Resources Protection Act) and underlying Minimal or Wilderness Management category to protect their free-flowing condition, water quality, wild classification, and any identified outstandingly remarkable values (ORVs) pending congressional action or for the duration of the Revised Plan. For more information, see Appendix F in this review.
- Congressionally designated rivers would be managed under the Wild River Management category (see Revised Plan, Chapter 2, Section 2.3.5) and specific guidance developed in a CRMP.
- For wild rivers within designated Wilderness, the more restrictive provisions of the Wild and Scenic Rivers Act and the Wilderness Act would apply.

1.6 Other Agency and Public Input

1.6.1 Eligibility Phase

The Refuge held a formal public comment period for the Revised Plan from April 7 through June 7, 2010. The Refuge received responses from 94,061 individuals and organizations consisting of 1,480 substantive original responses and 92,581 form letters. Of these, 54 mentioned wild and scenic rivers or the wild and scenic river review. A majority of comments regarding wild and scenic rivers expressed either support or opposition for the study of specific rivers. Multiple comments referred to specific rivers regarding their increased use, watershed and resource protection, physical impacts, experiential dimensions, development, and wilderness characteristics.

1.6.2 Suitability Phase

The Refuge held a 30-day comment period (October 10–November 12, 2010) focused on stakeholder input regarding the suitability criteria. For this purpose, a stakeholder was defined as:

“A person, group, or organization that has a direct or indirect stake in the results of the Arctic Refuge Wild and Scenic River review process because the stakeholder could affect or be affected by the actions, objectives, or management provisions associated with the findings of eligibility (including Outstandingly Remarkable Values and tentative classification), suitability and/or designation of wild rivers within Arctic Refuge.”

Key stakeholders in this process included the Environmental Protection Agency (EPA); Alaska Department of Fish and Game (ADFG); Alaska Department of Natural Resources (ADNR);

Federal agencies that border eligible rivers in the Refuge, such as the Bureau of Land Management (BLM) and National Park Service (NPS); special use permit holders such as commercial air operators and guides; the Federal Subsistence Board; tribal governments and Native corporations; Native allottees and private landowners in the Refuge; city and/or village governments (i.e., Arctic Village, Chalkyitsik, Fort Yukon, Kaktovik, and Venetie); and borough officials (North Slope boroughs and Fairbanks North Star). For more information regarding consultation and coordination with stakeholders, see Appendix C of this wild and scenic river review.

These stakeholders were sent a letter outlining the wild and scenic river process, summarizing the draft eligibility report, and a comment form regarding suitability criteria (Appendix D in this review). The responses from that inquiry were incorporated into the suitability analysis and are summarized for each river in Section 5. A summary of comments received on non-eligible rivers are included in Appendix E of this wild and scenic river review.



2. Eligibility Criteria and Evaluation

2.1 Determination of Free-Flowing

All the rivers and creeks in Arctic Refuge are free-flowing. The term “free-flowing” is defined by the Wild and Scenic Rivers Act as:

“Existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway...”

2.2 Outstandingly Remarkable Values and Regions of Comparison

Section 1(b) of the Act identifies outstandingly remarkable values (ORVs) in the following manner:

“It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.”

While the spectrum of resources that may be considered is broad, ORVs must be directly river related. They should:

- 1) be located in the river or on its immediate shore lands (within one-half mile on either side of the river);
- 2) contribute substantially to the functioning of the river ecosystem; and/or
- 3) owe their location or existence to the presence of the river.

2.2.1 Defining Outstandingly Remarkable Values

For a river to be eligible for designation to the NWSRS, the river, with its adjacent land area, must have one or more “outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values.” Since the Act does not further define outstandingly remarkable values, the determination that a river area contains outstanding values is a professional judgment on the part of the interdisciplinary review team.

The team clearly defined each ORV in advance of the eligibility evaluation to encourage an unbiased assessment. To provide consistency with other wild and scenic river reviews across the nation, the team reviewed ORV definitions developed by other agencies and guidance provided by the Interagency Wild and Scenic Rivers Coordinating Council (IWSRCC) (IWSRCC 1999a).

Both the USFS (U. S. Forest Service 2006) and the Bureau of Land Management (BLM et al. 1992) have developed a standard set of definitions for the seven ORVs identified by the Act. The BLM definitions sometimes reference its own agency policy, whereas definitions from the U.S. Forest Service are not tied to policy. In the State of Utah, Federal land managers took these definitions a step further (BLM et al. 1996) by developing sub-definitions (also called “components”) for each ORV and explaining how each sub-definition would be rated.

For the Arctic Refuge eligibility evaluation, the team started with the work done by the State of Utah and developed definitions and assessment criteria (components) for each ORV specific to Alaska resources and Arctic Refuge. The ORV definitions are included in Appendix A of this review.

2.2.2 Defining Regions of Comparison

An iterative step in the process was to determine what regions of comparison (ROCs) would be used for the evaluation of river-related values. In order to be assessed as outstandingly remarkable, a river-related value must be a unique, rare, or exemplary feature that is important at a comparative regional or national scale. This comparative analysis requires that like rivers be measured against like rivers. The IWSRCC guidance says the ROC is not fixed and that it should provide for meaningful comparative analysis (IWSRCC 1999a). The ROC should not be so large that no river would be eligible or so small that every river would be eligible.

The guidance also says the ROC does not need to be the same for each ORV. For example, the scenery on the Refuge is very different on the north side (north of Continental Divide) versus the south side of the Brooks Range. Scenery north of the Brooks Range is extremely different in form, line, color, and texture from scenery south of the Brooks Range. Due to this dramatic variation, two ROCs were selected for the scenic ORV. Conversely, recreation occurs across the entire Refuge in generally the same manner (e.g., bush planes are required for access; there are no roads or trails directing travel to specific locations; the entire Refuge is extremely remote; commercial operators report visitation the same way across the Refuge). Therefore, the entire Refuge would serve as the ROC for the recreational ORV.

The interdisciplinary review team was responsible for delineating an appropriately scaled area of consideration for each ORV. Within each ROC, like rivers are assessed against each other to allow the comparison of similar types of river resources. Each ORV definition was reviewed separately and evaluated to determine a reasonable ROC. The ROCs for each ORV are described in Appendix A of this review. Please also refer to Map 2-1.

2.2.3 Outstandingly Remarkable Value Assessment Methodology

Each member of the team gathered information on each of the 20 rivers, whether narrative (qualitative), numerical (quantitative), or a combination thereof, and then presented their research to the full team. In many—if not all—cases, other team members identified additional resources and datasets. In the end, information and data were gathered from all possible known sources, which sometimes included institutional knowledge from other Refuge and agency staff.

The purpose of the eligibility evaluation is to compare and contrast each river to other waters in the ROC for each outstandingly remarkable value (ORV). In some instances, datasets were rejected or component definitions not analyzed because the available information did not allow the team to compare and contrast the rivers. It was not helpful to include a dataset that had the same result for all the rivers or a dataset that applied only to a subset of the rivers being evaluated.



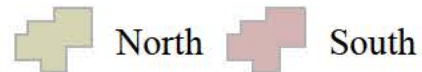
Map 2-1

Arctic National Wildlife Refuge

Regions of Comparison for Wild & Scenic River Eligibility Analysis

A

Arctic Refuge divided into North and South Slopes



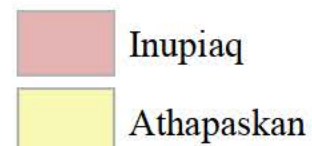
B

Interior Yukon River Basin



C

Native Alaskan Language Groups on the Arctic Slope and Upper Yukon Basin

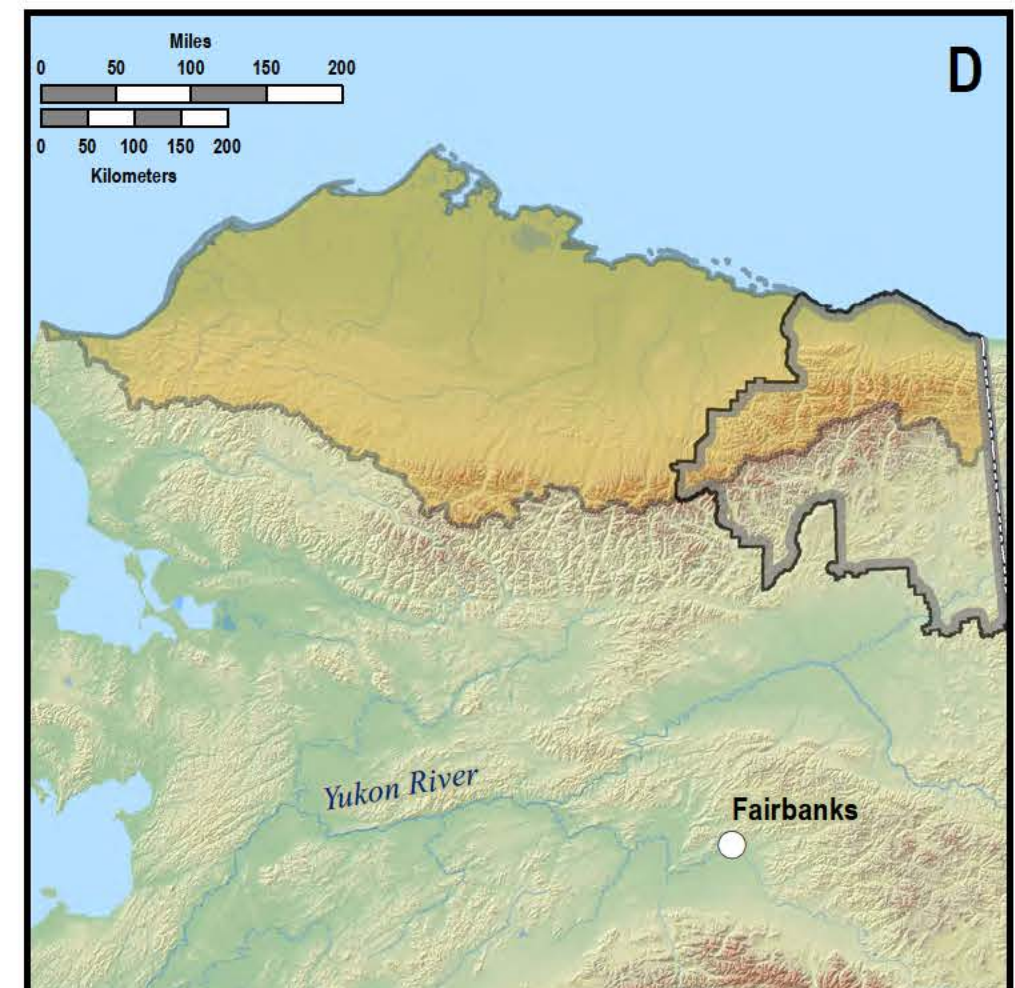
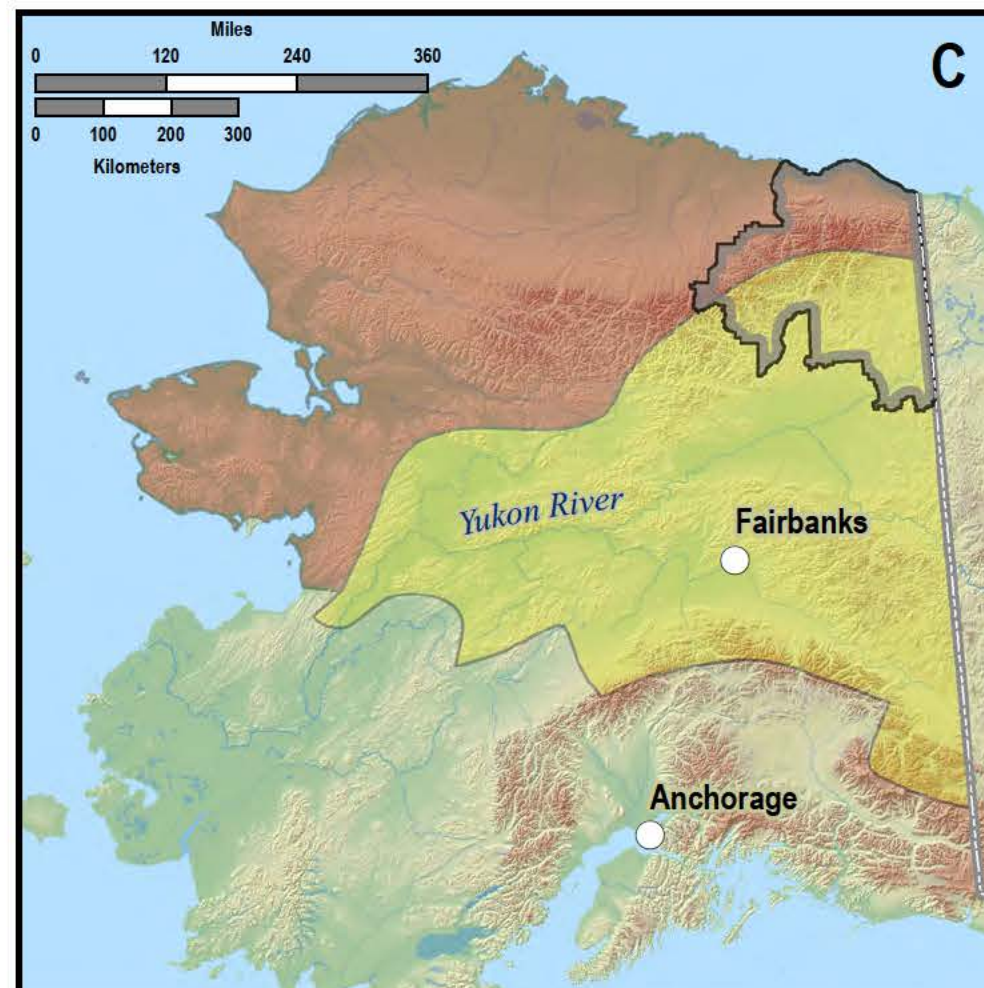
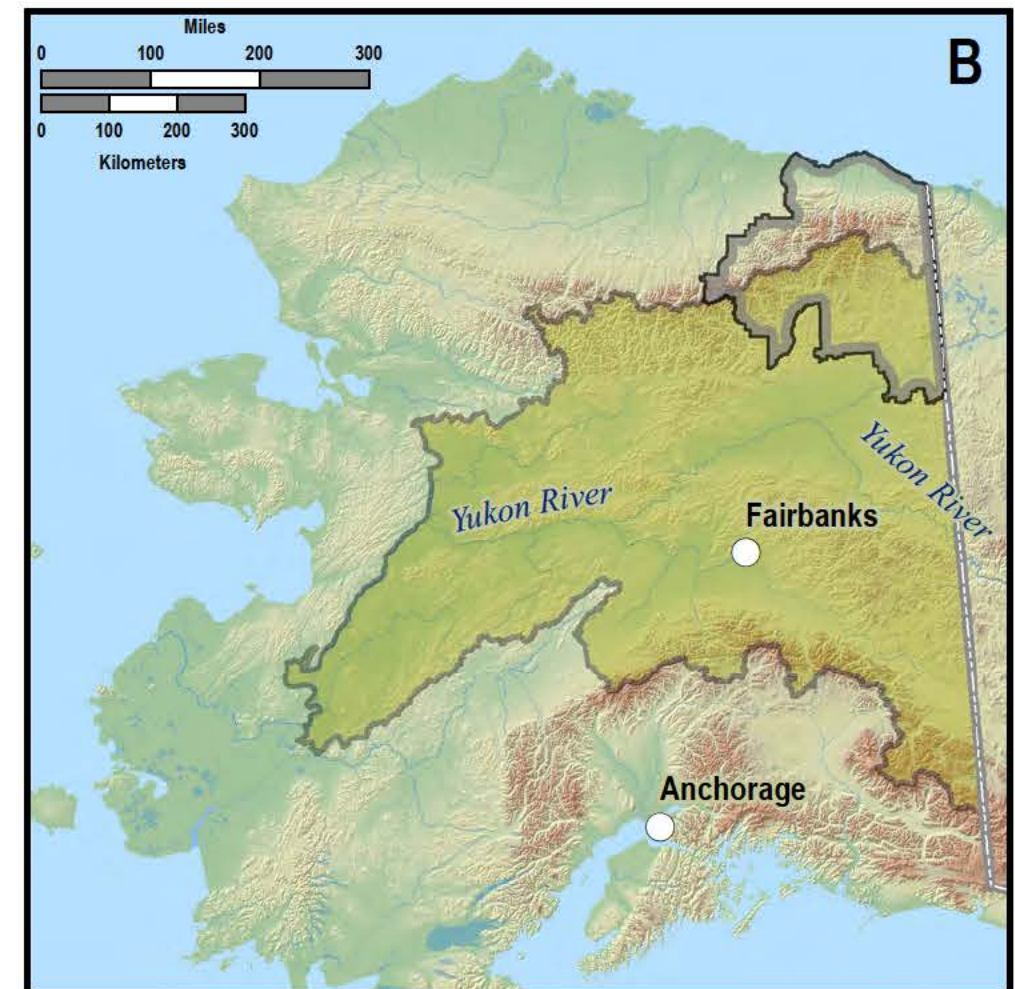
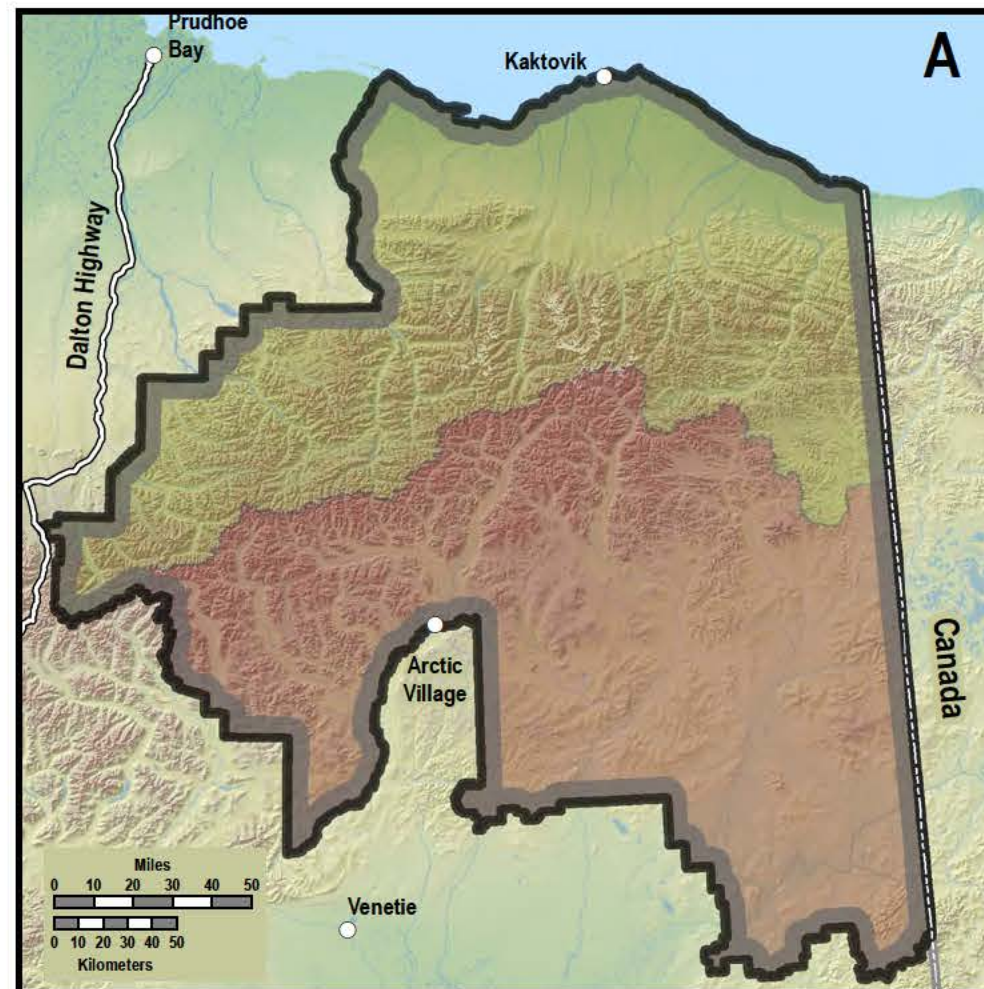
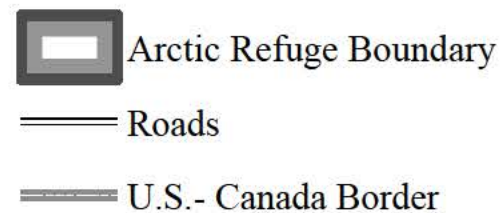


D

Arctic Slope of Alaska



Other Features



As a team, each definition and sub-definition was reviewed for each ORV to make a final determination of the appropriate data to use and how each information set would be analyzed to meet the requirements of the ORV definitions. A system was developed to rank the analytical results river-by-river for each ORV. While each of the ORVs and their components were evaluated separately using a distinct process, some commonalities exist for the assessment process:

1. All component scores were evaluated on a scale of zero to five, with five being the maximum number of points a component definition could score. This was to avoid weighting one component of an ORV over another.
2. The team used both single datasets and multiple datasets to fully evaluate each component. If multiple datasets were used, averages of the scores for each dataset were used so that the total component would score no higher than five.
3. A dataset was only used once across all ORVs. This was to avoid weighting certain data over others.
4. The team chose to use numeric (quantitative) data over narrative (qualitative) data whenever possible. For some datasets, only qualitative data were available.
5. The maximum number of points a river could score varied across ORVs based on the number of components. For example, there are five components for the recreational ORV for a maximum score of 25, while the scenic ORV has three components for a maximum score of 15.
6. According to Department of the Interior guidance (47 FR 39453-39461 1982), *“The determination of whether a river area contains ‘outstandingly remarkable’ values is a professional judgment on the part of the study team.”* The study team decided to “grade” the rivers being reviewed by percent-of-total-score for each ORV. The team decided that a river value required a score of at least 70 percent of the total possible points to be deemed “outstandingly remarkable.”

2.3 Classifications

After a river is determined to be eligible, it must be tentatively classified using the definitions in the Act. Classifications are based on the amount of development and access on and around the immediate shorelines of the river. Section 2(b) of the Act defines the classifications of wild and scenic rivers in the following manner:

“Every wild, scenic or recreational river in its free-flowing condition, or upon restoration to this condition, shall be considered eligible for inclusion in the National Wild and Scenic Rivers System and, if included, shall be classified, designated, and administered as one of the following:

*“1) **Wild river areas** – Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.*

*“2) **Scenic river areas** – Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.*

*“3) **Recreational river areas** – Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.”*

The classification assigned at this stage in the review process is preliminary and can be changed during the suitability study. All of the rivers included in the Arctic Refuge wild and scenic river review were tentatively classified “wild.”

2.4 Detailed Analyses for Each Outstandingly Remarkable Value

The outstandingly remarkable value (ORV) assessments for each of the 20 rivers included in the eligibility evaluation are in Appendix B of this review. The assessments describe the components and scoring guidelines for each ORV and the calculated composite scores for each river.

3. Eligibility Results

Of the 20 rivers studied for eligibility at this time, 10 rivers were identified as free-flowing and possessing at least one outstandingly remarkable value (ORV). Table 3-1 summarizes the eligibility findings for the Arctic Refuge wild and scenic river review. The locations of eligible rivers are shown in Map 3-1.



Table 3-1. Eligible Rivers

River System	Description	River Length	*Segment Length	**Preliminary Classification	Remarkable Values
Atigun River	The Atigun River, which is a tributary of the Sagavanirktok River, flows into the Refuge from bordering lands with the State and Bureau of Land Management and can be accessed by the Dalton Highway. The Refuge's portion is often referred to as Atigun River Gorge (or Atigun Gorge).	43	11	Wild	Geologic, Recreational
Canning River	The Canning River is the longest north-flowing river in the Refuge. It forms the western boundary of the Refuge and flows through mountains, foothills, coastal plain, and empties into the Beaufort Sea.	125	125	Wild	Cultural, Wildlife, Fish, Recreational
Marsh Fork Canning River	The Marsh Fork is the Canning River's main tributary; it flows into the Canning River from the west as it cuts through the rugged, striking landscape of the Phillip Smith Mountains.	54	54	Wild	Recreational
East Fork Chandalar River	The East Fork Chandalar River is a major tributary of the Chandalar River and serves as a highway to subsistence hunting, fishing, and trapping areas. From approximately Arctic Village south, the eastern half of the river, including the eastern streambed, is not in the Refuge boundary.	223	204	Wild	Cultural
Hulahula River	The Hulahula River originates in the glaciers of the Romanzof Mountains, flows west for a ways, and then sharply turns to the north as it flows between Mt. Chamberlin and Mt. Michelson and out to Camden Bay.	97	97	Wild	Recreational, Cultural
Jago River	The Jago River is flanked by the Romanzof Mountains and is fed by the McCall Glacier on Mt. Itso. It flows through the mountains to the coastal plain and finally to the Beaufort Sea.	84	84	Wild	Wildlife
Kongakut River	The Kongakut is the only major, floatable North Slope river whose entire watershed is in designated Wilderness. Originating high in the mountains of the eastern Brooks Range, the river flows north through miles of rugged mountains to the coastal plain and empties into the Beaufort Sea.	116	116	Wild	Recreational, Scenic, Geologic

River System	Description	River Length	*Segment Length	**Preliminary Classification	Remarkable Values
Okpilak River	The silt-laden Okpilak River begins in the heart of the most active glacial area of the Refuge. Its rugged, steep terrain and melting icy masses create a torrent of water in the headwaters that is channeled through a vertical canyon and then abruptly flattens as it flows onto the coastal plain to the Beaufort Sea.	73	73	Wild	Scenic, Geologic
Neruokpuk Lakes complex***	The Neruokpuk Lakes complex (which includes Carnivore Creek, Lake Peters, Lake Schrader, and the Kekiktuk River) includes the two largest and most northern arctic alpine lakes in North America. The connected lakes are surrounded by steep slopes rising to some of the highest peaks in the Brooks Range.	32	32	Wild	Scenic, Geologic, Fish
Porcupine River	The Porcupine is one of the largest tributaries of the Yukon River and is a historically important travel route. The Refuge portion begins at the United States-Canada border and flows downstream for approximately 85 miles.	476	85	Wild	Historic, Cultural, Geologic, Wildlife

* Segment length is approximate; it refers to the portion of the river that flows within the boundaries of Arctic Refuge. River length is the entire river. Both lengths are identified in miles.

** Preliminary classifications are interim classifications and can change through the suitability, recommendation, or designation phases of the review

*** The Neruokpuk Lakes complex includes Carnivore Creek, which is the inlet, and Kekiktuk River, which is the outlet. The entire length from the headwaters of Carnivore Creek to the confluence of Kekiktuk River with the Sadlerochit River was evaluated.

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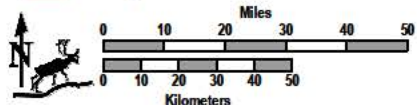
Map 3-1



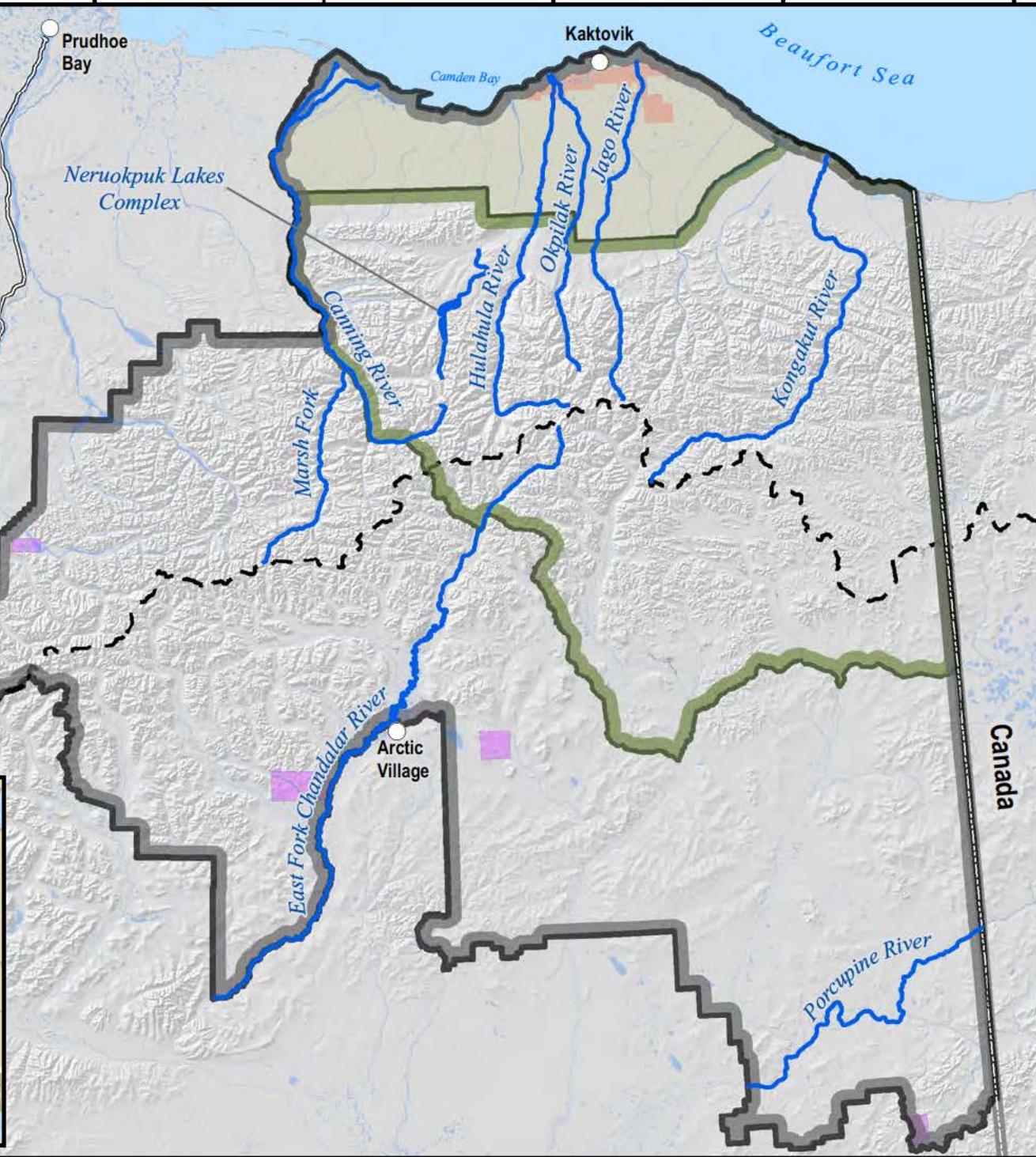
Arctic National Wildlife Refuge

Eligible Rivers

- Eligible Rivers
- Roads
- Arctic Refuge Boundary
- Wilderness Boundary
- 1002 Area
- U.S.- Canada Border
- Continental Divide
- Regional Native Corporation Lands
- Village Native Corporation Lands



Alaska Albers Equal Area Conic Projection, 1983 North American Datum.



4. Suitability Study

4.1 Suitability Analysis Process

The purpose of the suitability phase is to determine whether eligible segments would be appropriate additions to the NWSRS by considering tradeoffs between development and protection. Suitability factors include the physical, social, and political environments; the economic consequences; and the manageability of rivers if they were to be designated. Guidance for analyzing the suitability of eligible rivers was derived from IWSRCC (1999a) and the Wild and Scenic Rivers Act of 1968.

Ten rivers were evaluated for their suitability as part of the Arctic Refuge wild and scenic river review (Map 4-1). Only Congress can designate a wild and scenic river. The Service cannot administratively designate a river as a component of the NWSRS through a planning decision or other agency decision; therefore, no segment studied is designated or will automatically be designated as part of the NWSRS. The planning determination of suitability provides the basis for a decision to recommend legislation.

4.2 Methodology and Suitability Criteria

A suitability study must address the following questions:

1. Should the river's free-flowing character, water quality, and ORVs be protected, or are one or more other uses important enough to warrant doing otherwise?
2. Will the river's free-flowing character, water quality, and ORVs be protected through designation? Is designation the best method for protecting the river corridor? In answering these questions, the benefits and impacts of the designation must be evaluated and alternative protection methods considered.
3. Is there a demonstrated commitment to protect the river by any non-Federal entities that may be partially responsible for implementing protective management?

In Sections 4(a), 5(c), and 6(c) of the Act, Congress identified the factors to be considered and documented as a basis for determining the suitability of a river, and in 1999, the IWSRCC produced a concise document outlining these factors (IWSRCC (1999a)). The following criteria are used by Federal land managers to consistently evaluate the suitability of waters under their jurisdiction and to answer the three questions posed previously:

1. Characteristics which do or do not make the area a worthy addition to the NWSRS.
2. Status of land ownership, minerals (surface and subsurface), use in the area, including the amount of private land involved, and associated or incompatible uses.
3. Reasonably foreseeable potential uses of the land and related waters which would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and the values which could be foreclosed or diminished if the area is not protected as part of the NWSRS.
4. Federal, public, State, tribal, local, or other interests in designation or non-designation of the river, including the extent to which the administration of the river, including the

costs thereof, may be shared by State, local, or other agencies and individuals. Also, the Federal agency that will administer the area should it be added to the NWSRS.

5. Estimated cost, if necessary, of acquiring lands, interests in lands, and administering the area if it is added to the NWSRS.
6. Ability of the agency to manage and/or protect the river area or segment as a wild and scenic river, or other mechanisms (existing and potential) to protect identified values other than wild and scenic river designation.
7. Historical or existing rights which could be adversely affected.
8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.
9. Support or opposition of local and State governments and stakeholders for designation.
10. Consistency of designation with other agency plans, programs, or policies.
11. Contribution to a river system watershed or basin integrity.
12. Other issues and concerns, if any.

4.3 Data Sources

To evaluate the suitability criteria, the Service relied on various sources, including: Geographic Information Systems (GIS) data, unpublished agency literature, miscellaneous trip reports, environmental analyses for nearby development projects, Refuge resource specialists, other agencies, Native corporations, tribal governments, landowners, land status maps, published books, commercial service providers and guides, and public and stakeholder input.

4.4 Interim Management of Suitable/Recommended Rivers

Identifying a river as a candidate for wild and scenic river study under Section 5(d)(1) reflects the agency's determination that the river has the potential to be included in the NWSRS, but it does not trigger specific protection under the Act.

Interim management to adequately protect a candidate river's free flow, water quality, outstandingly remarkable values (ORVs), and preliminary or recommended classification is derived from an agency's existing authorities and is subject to existing private rights. The intent of interim protective management is to assure that a river maintains its suitable status while Congress reviews and considers a river for designation.

Pending release of the Revised Plan and final Environmental Impact Statement (EIS) and its associated ROD, the potential effects of proposed projects or Refuge uses on a suitable river's free flow, water quality, and ORVs will be evaluated on a site-specific basis, and adverse effects will be prevented to the extent of existing Service authorities. The goal is to manage suitable rivers to protect their preliminary classification (e.g., wild). For rivers identified as non-suitable in the Revised Plan, management reverts to the direction prescribed by the appropriate management category (Minimal Management or Wilderness Management).

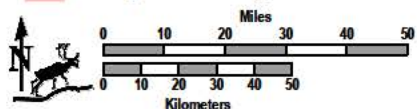
Map 4-1



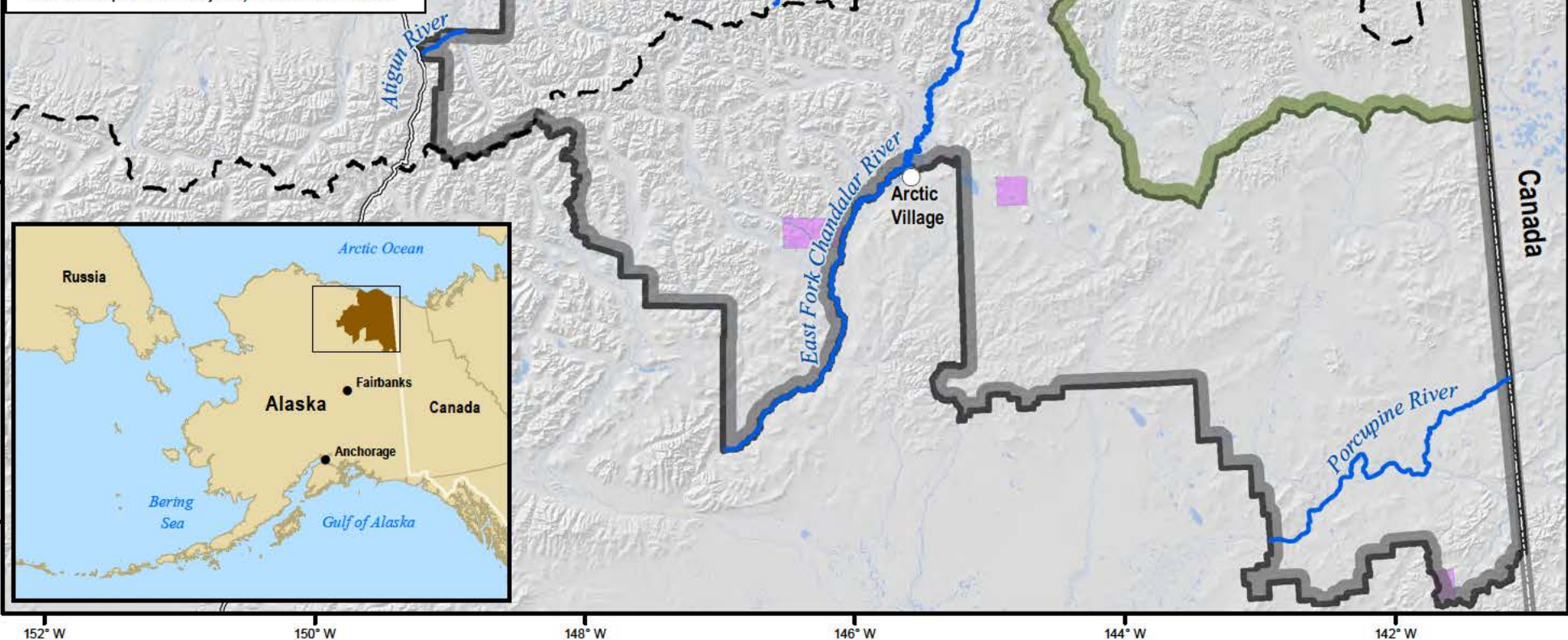
Arctic National Wildlife Refuge

Rivers Studied for Suitability

- Rivers Studied
- Roads
- Arctic Refuge Boundary
- Wilderness Boundary
- 1002 Area
- U.S.- Canada Border
- Continental Divide
- Regional Native Corporation Lands
- Village Native Corporation Lands



Alaska Albers Equal Area Conic Projection, 1983 North American Datum.



The Revised Plan identifies rivers determined suitable and recommended for congressional designation (see Section 5 of this report). Appendix F of this wild and scenic river review identifies the interim management prescriptions that will be applied to suitable and recommended rivers to protect their recommended classification and the specific values that qualify them for inclusion in the NWSRS.

4.5 Management of Designated Wild and Scenic Rivers

This section describes the requirements and effects of managing a river as a component of the NWSRS, based on direction in the Wild and Scenic Rivers Act. These effects would occur if a river determined suitable and recommended in the Revised Plan is subsequently designated by Congress. The following text is from an IWSRCC (2002) technical report.

4.5.1 *Purposes*

Section 1(b) of the Act specifies that the purposes for which wild and scenic rivers are added to the NWSRS are to protect the river's free-flowing condition, water quality, and outstandingly remarkable values (ORVs). Sections 7(a) and 10(a) make reference to these collective "values" for which rivers are added to the National System.

Management Implications:

- Focus the Comprehensive River Management Plan (CRMP) and subsequent river management on protecting a river's free-flowing condition, water quality, and ORVs.
- Thoroughly define the ORVs to guide future management actions and to serve as the baseline for monitoring.

4.5.2 *Classification*

The classification system outlined in Section 2(b) of the Act describes the type and intensity of development in existence at the date of the river's designation. To be "administered" in a class means defining the river's initial landscape character and, through development of the CRMP, establishing standards relative to future in-corridor land uses. For example, administering a wild river will require more restrictive decisions to protect the river's character than for the administration of a scenic or recreational river.

Management Implications:

- Describe a river's classification and landscape character at the date of designation in the CRMP to serve as the basis for evaluating proposed land uses and monitoring.
- Use classification to provide a general framework for the type and intensity of land management activities that may take place in the future.
- Consider continuing to allow uses in existence at the date of designation that do not conform to the river's classification and that are not specifically addressed in the enabling legislation, so long as the river's free-flowing condition, water quality, and ORVs are protected.
- Apply the protections under Sections 7 (water resources projects) and 10(a) (nondegradation policy) independent of classification.

4.5.3 *Establishment of Boundaries and Classification*

Sections 3(b) and 3(c) of the Act require that each federally administered river in the NWSRS have a legally established boundary. Congress has, in a few instances, specified the boundaries for a river in the designating legislation, but generally this responsibility is left to the managing agency to be completed following designation. For the purposes of this analysis, commensurate with the direction in ANILCA and Section 15(1) of the Act, the Service would establish a detailed boundary of not more than 640 acres of land per river mile within one year of designation. This analysis also assumes that all designated rivers in Arctic Refuge would be classified “wild.”

The notice of the availability of the boundaries and classification (if not specified in the designating legislation) must be published in the Federal Register and transmitted to Congress. Refer to IWSRCC (1998) for additional discussion of developing a boundary that provides necessary protection for identified values.

Management Implications:

- A bank-to-bank boundary is unacceptable (IWSRCC 1998).
- Use a river’s ORVs as the basis for boundary establishment. They must be sufficiently described and properly referenced in establishing a detailed boundary for the river.
- The final boundary is not required to be posted or otherwise located on the ground.

4.5.4 *Comprehensive River Management Plan*

Section 3(d)(1) of the Act requires a “comprehensive management plan...to provide for protection of the river values.” The CRMP must address: resource protection; development of lands and facilities; user capacities; and other management practices necessary or desirable to achieve the purposes of the Act (see IWSRCC 2010 for more information).

The CRMP is to be coordinated with, and incorporated into, a river-administering agency’s resource management plan. The Act provides three full fiscal years after the date of designation for its completion and requires a notice of its completion and availability be published in the Federal Register.

Management Implications:

- A CRMP is required for all congressionally designated wild and scenic rivers. The CRMP must:
 - Describe the existing resource conditions, including a detailed description of the ORVs;
 - Define the goals and desired conditions for protecting river values;
 - Address development of lands and facilities;
 - Address user capacities (the types and amounts of public use the river area can sustain without adverse impact to other values);
 - Address water quality issues and instream flow requirements;
 - Reflect a collaborative approach with all stakeholders;
- Identify regulatory authorities of other governmental agencies that assist in protecting river values; and
- Include a monitoring strategy to maintain desired conditions.

- Prior to the completion of a CRMP, thoroughly analyze the effects of a proposed activity on the values for which the river was designated.

4.5.5 Acquisition Procedures and Limitations

Sections 6(a)(1) through 6(g)(3) of the Act describe procedures for acquisition of lands and interests in lands by Federal managers on congressionally designated wild and scenic rivers. Acquisition of lands (fee-simple) or interests in lands (easements) from willing sellers is an appropriate tool in select circumstances on some rivers.

Management Implications:

- Establish general principles for land acquisition in the CRMP (42 FR 39454), where appropriate. Consider acquisition of lands or interests in lands to provide resource protection and access and to facilitate appropriate recreation use.
- Lands owned by a State may be acquired only by donation or by exchange.

4.5.6 Restrictions on Hydroelectric and Water Resources Projects

Section 7(a) prohibits the Federal Energy Regulatory Commission from licensing the construction of hydroelectric facilities on a designated river. Further, the Act prohibits other Federal agencies from assisting in the construction of any water resources project that would have a direct and adverse effect on a designated river. The Act also includes a standard that governs water resources projects below, above, or on a stream tributary to a designated river or congressionally authorized study river. Determinations under Section 7(a) are made by the river-administering agency. Standards and procedures to evaluate the effects of proposed water resources projects are presented in IWSRCC (2004).

Management Implications:

- The river-administering agency is responsible for making determinations under Section 7.
- Evaluate a water resources project based on its effects on the values for which a river is added to the NWSRS, namely its free-flowing condition, water quality, and ORVs. The river's classification is not a factor in this evaluation.
- Federal Energy Regulatory Commission licensed facilities are prohibited within a designated river corridor. Other federally assisted water resources projects within a designated river corridor are evaluated as to their potential "direct and adverse effect" on the values for which the river was designated. Proposed water resources projects below, above, or on a stream tributary to a designated river are evaluated as to their potential to invade the designated river area or unreasonably diminish the scenic, recreational, fish or wildlife values of the designated river.
- Include direction in the CRMP to evaluate a water resources project under Section 7(a). It is also helpful to provide reference to, or include, the evaluation procedures in the CRMP (or appendix).

4.5.7 Limitations on Entry on Public Lands

Section 8(a) requires all public lands within a wild and scenic river corridor to be retained in Federal ownership, with allowances for exchange as conditioned in Section 6(d) and lease of Federal lands (as described in Section 14(A)).

Management Implications

- Consider the potential for exchange in establishing general principles for land acquisition in the CRMP.

4.5.8 Limitations on Mineral Entry

Section 9(a) affects the development of Federal minerals in several ways. First, subject to valid existing rights (i.e., subject to existing mining claims and mineral leases), the minerals located on Federal lands within the bed or banks or one-quarter mile of the banks of any designated wild river are withdrawn from all forms of appropriation under the mining laws and from the operation of the mineral leasing laws. Second, subject to valid existing rights (i.e., subject to mining claims where the claimant has filed a proper patent application and paid the required fees prior to the river's designation), mining claimants may only obtain title to the mineral deposits and such rights to the use of the surface and surface resources as are reasonably required for prospecting or mining. Third, the Act requires regulations be developed to govern mining and mineral leasing activities in wild and scenic river corridors. While the Secretaries of the Interior and Agriculture have not issued these regulations, the BLM and USFS use their existing regulations (43 CFR 3809 and 36 CFR 228, respectively) to meet, to the extent possible, the nondegradation standard of Section 10(a).

In areas where mineral activity is permissible, the CRMP should address locatable, leasable, and salable mineral materials. Locatable minerals are “valuable mineral deposits” located under the General Mining Law of 1872, as amended, and include, for example, gold, silver, copper, and lead. Leasable minerals are defined by statute (e.g., oil, gas, coal, geothermal); a lease must be obtained from the government for their extraction. Salable minerals are disposed of by permit and consist, for example, of common varieties of sand, stone, and gravel. Leasable and salable mineral activities are discretionary on the part of the administering agency.

Management Implications:

- Provide direction for discretionary mineral activity in the CRMP, as appropriate.

4.5.9 Management Direction

The IWSRCC (2002) guidelines interpret Section 10(a) as a “nondegradation and enhancement policy for all designated river areas, regardless of classification.” Existing uses on Federal lands may continue where they do not conflict with river protection. Adverse effects to the values made explicit in Section 1(b) of the Act on Federal and non-Federal lands must be identified in development of the CRMP, with appropriate strategies detailed for their resolution. To achieve a nondegradation standard, the river-administering agency must document baseline resource conditions and monitor changes to these conditions.

Management Implications:

- This section is interpreted as a nondegradation and enhancement policy for all rivers, regardless of classification (Interagency Guidelines). The river manager must seek to protect existing river-related values and, to the greatest extent possible, enhance those values.
- Provide for public recreation and resource uses that do not adversely affect or degrade the values for which the river was designated (Interagency Guidelines).
- Protect rivers by documenting and eliminating adverse impacts on values (free flow, water quality, ORVs), including activities that were occurring on the date of designation. Enhance rivers by seeking opportunities to improve conditions.

4.5.10 *Management of Wild and Scenic Rivers in Wilderness*

Section 10(b) removes the potential for conflict on wild and scenic rivers flowing in designated Wilderness by applying the more restrictive provisions of the Wild and Scenic Rivers Act or the Wilderness Act in any situation of conflict. This section recognizes the importance of designating river systems by removing any potential for conflict in dual designations.

Management Implications:

- River managers must be familiar with provisions of both the Wild and Scenic Rivers Act and the Wilderness Act when developing the CRMP.

4.5.11 *Cooperative Agreements*

Section 10(e) of the Act encourages a Federal-State partnership in wild and scenic river administration. It recognizes the benefits from collaborative development and implementation of a CRMP and the role of State and local government in directing activities on non-Federal lands (e.g., water pollution abatement, zoning).

Management Implications:

- Identify opportunities in the CRMP for the river-administering agency to effect specific written cooperative agreements in administration of a wild and scenic river.

4.5.12 *Federal Assistance to Others*

Section 11(b)(1) authorizes the Secretary of the Interior to provide technical (i.e., non-monetary) assistance and the use of agency funds to states, their political subdivisions, private organizations, and individuals to “plan, protect, and manage river resources.” This authority applies to projects and activities on non-Federal lands within and proximate to a wild and scenic river corridor. It provides a mechanism to effect partnerships for projects and activities distant from the designated wild and scenic river yet with the potential to affect designated wild and scenic river values. Opportunities for such partnerships should be identified in the CRMP and implemented through a properly documented written agreement to assure the public’s interests and the private landowner’s rights are protected.

Management Implications:

- Identify opportunities in the CRMP for the river-administering agency to effect specific written cooperative agreements in administration of a wild and scenic river.

4.5.13 Management Policies

Section 12(a) of the Act applies to activities conducted by a Federal department or agency that are within or proximate to a designated wild and scenic river. Through the language of this section, Congress directs other Federal agencies to protect river values in addition to meeting their agency mission. Refer to IWSRCC (1999b) for a description of the authorities of other Federal agencies in river protection.

Management Implications:

- In addition to preparing a CRMP for lands within the river corridor, the river-administering agency must consider actions on lands it administers adjacent to this area and make certain such actions protect wild and scenic river values.
- Other Federal agencies must protect wild and scenic river values in actions for which they are responsible within and adjacent to a wild and scenic river corridor.

4.5.14 Existing Rights

Section 12(b) qualifies that nothing in Section 12(a) is to be construed as eliminating existing rights or privileges affecting Federal lands without the owner's consent.

Management Implications:

- Consider existing rights or privileges affecting Federal lands when evaluating management actions on lands within or adjacent to the river corridor administered by the river-administering agency or other Federal agency.

4.5.15 Water Pollution

Section 12(c) directs the river-administering agency to cooperate with the EPA and State water quality agencies in addressing water quality concerns in wild and scenic rivers. Cooperation requires active participation by the river-administering agency in evaluation of existing water quality, identification of limitations, and development of the long-term strategies necessary to address water quality-related problems.

Management Implications:

- Seek enforcement of water quality laws through the EPA and State water-quality agencies.
- Work in cooperation with the EPA and State water quality agencies to establish baseline conditions, identify water-quality related issues, and develop a strategy to improve and protect water quality.

4.5.16 Jurisdiction and Responsibilities of State with Respect to Fish and Wildlife

Section 13(a) of the Act clarifies that the role of the States in management of fish and wildlife is unaffected by the Act. The river-administering agency remains responsible, however, for the evaluation of components of fish or wildlife restoration or enhancement projects that are also water resources projects and subject to Section 7(a) of the Act. In most instances, such projects would have a beneficial effect on wild and scenic river values; however, they must be designed to avoid adverse effects on free flow and other river-related values.

Management Implications:

- Develop an effective partnership with State fish and wildlife agencies to achieve mutual goals in river protection.

4.5.17 Federal Reservation of Water

Section 13(c) expressly reserves the quantity of water necessary to achieve the Act's purposes, including protecting the values for which a river is designated.

Management Implications:

- Describe the dependency of ORVs to flow in the CRMP.
- Establish baseline conditions, identify water-quantity related issues, and develop a strategy to protect flow-dependent ORVs.

4.5.18 Navigable Rivers

Section 13(f) clarifies that nothing in the Act affects a State's rights to navigable waterways. State ownership of the underlying river bed on navigable waterways does not, however, preclude the river-administering agency from regulating uses (e.g., private and commercial boating) on the water column as necessary to meet the purposes of the Act. The need to regulate on-water use includes providing a level of public safety, maintaining a desired recreation experience, and protecting biological and physical values. On-river limitations may include, for example, restrictions on the numbers of private and commercial boaters, timing of use, and type and size of craft.

Management Implications:

- Work in partnership with the State to assure the State's public trust interest in navigability and the purposes of the Act are met.

4.5.19 Easements and Rights-of-Way

Section 13(g) specifies that an easement or right-of-way may be granted within the boundary of a wild and scenic river, subject to conditions to protect values.

Management Implications:

- Evaluate any component of a project proposal requiring an easement or right-of-way that is a water resources project under Section 7(a) of the Act prior to further consideration of the easement or right-of-way.
- Grant an easement or right-of-way subject to the nondegradation policy of Section 10(a) and if it is in accordance with all laws applicable to the area.



4.6 Factors Common to Rivers in the Suitability Study

The information provided in this section provides a synopsis of some aspects of the suitability criteria that are common to most or all eligible rivers (see Section 4.2 of this report for a complete list of suitability criteria). River-specific data that are available and relevant are summarized under the suitability details of each river in Section 5 of this review.

4.6.1 Common Factors for Criterion 2

Criterion 2 – Status of land ownership, minerals (surface and subsurface), use in the area, including the amount of private land involved, and associated or incompatible uses.

4.6.1.1 Ownership of Submerged Lands and River Beds

Arctic Refuge was originally established as the Arctic National Wildlife Range (Range) by Public Land Order (PLO) 2214 in 1960. All lands within the boundaries of the original Range were withdrawn in 1957 pending a final Secretarial decision on the proposed reservation. Submerged lands within the boundaries of the original Arctic Range, including river beds, were retained in Federal ownership on the date Alaska was granted statehood. The Canning, Hulahula, Okpilak, Jago, and Kongakut Rivers are all within the boundaries of PLO 2214.

With the passage of ANILCA in 1980, the Range was incorporated into the Arctic National Wildlife Refuge, which is 19.64 million acres¹ in size (see Maps 1-1 and 1-4 in Chapter 1 of the Revised Plan). In those portions of the Refuge that were not part of the original Range, the submerged lands beneath navigable waters are owned by the State of Alaska.

The Atigun, Marsh Fork Canning, and Porcupine Rivers are located outside the boundary of PLO 2214. The portion of the East Fork Chandalar River that is in designated Wilderness is within the boundary of PLO 2214, while the non-designated portion is outside the PLO 2214 boundary. In 2005, the Department of the Interior disclaimed all Federal interest in the submerged lands beneath the Porcupine River. The navigable status of the other three rivers has not been determined.

4.6.1.2 Minerals

Pursuant to Section 304(c) of ANILCA, all public lands within the Refuge were withdrawn, subject to valid existing rights, from location, entry, and patent under the mining laws. There are no valid mining claims on Arctic Refuge. Section 1003 of ANILCA prohibits oil and gas leasing, development, and production anywhere on Arctic Refuge (including the 1002 Area) unless authorized by Congress. On national wildlife refuges, Section 16 of the Federal Coal Leasing Amendment Act of 1975 (Public Law 94-377) prohibits coal mining, and Section 1014(c) of the Geothermal Steam Act of 1970 prohibits geothermal leasing.

¹ Acreages in this Plan are derived from many sources and may not agree with previously published values, including the draft Revised Plan. For more information, please refer to “A Note about Acreages” in the front pages of this volume.

4.6.1.3 Classification

All eligible rivers have a tentative wild river classification because they don't have road or trail access in the study corridor.

4.6.2 Common Factors for Criterion 3

Criterion 3 – Reasonably foreseeable potential uses of the land and related waters which would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and the values which could be foreclosed or diminished if the area is not protected as part of the NWSRS.

4.6.2.1 Federally Assisted Water Resources Projects

There are no known proposed water resources projects on any of the 10 eligible rivers that might be foregone as a result of designation.

4.6.3 Common Factors for Criterion 4

Criterion 4 – Federal, public, State, tribal, local, or other interests in designation or non-designation of the river, including the extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals.

4.6.3.1 Administration (Management and Cost)

In all cases, the Service would administer the designated river area should it be added to the NWSRS. Where private, State, or tribal landowners are identified, the Service would work and coordinate with those landowners to ensure continued protection of river resources, either through interim Minimal Management or Wilderness Management (as applicable) pending designation or through a CRMP after designation.

4.6.3.2 State of Alaska

The State of Alaska is opposed to any recommendations for additional wild and scenic river designations in Arctic Refuge.

4.6.4 Common Factors for Criterion 6

Criterion 6 – Ability of the agency to manage and/or protect the river area or segment as a wild and scenic river, or other mechanisms (existing and potential) to protect identified values other than wild and scenic river designation.

4.6.4.1 Water Rights, Water Quality, and Instream Flow Regimes

The Service holds unquantified Federal reserved water rights sufficient to achieve the purposes for which the Refuge was established. For the lands in the original Arctic National Wildlife Range, there are implied Federal reserved water rights with a priority date of

December 6, 1960. ANILCA established the Refuge and made the reservation of water explicit in the fourth purpose:

“to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge.”

These explicit Federal reserved water rights have a priority date of December 2, 1980. While the Refuge retains Federal reserved water rights, Service policy is to “comply with State laws, regulations, and procedures in obtaining and protecting water rights...except where application of State statutes and regulations does not permit Federal purposes to be achieved.” Currently, the Service does not hold perfected State water rights for any of the rivers being studied for wild and scenic river designation.

Numerous laws and court cases provide the authorities under which the Service acquires, manages, and protects its waters and water rights, among them the National Wildlife Refuge System Improvement Act of 1997, the Fish and Wildlife Act of 1956, the Fish and Wildlife Coordination Act of 1934, the McCarran Amendment of 1952, and the Clean Water Act of 2002.

4.6.4.2 Recreation

The 1988 Plan (Service 1988) states that “the Service will manage for recreational use to avoid overcrowding conditions and minimize adverse impacts to historical and/or cultural, fish and wildlife, wilderness, and other special values.” Management of the following issues is subject to Section 1110(a) of ANILCA: regulating access, limiting the size and number of recreational group visits, limiting commercial guiding activity, and educating users. The Revised Plan will provide a comprehensive framework for working with local villages, State agencies, and other Federal government agencies to protect against proposed activities that would be incompatible with protecting outstandingly remarkable values (ORVs).

In response to complaints made by private parties and recreational guides regarding the effect of encountering large groups, the Refuge decided to implement group size limits of 7 hikers or 10 floaters for commercial groups Refuge-wide. These same group size limits are recommended for private parties as well.

4.6.4.3 Recreation in Designated Wilderness

The Wilderness Act, Refuge establishing purposes, and ANILCA require the Service to manage designated Wilderness areas to maintain Wilderness resources and values; preserve the Wilderness character of the biological and physical features; and provide opportunities for research, subsistence, and wildlife-oriented recreation. Access by foot, aircraft, motorboat, and snowmachine are permitted for traditional subsistence use and traditional commercial recreational activities (e.g., commercial guide services) will continue. The Revised Plan provides a comprehensive framework for working with local villages, State agencies, and other Federal government agencies to protect against proposed activities in designated Wilderness that would be incompatible with protecting an outstandingly remarkable value (ORV).

4.6.4.4 Existing Protections

See Appendix G of the wild and scenic river review for existing applicable laws, regulations, acts, and other protections that apply to rivers in Arctic Refuge. This appendix also has information about how Wilderness and Minimal Management categories differ.

4.6.5 Common Factors for Criterion 9

Criterion 9 – Support or opposition of local and State governments and stakeholders for designation.

4.6.5.1 Support by State Government

The State of Alaska is opposed to any new wild and scenic river designations in Arctic Refuge.

4.6.5.2 Stakeholder Comments

During the 2010 stakeholder comment period, the Service received 55 comments regarding suitability criteria. Comments pertaining to a specific river are documented under that river (see Section 5 of this report). The following comments apply to all eligible rivers:

Comments supporting designation:

- All rivers in the Refuge are free-flowing, have pure, high quality water, contain one or more outstanding remarkable value (ORV), and provide diverse habitat in the arctic and subarctic.
- The list of eligible rivers was too short. All 160 rivers in the Refuge, rather than a subset, should have been evaluated for eligibility. The method in which rivers were excluded from eligibility was highly flawed, as it lacked necessary and pertinent information and showed a bias toward those rivers with a history of commercial use.
- The inventory, study, and recommendation of rivers for wild and scenic river designation would provide further protection of the rivers, their watersheds, and the integrity of their basins including the adjacent coastal ecosystem.
- The rivers should be considered in their entirety and not fragmented into management units, as they are essential and intact ecological parts the arctic and subarctic.
- The rivers' close proximity to mountain ranges, boreal forest, and the Beaufort Sea provides for dramatic scenery.
- Other relevant studies and contemporary writings about Refuge river values should be included in the wild and scenic river review.
- The draft Plan should include a number of alternatives that would recommend designating high priority eligible rivers.
- Each of the eligible rivers contains more ORVs than those identified.
- Comparing Refuge rivers to each other discounts their overall Refuge value.

Comments opposing designation:

- The State of Alaska and the Citizens' Advisory Commission question the Refuge's authority to conduct a wild and scenic river review. They assert that the Refuge does

not have authority under ANILCA to consider designating any more rivers. They also state that the rivers are already adequately protected, especially those that flow through designated Wilderness.

- The State of Alaska commented that designation could interfere with the State's ability to allocate water resources for on-shore development, which is a matter of national concern.
- The Refuge's rivers are protected; change is not necessary, and rivers should be protected through the Refuge's comprehensive management plan.
- There is a lack of stewardship for currently designated Arctic Refuge wild rivers, and unless those stewardship deficiencies are repaired, there is little to be gained by further designation of wild rivers.

Other concerns:

- What are the possible implications (positives and negatives) of wild and scenic river designation? Do the benefits outweigh the drawbacks?
- Would designation affect commercial industries, subsistence, hunting, fishing, and/or other visitor uses?
- Wild river designation is important, but is it the best thing for the Refuge, considering reduced budgets, and—more so—would designation detract from other more pressing Refuge priorities?
- Will designation attract more visitors?
- The Northern Alaska Environmental Center, Natural Resources Defense Council, Wilderness Society, Defenders of Wildlife, Friends of Alaska National Wildlife Refuges, Sierra Club, and Trustees for Alaska are concerned that conservation, environmental, and outdoor recreational non-profit organizations were not defined as stakeholders for the wild and scenic river review.
- Stakeholder comments reflect concerns regarding large rafting groups; hunters with poor etiquette; motorized hunting access that could negatively affect wildlife populations in non-protected areas; the lack of protection for river resources; and the potential for development, including oil and gas activities and infrastructure.
- Comments suggest the following protective mechanisms: maintain current restrictions on commercial operators; include private parties in group size limits; develop and implement an allocation system to regulate departure dates; require floaters to register with the Refuge before embarking on a trip; require minimum impact techniques, such as those promoted by the Leave No Trace Center for Outdoor Ethics; and prohibit oil and gas activities and infrastructure.

4.6.6 Common Factors for Criterion 10

Criterion 10 – Consistency of designation with other agency plans, programs, or policies.

4.6.6.1 Consistency of designation

The Refuge is required to consult with other divisions of the Service on actions they carry out, fund, or authorize that might affect species listed as threatened or endangered under Section 7 of the Endangered Species Act. Activities in areas designated as critical habitat under the

Endangered Species Act are also reviewed to ensure they are not likely to result in the adverse modification of critical habitat. For activities that may affect polar bears, other listed species, or designated critical habitat, the Refuge complies with both the Marine Mammal Protection Act and the requirement for consultation under Section 7 of the Endangered Species Act. Map 4-2 shows polar bear critical habitat areas in relationship to studied rivers.

Refuge staff has worked in concert with the Marine Mammals Management office polar bear biologists, the Fairbanks Fish and Wildlife Field Office endangered species biologists, the North Slope Borough Wildlife Department, and a wide array of Kaktovik community partners to optimize human safety and reduce disturbance to polar bears. Polar bear interaction guidelines for incidental encounters, as well as polar bear viewing guidelines for recreational polar bear viewing, have been developed to minimize the occurrence of human-polar bear conflicts.

Wild river designation would not adversely affect current management efforts, plans, or policies regarding polar bears. Designation could increase the protections for polar bear critical habitat by foreclosing on oil and gas development and their associated infrastructure support mechanisms in the designated corridor.

4.6.7 Common Factors for Criterion 12

Criterion 12 – Other issues and concerns, if any.

4.6.7.1 Subsistence

Although subsistence users have concerns about how their traditional uses would be affected by wild and scenic river designation, ANILCA protects these uses. Designation would have no impact to federally qualified subsistence users. Increased education about the benefits of wild and scenic river designation and the protection of subsistence uses could diminish these concerns.

148° W

146° W

144° W

142° W

Map 4-2



Arctic National Wildlife Refuge

Polar Bear Critical Habitat and Eligible Rivers

Eligible Rivers

*



Arctic Refuge Boundary

Polar Bear Critical Habitat

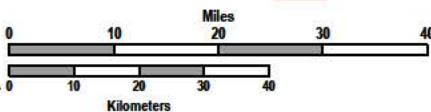


Wilderness Boundary

U.S.- Canada Border



Village Native Corporation Lands



Alaska Albers Equal Area Conic Projection, 1983 North American Datum.

*Designated under the Endangered Species Act, U.S. Fish & Wildlife Service, Marine Mammals Management Office, Anchorage, AK.



Kaktovik

Camden Bay

Beaufort Sea

Neruoqpuk
Lakes

Canning River

Hulahula River

Okpilak River

Jago River

Kongakut River

Canada

70° N

N 70°

68° N

N 68°

146° W

144° W

142° W



4.6.7.2 ANILCA

- ANILCA (PL 96-487) Section 1002 provided for a comprehensive and continuing inventory and assessment of the fish and wildlife resources of the coastal plain of the Refuge; an analysis of the impacts of oil and gas exploration, development, and production; and authorized exploratory activity within the coastal plain in a manner that avoided significant adverse effects on the fish and wildlife and other resources. Congressional authorization to conduct an exploration program in the 1002 Area expired on June 1, 1987, when the Department of the Interior provided Congress with a report on future management of the 1002 Area of the Refuge. The report and decision has remained with Congress ever since. Section 1002 applies to the segments of the Okpilak, Canning, Jago, and Hulahula Rivers that flow through the 1002 Area. When Congress makes a management decision regarding the 1002 Area, that action will be incorporated into the Revised Plan and implemented.
- ANILCA (Public Law 96-487) Section 1003 prohibits production of oil and gas, and other developments leading to the production of oil and gas, in Arctic Refuge unless authorized by Congress. Section 1003 applies to Refuge portions of the Atigun, Kongakut, Porcupine, Marsh Fork Canning, and East Fork Chandalar rivers, and the Neruokpuk Lakes complex. Section 1003 also applies to the segments of the Okpilak, Canning, Jago, and Hulahula rivers that are upstream of the 1002 Area.
- ANILCA set forth the purposes of the Refuge; defined objectives and provisions for planning and management; and authorized studies and programs related to wildlife and wildland resources, commodity resources, and recreational and economic uses.

5. River Specific Suitability Analysis

5.1 Atigun River

Reach: The Atigun River, which is a tributary of the Sagavanirktok River, flows into the Refuge from bordering lands managed by the State and BLM and can be accessed by the Dalton Highway. The Refuge's portion is often referred to as Atigun River Gorge (or Atigun Gorge).

Total River Length:	43 miles	Primary Classification:	Wild
Length on Refuge:	11.4 miles	ORVs:	Geologic, Recreational
Length in Wilderness:	0 miles		

5.1.1 Description/Overview

The portion of the Atigun River being considered for designation (downstream of the Refuge boundary) begins approximately 28 miles from its headwaters and is within three-quarters of a mile of the James Dalton Highway and the Trans-Alaska Pipeline System (Map 5-1). Road access, rather than aircraft access, makes the Atigun unique from other rivers in the Refuge. The river flows north-northeast through a one-mile-wide valley until it joins with the Sagavanirktok River. Combined with the Sagavanirktok, this waterway is the longest river access between the Brooks Range and the Beaufort Sea.

5.1.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

Geologic Value: The headwaters of the Atigun are located in the glaciers of the Endicott Mountains and drop into Atigun Gorge, a chasm that is an eight-mile slice through the mountains, exposing about one hundred million years of the Earth's history. The many layers of limestone, chert, sandstone, shale, and conglomerate were deposited while this area was under the sea during the late Paleozoic and early Mesozoic. Abundant sea life fossils can be found throughout the layers. The gorge also displays the tremendous force exerted on these rocks as they were lifted up from the sea. The layers of rock bed were folded and faulted into many structures. Pleistocene glaciers and finally the draining of a glacial lake all helped form this 1,500- to 2,000-foot-deep gorge (Detterman et al. 1975). Annually, geology students from the University of Alaska Fairbanks visit Atigun Gorge to study its exemplary features.

Recreational Value: In addition to its geologic values, compared to other Brooks Range rivers, the Atigun is a heavily used recreational river and has recreational values that affect the suitability of this segment. Atigun Gorge boasts some of the most challenging road-accessible whitewater in the northern portion of Alaska. Whether seeking whitewater boating adventures; riparian habitat for excellent roadside birding; a relatively rapid route to hunting grounds away from the road; access to more distant valleys during long expeditions; spring skiing, mushing, and ice climbing opportunities in an arctic setting; or

the visual drama of a scenic backdrop for a holistic wilderness backpacking or hiking experience—Atigun Gorge is clearly increasingly valued by an ever broadening range of visitors as a recreational treasure.

Other Values: There are characteristics of the Atigun River unrelated to geology and recreation that affect the suitability of this segment. The Atigun River's cultural, archaeological, and scientific resources are uniquely placed for easily accessible education and interpretation opportunities. Atigun Gorge has also been recognized as a location for educational studies, exploration of geologic features, and archaeological surveys. Atigun Gorge is in the Wiseman subsistence use area and is important for subsistence sheep hunting. The Atigun River supports rearing and feeding habitat for lake trout and burbot, as well as spawning and overwintering habitat for Dolly Varden, arctic grayling, round whitefish, ninespine stickleback, and slimy sculpin.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The Atigun River is located outside the boundary of PLO 2214 (the original Arctic Range). The ownership of the submerged lands beneath this river depends on its navigability for purposes of title. If determined navigable, the State would own the submerged lands beneath the navigable portion of the river to the ordinary high water mark. If determined non-navigable, the submerged lands belong to the owners of the adjacent uplands. The navigability status of the Atigun River is undetermined at this time.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Recreational use and oil and gas exploration and development have the highest potential to be enhanced, foreclosed, or curtailed if the Atigun River were included in the NWSRS.

The 1988 Plan identified the Atigun Gorge as an area that was experiencing minor adverse impacts on recreation due to increased visitor use. In 1995, the Dalton Highway was opened to the public; since that time, the Atigun River corridor has experienced steady increases in visitation (BLM 2005). The highway serves as an access corridor to the Refuge, which is located less than three-quarters of a mile away and easily accessible from the highway. Approximately seven percent of all Dalton Highway survey respondents named either the area between Atigun Pass and Toolik Field Station, or the Galbraith Lake area specifically, as primary destinations (BLM 2007). The Refuge's Visitor Study (Christensen and Christensen 2009) found that the Atigun River was one of the Refuge's top five most common entry (seven percent) and exit (eight percent) points.

Wild river designation would require the Refuge to address user capacity as part of a CRMP. Management prescriptions intended to protect social and physical experience dimensions could have a positive and negative impact on recreational use in the Atigun River Gorge. The quality of recreational experiences could be enhanced by limiting or restructuring use. Simultaneously, management structure and perceived controls could detract from the overall experience.

The second potential use is oil and gas exploration, associated infrastructure development, and monitoring and maintenance of the Trans-Alaska Pipeline System. Currently, Alyeska flies over the Atigun River valley from the westerly Refuge boundary to the river's confluence with the Sagavanirktok River as an alternate weather route for aviation

surveillance trips. Also, Alyeska maintains a contingency spill containment site, as approved in the Trans-Alaska Pipeline System Oil Discharge Prevention and Contingency Plan, on BLM land just north of the Refuge boundary, approximately one mile from its confluence with the Sagavanirktok. Alyeska operations include conducting spill response training and exercises in the vicinity of the spill containment site on a one- to three-year cycle. However, these uses occur outside the study corridor, and the Service does not have jurisdiction over airspace.

A proposal exists to build a new natural gas pipeline in the BLM Utility and Trans-Alaska Pipeline System corridors. Noise, dust, and other disturbances associated with construction activities in close proximity to Atigun Gorge could impact recreational use inside the gorge. Although recreational experiences are not encompassed in the geologic ORV, use and enjoyment of the area's geology would be directly impacted.

Alaska Statute 19.40.210 prohibits the use of off-road vehicles on land within five miles of the right-of-way of the Dalton Highway north of the Yukon River. Legislation that would remove current restrictions on the use of snowmachines in the Dalton Highway Corridor Management Area was recently introduced in the Alaska Legislature. Also introduced was similar legislation that would remove the restriction on the use of all-terrain vehicles in the Dalton Highway Corridor Management Area. If the State restriction is removed, motorized activity would increase on lands adjacent to the Refuge. Illegal use of off-road vehicles on Refuge lands would likely occur, too, which could result in increased hunter harvest of Refuge wildlife and disturbance to sensitive wildlife populations; increased impacts to vegetation and soils; increased impacts to local subsistence opportunities; and increased fossil collection.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

All the land in the Atigun River corridor is owned by the Service; therefore, the Service would be responsible for administering the Atigun River corridor.

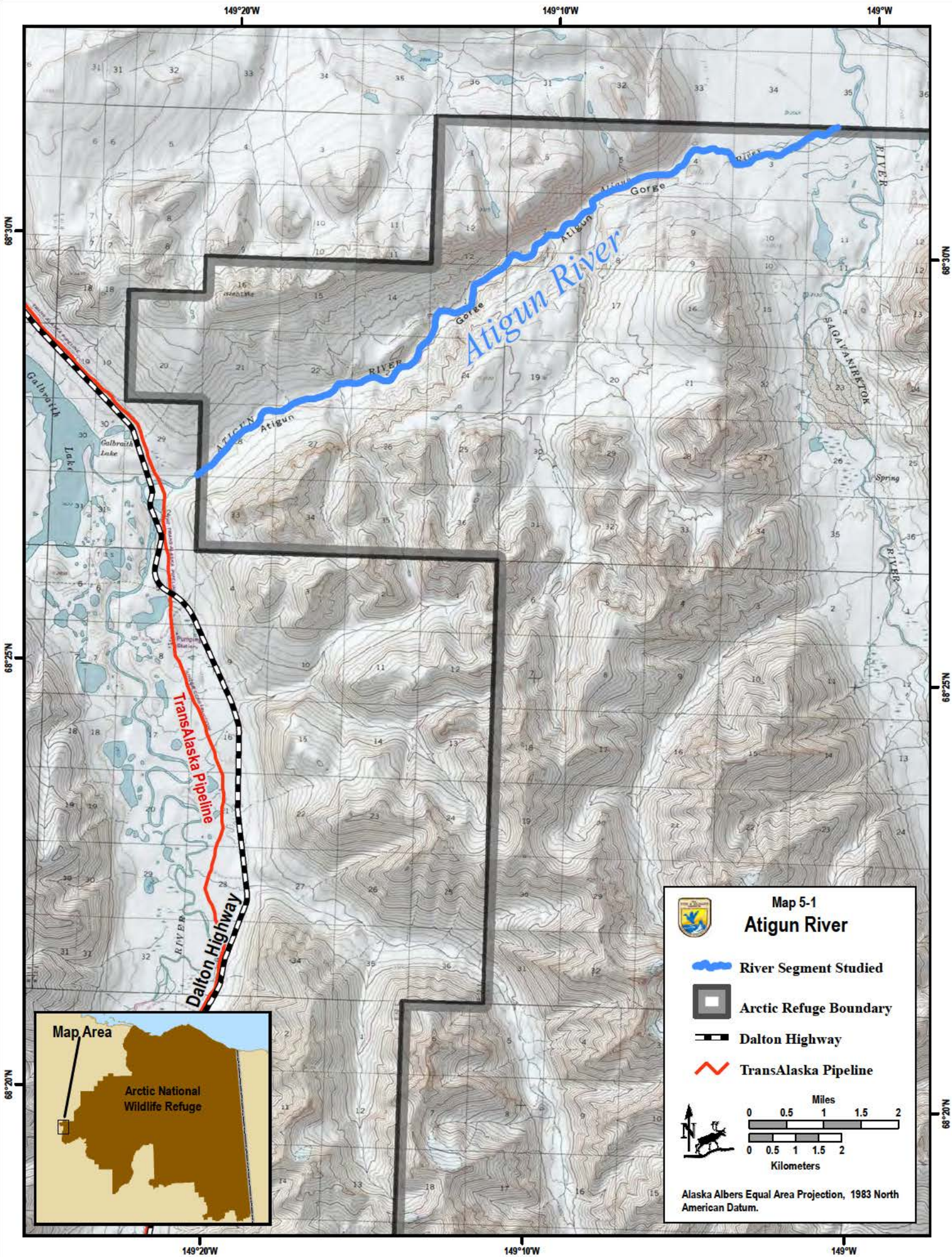
5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

Ownership of the Atigun River's submerged lands is undetermined at this time. The State has not filed a quiet title action or an application for a recordable disclaimer of interest. Additionally, since the headwaters of the Atigun are located outside the Refuge, it is possible that other entities could file water rights applications for water diversions, which could affect water quantity.

The cost of CRMP development, related data needs, and any management actions resulting from the CRMP planning effort may be offset by increased funding and staffing associated with designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The Arctic Refuge segment of the Atigun River (11.4 miles) flows through lands administered under Minimal Management provisions.



7. Historical or existing rights that could be adversely affected with designation.

There are no historical or existing rights in the river corridor.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

There are no local zoning or other land use controls in the proposed corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 public scoping period on the Revised Plan, the Service received one comment supporting designation for Atigun River and four comments suggesting the need for increased protection of the resource.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 12 comments for the Atigun River from commercial guides, recreational visitors, conservation organizations, the wild and scenic rivers coordinator for BLM in Fairbanks, and other unidentified commenters. Six comments supported designation of the Atigun River, and six comments did not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, hunting, and fishing. In their comments, stakeholders identify the following values with the corresponding frequencies: wildlife (11), recreational (8), scenic (10), geologic (8), cultural (3), fish (3), and historic (1). Additionally, stakeholders identified intact wilderness qualities, intact ecological systems, and subsistence as other Atigun River values. Specifically, comments noted that the Atigun River valley provides habitat for Dall's sheep and easy road access to whitewater, making it an important recreational river. Comments also noted that the river valley is a cultural site containing multiple prehistoric hearths. Stakeholder concerns for the Atigun River include oil spills and excessive sport hunting.

10. Consistency of designation with other agency plans, programs, or policies.

Wild river designation of the Atigun would provide a complimentary set of protections to other Refuge and Service policies and programs.

11. Contribution to a river system watershed or basin integrity.

The Atigun River is a tributary of the Sagavanirktok River. These two rivers combine to create the longest river access between the Brooks Range and the Beaufort Sea. The Sagavanirktok River has one of the highest diversity of freshwater and anadromous fish species on the North Slope of Alaska, especially in its lower reaches. The Atigun River provides important hydrologic contributions to the Sagavanirktok, which in turn affects the fish habitat in this watershed. Designation could help protect this watershed.

12. Other issues and concerns, if any.

There are no additional issues or concerns pertaining to the Atigun River.

5.1.3 Preliminary Suitability Determination

The Atigun River is preliminarily determined to be suitable with a wild river classification. The Wild and Scenic Rivers Act provides useful tools for managing and protecting the values in this river corridor. The Atigun River is the Refuge's only front country river due to its

proximity to and accessibility via the Dalton Highway. Because of this, the Atigun has unique management needs, and these needs can be addressed in a legally binding manner through the Act. The river valley is approximately one mile wide, allowing the provisions of the CRMP to apply to the entire valley, thereby avoiding potential displacement issues in the corridor. The Act provides useful, meaningful, and additional management tools to protect the geologic and recreational ORVs, the wildlife, and the scenic values of the Atigun River. The intent of the Act was to protect rivers whose waters are fragmented between different management agencies and/or private landowners and whose values are threatened by potential development. The Atigun River falls under this category, and the Service has the ability to protect the river corridor.



5.2 Canning River

Reach: The Canning River is the longest north-flowing river in the Refuge. It forms the western boundary of the Refuge and flows through mountains, foothills, coastal plain, and empties into the Beaufort Sea.

Total River Length:	125.5 miles	Primary Classification:	Wild
Length on Refuge:	125.5 miles	ORVs:	Cultural, Wildlife, Fish, Recreational
Length in Wilderness:	83.6 miles		

5.2.1 Description/Overview

The Canning River forms the western boundary of the Refuge north of the Brooks Range (Map 5-2). The entire length of Canning River and its headwaters, including the Marsh Fork (see Section 5.3), is being considered for designation. The Canning River starts in the Romanzof Mountains and flows in an arc to the south, west, and finally north through scenic, glaciated valleys near the Continental Divide. Within about 15 miles of the Beaufort Sea, the Canning becomes a three-mile-wide, heavily braided, shallow waterway. The river then creates a wide delta with multiple distributaries as it empties into the Beaufort Sea.

5.2.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

Cultural Value: The Canning River has been used by multiple cultures for thousands of years, and numerous cultural and paleontological sites are located in the proposed wild and scenic river corridor. Many archaeological sites, including tent rings and open-air camps, have been located in the river corridor. The archaeological evidence suggests use by Paleoindian, Paleoarctic, Denbigh, Northern Archaic, ancestral Iñupiat and Athabascan groups, and historic and modern Iñupiat and Gwich'in. In general, Arctic Refuge is known as a cultural crossroads where Eskimo and pre-Eskimo coastal cultures interacted and traded with Indian and pre-Indian cultures from the interior, north, and south. Additionally, multiple Eskimo and pre-Eskimo cultures from Alaska and Canada traded with one another, west and east. The cultural exchange in both directions has national, if not global, importance (D. Corbett, Regional Archaeologist, pers. comm., June 9, 2010). The archaeological record from the Canning River indicates the river was used for these cross-cultural exchanges. Tribal members identify the Canning River as having important contemporary cultural value. Modern Iñupiat intensively use the river for subsistence purposes (Exxon Mobil Corporation 2009), including winter subsistence fishing in open water areas associated with the river's many springs. A multi-cultural archaeological record, combined with contemporary cultural values and uses, gives the Canning River outstandingly remarkable cultural values that are unique from other rivers in Alaska and those in the NWSRS.

Wildlife Value: The Canning has outstandingly remarkable wildlife values. The vegetation diversity in the river corridor provides habitat for nesting migratory birds and waterfowl. Shorebirds (including plovers, sandpipers, and phalaropes) concentrate around the Canning River delta between mid-July and August in preparation for their fall migration.

High densities of nesting tundra swans and molting small geese, as well as the only known nesting sites of Sabine's gulls in the Refuge, are found on the Canning River delta (Revised Plan Chapter 4, Section 4.3.6.7).

Because polar bears are listed as a threatened species under the Endangered Species Act, special attention is paid to their habitat protection. Polar bear critical habitat is generally found within about 25 miles of the Beaufort Sea coast. The eligibility phase included evaluative criteria for polar bear critical habitat on all inventoried North Slope rivers. The Canning River was found to have over 50 miles of critical polar bear habitat and four confirmed polar bear den sites.

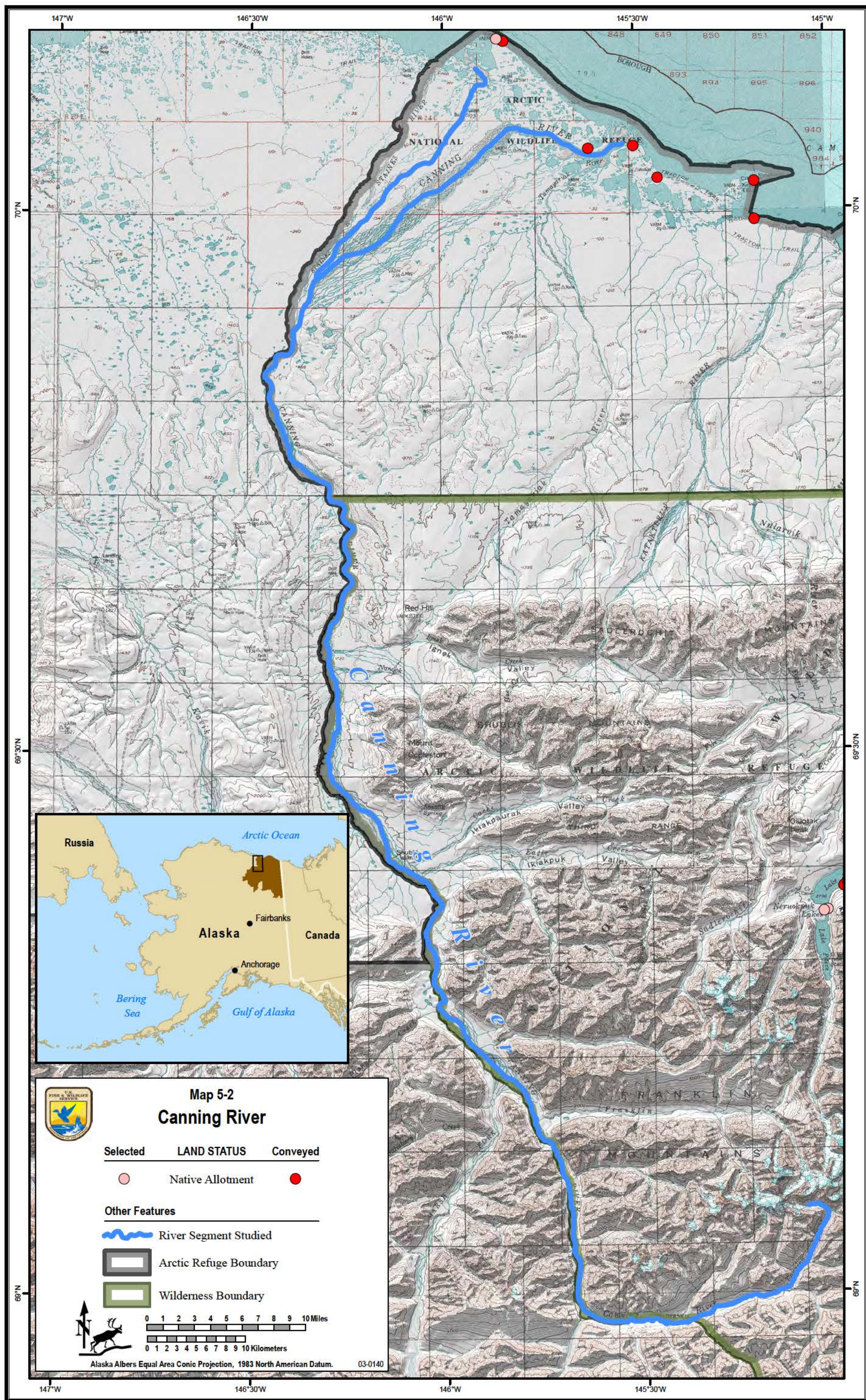
Small groups of muskoxen live along the Canning River and in adjacent areas between the Marsh Fork confluence and the Canning River delta. They are most often seen between Mount Cobblestone and Red Hill. These animals live year round on the coastal plain and foothills of the Refuge; on the Canning River, they can be seen on upland terraces or ridges.

A relatively high density of North Slope moose are found along Cache and Eagle creeks where these drainages enter the Canning River south of Shublik Springs. Moose browse on stands of dense willows found along these creeks. Large predators, including grizzly bears, wolves and wolverines, also live along the Canning River and in the adjacent mountains.

The Central Arctic caribou herd's calving activity usually is concentrated in two areas, one of which is the lower Canning River delta. Most years, as many as 1,000 cows calve on the river delta (U.S. Fish and Wildlife Service 1988). The majority of the herd moves east of the Canning to feed and seek insect relief from June through August, and about 20–30 percent of the herd winters along the river near the southern boundary of the 1002 Area. This herd provides important opportunities for subsistence and general hunting. The exceptional combination of pristine habitat and wildlife contribute substantially to the functioning and productivity of the river ecosystem.

Fish Value: The Canning also has outstandingly remarkable fish values. The river has the highest fish diversity on the north side of the Refuge. An extensive network of springs along the Canning River supports high invertebrate densities and overwintering, spawning, and rearing populations of Arctic grayling, Arctic char, round whitefish, burbot, and a population of anadromous Dolly Varden that is genetically distinct compared to populations from other nearby drainages (Crane et al. 2005). The Alaska Department of Fish and Game identified the Canning River as important habitat for anadromous fish (Alaska Statute 16.05.871). Anadromous broad whitefish, least cisco, Arctic cisco, chum, sockeye, and pink salmon have been documented in the river and delta habitats. Round whitefish have been observed in the mainstem of the Canning and in lakes near the river's mouth (Craig 1977, Smith and Glesne 1983). Glaciers in the headwaters and extensive aufeis fields that form in the mainstem Canning and Marsh Fork tributary melt much later in the season than snow and can be an important source of late season discharge to the Canning River, thus affecting fish habitat.

The Canning River is an important migratory corridor for anadromous Dolly Varden returning to spawning and overwintering habitat in the Canning River and its tributaries. Smith and Glesne (1983) documented 39,000 Dolly Varden in the Canning and Marsh Fork, which is the highest Dolly Varden abundance reported for any drainage on the North Slope of Alaska. Most spawning redds were observed in the mainstem of the Canning



above the Marsh Fork confluence. An isolated population of resident Arctic char has been found in Shublik Springs (Craig 1977).

As the only North Slope river in the Refuge with round whitefish and burbot populations, the Canning River is particularly important to Kaktovik subsistence users (Jacobson and Wentworth 1982). A 10-mile stretch downriver from Shublik springs is used for burbot, Arctic grayling, and Dolly Varden fishing; another 10-mile braided section just above the confluence with the Staines River is noted for the presence of numerous winter fishing holes.

Recreational Value: The Canning River is the longest north-flowing river on Arctic Refuge. It is a well-used recreational river that offers visitors the opportunity to explore the mountains, the coast, and everything in between. The Canning River flows through extensive tundra fields, past Shublik Springs, and through incredibly abundant waterfowl habitat. There are reliable air drop-off and pick-up locations along the upper, middle, and lower reaches of the drainage, which offers diversity to the overall experience. Many floaters start their trip on the Marsh Fork Canning River (see Section 5.3) and continue their trip onto the mainstem, while others start in the upper mainstem Canning. As a primarily Class I river with some Class II water, the Canning offers a safe experience for less experienced boaters without sacrificing the true arctic experience. The river provides opportunities for solitude and enjoyment of natural river sounds; primitive and unconfined recreation in a natural, undisturbed environment; and opportunities for wildlife viewing, fishing, hunting, trapping, hiking, and photography.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The entire Canning River is located within the boundaries of PLO 2214 (the original Arctic Range). The western boundary of PLO 2214 follows the ordinary high water mark along the western bank of the Canning River for nearly its entire length. In the Canning River corridor, the Service owns all lands, including submerged lands, except for two Native allotments totaling 75.97 acres that border the river.

The Service has explicit but unquantified Federal reserved water rights for water quality and necessary water quantity to achieve the purposes of Arctic Refuge established by ANILCA (Public Law 96-487). The Service has not obtained any State-based water rights for the Canning River. Other entities could file water rights applications for water diversions that could affect water quantity.

State lands adjacent to the Refuge boundary have been leased for oil and gas development, providing an opportunity for incompatible uses to occur in a potential wild and scenic river corridor.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Two foreseeable uses of lands in the Canning River corridor that could cause negative impacts are visitor use and oil and gas exploration and development. Recreational uses in the Canning River corridor include hiking, backpacking, floating, hunting, fishing, dog mushing, caribou viewing, and bird watching. General hunting, especially for non-Alaska residents, has become more popular since the opening of the Dalton Highway to the public. The Canning and its Marsh Fork define the boundary between Game Management Units 26B on the west side of the river and 26C on the east side of the river.

An inventory of water resources completed in 1985 (Tweten 1985) identified the top five rivers in the 1002 Area whose watersheds were threatened by potential water and mineral resource development and non-consumptive uses. There are two forms of non-consumptive use: 1) those related to socioeconomics, such as general and subsistence hunting and fishing, river floating, recreational uses, aircraft landings, and historical and present-day travel; and 2) those related to construction or maintenance, such as gravel extraction from streambeds to build roads and other infrastructure, and some forms of dredge mining. The Canning River was rated second in this study and was identified: 1) for potential mineral or oil and gas development; 2) as a navigable transportation route; and 3) as having important resource values, including habitat for threatened species; habitat for overwintering, spawning, and smolting fish; wetlands dependent on water flow; historical and cultural values; and subsistence and general fishing values.

Potential threats to the Canning River valley from oil and gas development include the expansion of the Point Thomson Project to within two miles of the river corridor; the 2011 ADNR Notice of Sale of State leases to allow for possible oil and gas exploration and development in the Beaufort Sea, the North Slope, and the North Slope Foothills areas, including areas adjacent to Arctic Refuge and adjacent to the Canning River; and the “Proposed Consistency Determination – Beaufort Sea Area-wide Oil and Gas Lease Sales, 2009–2018” (ADNR 2009). This determination includes waters north of and adjacent to the northern boundary of the Refuge. It requires gravel mining sites for exploration and development activities. According to the lease agreement, activities will be restricted to the minimum necessary to develop the field efficiently and with minimal environmental damage. Where practicable, gravel sites would be designed and constructed to function as water reservoirs for future use. Gravel mine sites required for exploration activities would not be located in an active floodplain of a water course unless the ADNR Division of Mining, Land and Water, after consultation with ADFG, determines that there is no practicable alternative or that a floodplain site would enhance fish and wildlife habitat after mining operations are completed and the site is closed.

Wild and scenic river designation would require the Refuge to address user capacity as part of a CRMP. Management prescriptions intended to protect social and physical experience dimensions could have a positive and negative impact on recreational use in the Canning River corridor. The quality of recreational experiences could be enhanced by limiting or restructuring use. Simultaneously, management structure and perceived controls could detract from the overall experience.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

The Service would work with the two private landowners and the State to administer the Canning River corridor.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

Excluding the two Native allotments, the entire length of the Canning is in Federal ownership and is managed by the Refuge. Therefore, acquiring lands and interest in lands would not be necessary.

The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The upper 83.5 miles of the Canning River flow through lands administered under Wilderness Management provisions. The lower 42 miles of the Canning River flow through lands administered under Minimal Management provisions.

Designation of the polar bear as a threatened species under the Endangered Species Act affords additional Federal protections to any lands and waters identified as critical habitat. Approximately 29 miles of the lower Canning River is in polar bear critical habitat. Likely, these protections would benefit other wildlife and fish species in the area.

7. Historical or existing rights that could be adversely affected with designation.

There are no historical or existing rights in the river corridor.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

From the Beaufort Sea to the junction with the Marsh Fork, the Canning River is in the coastal zone of the North Slope Borough. Under Section 307(c) of the Coastal Zone Management Act of 1972, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. The Alaska Coastal Management Program was terminated on July 1, 2011, per AS 44.66.030. There are no other local zoning or other land use controls protecting the river's ORVs to prevent incompatible development in the river corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 public scoping period for the Revised Plan, the Service received 13 comments supporting designation for the Canning, 5 comments requesting increased resource protection, 3 comments relating personal travel experiences on the Canning River to the coast and the abrupt interruption of their overall experience due to the number of oil drums and oil derricks seen from the river, and 1 comment stating that further designations of the Canning River would hinder oil and gas development and therefore threaten the country's ability to produce its own oil.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 20 comments for the Canning River from commercial guides, recreational visitors, conservation organizations, a commercial air-taxi operator, the Native Village of Kaktovik tribal president, and other unidentified commenters. Eight comments support wild and scenic river designation of the Canning River, and 12 comments did not clearly mention support or opposition to designation. Stakeholder comments indicated that river uses include commercial and non-commercial recreation, hunting, fishing, rafting, and subsistence. One comment mentioned that the stakeholder's family historically used the river for herding reindeer. In their comments, stakeholders identify the following values with the corresponding frequencies: wildlife (16), recreational (17), scenic (16), geologic (17), cultural (5), fish (11), and historic (7). Additionally, stakeholders identified intact

wilderness qualities and subsistence as other values of the Canning River. Specifically, comments noted the Canning River is important for fish, birds, muskoxen, land-denning polar bears, and caribou from both the Porcupine and Central Arctic herds. Comments also noted that Federal ownership of most of the river, its beds, and banks makes it feasible to consider the Canning River for designation and that all its tributaries should be considered for review. Comments emphasize how lakes in the Canning River's delta are vital to providing adequate and clean water for bird and fish habitats. Stakeholders also commented that the Canning flows through scenic glaciated valleys; has rich historical significance from early explorers such as Leffingwell; and is one of the most floated and hiked rivers on the Refuge. Stakeholder concerns include high visitor use and part of the river's location in the 1002 Area. One comment noted that because the Canning River marks the western boundary of the Refuge's coastal plain, it is among the most threatened rivers due to active oil and gas leasing on adjacent State lands.

10. Consistency of designation with other agency plans, programs, or policies.

Wild river designation of the Canning River would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, the Endangered Species Act, and ANILCA.

11. Contribution to a river system watershed or basin integrity.

The Canning River watershed drains approximately 2,900 square miles. The Canning River, in conjunction with the Marsh Fork, has a notable and extensive spring system that, when compared to other river systems on the North Slope of Alaska, may export the largest volume of spring water (Childers et al. 1977). During winter, some of this water remains unfrozen and provides overwintering habitat for fish. Downstream from spring-fed areas, overflow water freezes and forms extensive areas of aufeis that can extend upwards into the mainstem of the Canning, the upper reaches of the Marsh Fork, and down the mainstem of the Canning River. Aufeis melts much later in the season than snow and can be an important source of late season discharge to the Canning River. The lakes in the Canning River delta contain the largest winter water volume in the Refuge.

Designating the entire length of the Canning River would aid in protecting the integrity of the Canning River watershed, which serves as an important migratory corridor for the most diverse fish community on the north side of the Refuge. Designation would protect the river and its delta while maintaining the uniqueness of the river corridor by providing visitors exposure to extraordinary wilderness characteristics, historic structures, paleontological resources, the Canning Forest, and pristine streams and springs.

12. Other issues and concerns, if any.

There are no additional issues or concerns pertaining to the Canning River.

5.2.3 Preliminary Suitability Determination

The Canning River is preliminarily determined to be not suitable. Although it has several outstandingly remarkable values, it would be extremely difficult for the Service to manage the Canning River as part of the NWSRS because of its boundary with State land that has high potential for oil and gas exploration and development. Permanent protection and enhancement of the Canning River's ORVs would require the active involvement and commitment of the State of Alaska to develop and implement resource protection strategies commensurate with

the mandate of the Wild and Scenic Rivers Act. The State of Alaska is opposed to any new wild and scenic river designations in Arctic Refuge and would not be willing to work with the Service to manage the Canning River as a wild river.

The Service considered whether the ordinary high water mark on the west side of the river could be used as a wild river boundary for the Canning River. Section 10(a) of the Act mandates administration of designated rivers to protect and enhance the values that led to designation, and establishing a wild and scenic river boundary that encompasses the identified ORVs is essential. The boundary delineates the area within which the Service would work with landowners and local communities to develop effective protections and management strategies, but it does not give the Service the authority to regulate non-Federal lands. While surface disturbing activities would be prohibited within the river bed, incompatible land uses immediately adjacent to the river and outside the river boundary could have a high potential for affecting water quality and the fish and wildlife ORVs. For these reasons, the Service would not be able to ensure protection and management of all the Canning River's ORVs if the west boundary of the designated wild river were located along the ordinary high water mark.

The Service also considered whether the river could be segmented and a portion of the river recommended as suitable. The fish, wildlife, and cultural ORVs of the Canning River primarily exist in the lower river where it borders State land and in the river's delta, which is managed by the Service. Therefore, it would not be possible to segment the river above its border with State land and determine it suitable.

We preliminarily determined that wild river designation would not be the best way to manage the values associated with the Canning River. The Refuge's natural resource management strategies are applied at a Refuge-wide or ecosystem level; thus, Refuge-wide protections that encompass the Canning River already exist. The entire Canning River flows in the original Arctic Range, and most of it flows through designated Wilderness. Therefore, the Canning is already afforded a high level of protection, and its visitor use could be managed through a Refuge-wide Visitor Use Management Plan, which is the highest priority step-down plan identified in the Revised Plan. The Service will continue to comment on proposed activities outside the Refuge and to partner and cooperate with adjacent landowners to protect water quality and river values associated with the Canning River.

5.3 Marsh Fork Canning River

Reach: The Marsh Fork is the Canning River's main tributary; it flows into the Canning River from the west as it cuts through the rugged, striking landscape of the Phillip Smith Mountains.

Total River Length:	54.3 miles	Primary Classification:	Wild
Length on Refuge:	54.3 miles	ORVs:	Recreational
Length in Wilderness:	0 miles		

5.3.1 Description/Overview

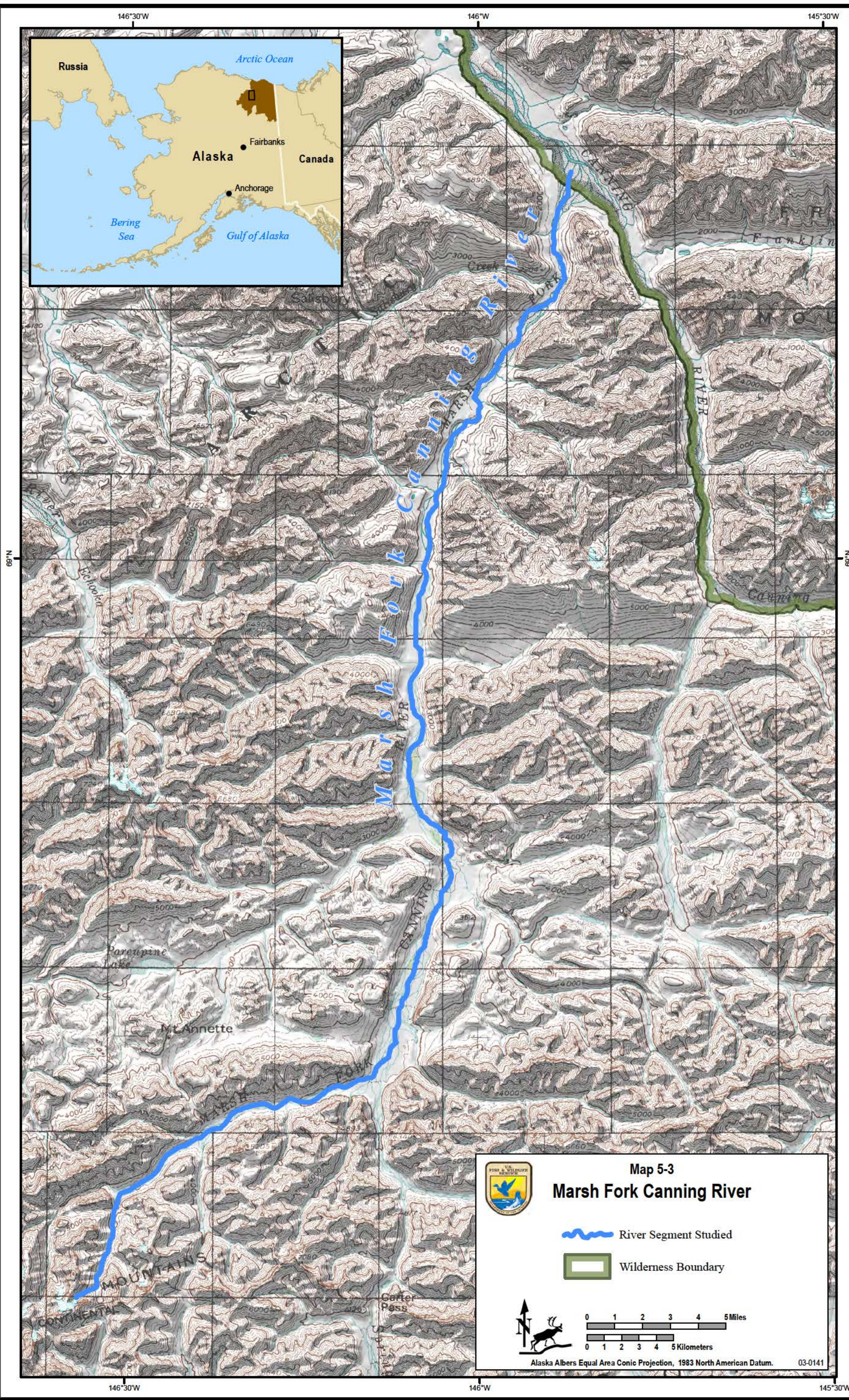
The Marsh Fork is the largest tributary of the Canning River, and it cuts a narrow valley through the Philip Smith Mountains (Map 5-3). From its origin in the Philip Smith Mountains, the river flows more than 54 miles through steep-sided valleys with mountains exceeding 6,500 feet (Alaska Division of Geological and Geophysical Surveys 1987). Where the Marsh Fork meets the main Canning River, it abruptly exits the mountains as the adjoining waters continue to flow north through the coastal plain.


5.3.2 Suitability Factors

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

Recreational Value: The Marsh Fork Canning River has outstandingly remarkable recreational values that are unique from other rivers in Alaska and those in the NWSRS. The Marsh Fork provides an opportunity to float or hike through a primitive, essentially untouched portion of the Brooks Range with some of the highest, most precipitous arctic mountains. This relatively short stretch of crystal clear river offers a phenomenal holistic recreational experience, including impressive mountain scenery, an abundance of wildflowers and other plant species, waterfalls and springs that pour down steep slopes into the river, productive fishing holes, and relatively dry uplands that provide a fairly easy substrate for hiking. Wildlife-viewing opportunities abound along the Marsh Fork. Dall's sheep concentrate at several mineral licks near the river and on adjacent mountain slopes. Wolves travel along the river between natal den sites and rendezvous sites, and brown bears frequent the area. Small numbers of moose and caribou use the river seasonally. Carter Pass, on the Continental Divide between the north-flowing Marsh Fork and the south-flowing Spring Creek, is one of the lowest passes through the Brooks Range in this region of Arctic Refuge.


Recreationists also come to fish and bird watch. There are several large grayling and Arctic char spawning areas, and a miniature subspecies of char that reaches about eight inches in maturity occurs in this river. Birders come for the opportunity to view gray-headed chickadees and Smith's longspurs, and lucky birders may even catch a glimpse of a bluethroat (Steve Kendall, U.S. Fish and Wildlife Service, pers. comm. 2010). Other birds that are commonly viewed include golden eagles, gyrfalcons, peregrine falcons, long-tailed and parasitic jaegers, yellow wagtails, Arctic warblers, Say's phoebes, and horned larks.






Map 5-3


Marsh Fork Canning River



River Segment Studied



Wilderness Boundary



012345

Miles

012345

Kilometers

Alaska Albers Equal Area Conic Projection, 1983 North American Datum.

03-0141

With normal water levels, the Marsh Fork travels at about 5–6 miles per hour, and waters are generally class I and II. While the river can be floated in 4–5 days, the average trip length is 8.6 days, which usually includes boating to lower reaches of the Canning River near Shublik Springs. The trip could be extended to 12–14 days by floating to the ocean.

Other Values: There are characteristics of the Marsh Fork Canning River unrelated to recreation that affect the suitability of this segment. The Marsh Fork has a high density of spring-fed overwintering habitats used by round whitefish, Arctic grayling, and anadromous Dolly Varden. Smith and Glesne (1983) reported that 39,000 Dolly Varden overwintered in the Canning and Marsh Fork, which is the highest Dolly Varden abundance reported for any drainage on the North Slope of Alaska. High densities of benthic invertebrates in spring-fed habitats provide an important food source for juvenile and resident fish. Dolly Varden spawning and overwintering in the Marsh Fork are part of the Canning River population, which is genetically distinct when compared to other North Slope populations (Crane et al. 2005).

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The Marsh Fork Canning River is located outside the boundary of PLO 2214 (the original Arctic Range). The ownership of the submerged lands beneath this river depends on its navigability for purposes of title. If determined navigable, the State would own the submerged lands beneath the navigable portion of the river to the ordinary high water mark; if non-navigable, the submerged lands belong to the owners of the adjacent uplands. The navigability status of the Marsh Fork Canning River is undetermined at this time.

The Service has not obtained any State-based water rights for the Marsh Fork. However, since the headwaters of the Marsh Fork are located in the Refuge, it is unlikely that other entities would file for diversionary water rights on this river.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Wild and scenic river designation would require the Refuge to address user capacity as part of a CRMP. Management prescriptions intended to protect social and physical experience dimensions could have a positive and negative impact on recreational use in the Marsh Fork Canning River corridor. The quality of recreational experiences could be enhanced by limiting or restructuring use. Simultaneously, management structure and perceived controls could detract from the overall experience.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

All the land in the Marsh Fork Canning River corridor is managed by the Service; therefore, the Service would be responsible for administering the Marsh Fork Canning River corridor.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

The ownership of the submerged lands is undetermined at this time. The State has not filed a quiet title action or an application for a recordable disclaimer of interest.

The cost of CRMP development, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The entire length of the Marsh Fork Canning River flows through lands administered under Minimal Management provisions.

7. Historical or existing rights that could be adversely affected with designation.

There are no historical or existing rights in the river corridor.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

Under Section 307(c) of the Coastal Zone Management Act, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. The Marsh Fork is in the coastal zone of the North Slope Borough, but the Alaska Coastal Management Program was terminated on July 1, 2011, per AS 44.66.030. There are no other local zoning or other land use controls protecting the river's ORVs by preventing incompatible development in the river corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designate under the Wild and Scenic Rivers Act.

During the 2010 public scoping period for the Revised Plan, the Service received six comments supporting designation of the Marsh Fork Canning River and two requesting increased resource protection.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 18 comments for the Marsh Fork Canning River from commercial guides, recreational visitors, conservation organizations, a commercial air-taxi operator, and other unidentified commenters. Eight comments supported designation of the Marsh Fork Canning, and 10 comments did not clearly mention support for or opposition to designation. Stakeholder comments indicated that river uses include commercial and non-commercial recreation, hunting, fishing, and rafting. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (15), recreational (15), scenic (17), geologic (14), cultural (4), fish (7), and historic (2). Additionally, stakeholders identified intact wilderness qualities, intact ecological systems, and hunting as other Marsh Fork Canning River values. Specifically, comments noted that the open, shale-dominated basin of the upper Marsh Fork allows for unusual scenic views, and the nutrient rich soils and resulting plant life provide forage for Dall's sheep. Comments further noted that the river provides fun and challenging whitewater through a scenic canyon of geological interest and that there are rugged peaks, erratic boulders, and fossilized marine rock along the river. Gray-headed chickadees are also known to nest in the area.

10. Consistency of designation with other agency plans, programs, or policies.

Wild and scenic river designation of the Marsh Fork would provide a complimentary set of protections to other Refuge and Service policies and programs and ANILCA.

11. Contribution to a river system watershed or basin integrity.

The Marsh Fork is the largest tributary of the Canning River. This watershed drains approximately 2,900 square miles. Designating the Marsh Fork would afford continued protection of this important river system and would help maintain the integrity and the uniqueness of Carter Pass by providing easy access for people and wildlife over the Continental Divide.

The Marsh Fork Canning River, in conjunction with the Canning River, has a notable and extensive spring system that, when compared to other river systems on the North Slope of Alaska, may export the largest volume of spring water (Childers et al. 1977). During winter, some of this water remains unfrozen and provides overwintering habitat for fish. Downstream from spring-fed areas, overflow water freezes and forms extensive areas of aufeis that can extend into the upper reaches of the Marsh Fork and down the mainstem of the Canning River. Aufeis melts much later in the season than snow and can be an important source of late season discharge to the Canning River.

12. Other issues and concerns, if any.

There are no additional issues or concerns pertaining to the Marsh Fork Canning River.

5.3.3 Preliminary Suitability Determination

The Marsh Fork Canning River is preliminarily determined to be suitable with a wild river classification. The rivers in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. To determine a river suitable, Refuge staff believed it was imperative to: 1) gain additional management tools through potential designation, and 2) avoid creating new management issues by displacing visitor use to other highly desirable and visited river corridors. Determining the Marsh Fork Canning River as suitable, along with the Kongakut and Hulahula Rivers, achieves these goals. The intent driving this determination is to avoid displacing visitor use to similarly desirable river corridors and to promote holistic, ecosystem-wide, effective management strategies.

The Marsh Fork Canning River is the third most visited river on the Refuge's North Slope, and its popularity has been increasing steadily. Visitor use data reflects that recreational use of the Kongakut River is being displaced to the Marsh Fork. The Wild and Scenic Rivers Act provides useful management tools to protect the recreational outstandingly remarkable value and the scenic, geologic, fish, and wildlife values of the Marsh Fork. Most of the Marsh Fork flows through a narrow river valley, allowing the provisions of the CRMP to apply to most of the valley, thereby avoiding potential displacement issues in the corridor. The entire length of the Marsh Fork Canning River flows outside of the original Arctic Range and outside designated Wilderness. Wild river designation would increase the protection and Service's manageability of the Marsh Fork Canning River.

5.4 East Fork Chandalar River

Reach: The East Fork Chandalar River is a major tributary of the Chandalar River and serves as a highway to subsistence hunting, fishing, and trapping areas. From approximately Arctic Village south, the eastern half of the river, including the eastern streambed, is not in the Refuge boundary.

Total River Length:	223.3 miles	Primary Classification:	Wild
Length on Refuge:	203.7 miles	ORVs:	Cultural
Length in Wilderness:	32.9 miles		

5.4.1 Description/Overview

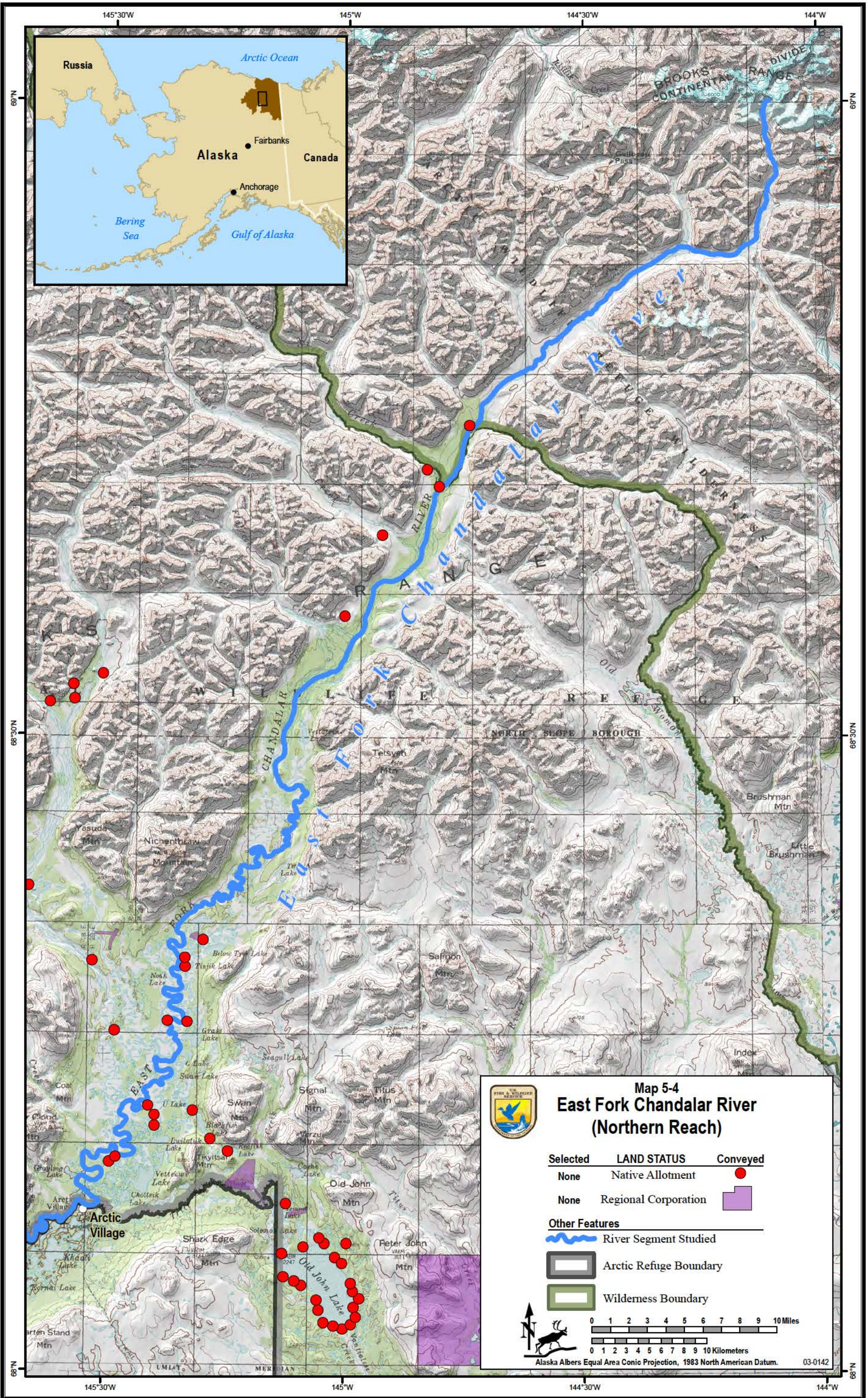
The Chandalar River is a major tributary of the Yukon River. The East Fork Chandalar River flows swiftly south nearly 60 miles from its high mountainous headwaters through a wide, mountain-rimmed valley, and then it meanders slowly through a forested, lake-dotted valley as it passes Arctic Village (Maps 5-4 and 5-5). The East Fork serves as a highway to access subsistence hunting, fishing, and trapping areas around Arctic Village. Many villages have economies that revolve around subsistence uses and opportunities.

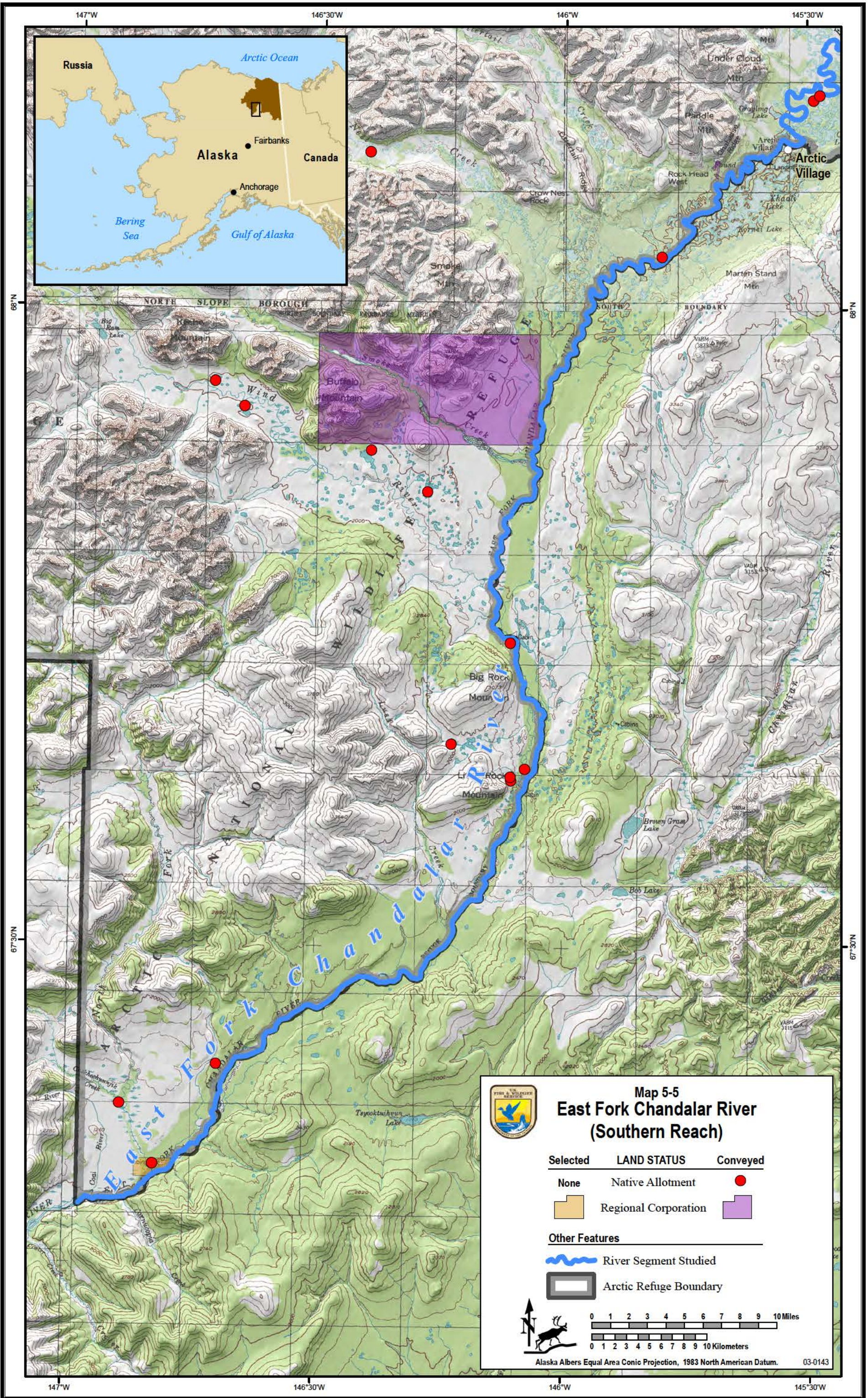
5.4.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

Cultural Value: The East Fork Chandalar River has outstandingly remarkable cultural values that are unique from other rivers in Alaska and those in the NWSRS. The East Fork provides an opportunity to experience a community whose economic basis is subsistence use of diverse wildlife and plant populations on the south side of the Brooks Range. The East Fork travels from the mountain-rimmed headwaters in the Romanzof Mountains past Arctic Village, along the Refuge boundary, and further on to its confluence with the mainstem Chandalar River. This drainage then continues past the village of Venetie for 100 miles before it enters the Yukon River. The Chandalar drainage's large expanse and relatively predictable water flow allow it to serve as a highway to subsistence hunting, fishing, and trapping areas, primarily for the villages of Arctic Village and Venetie, but also for other villages along the Yukon River. The only year-round access to Venetie and Arctic Village is via airplane.

Until the 1950s, the Neets'aii Gwich'in ("those who dwell to the north") lived a highly nomadic life. They traditionally used seasonal camps and semi-permanent settlements, such as Arctic Village, Christian, Venetie, and Sheenjek, in pursuit of fish and game. They traded with Iñupiat Eskimos on the Arctic coast. There is archaeological evidence the Arctic Village area was populated as early as 4,500 BC (Alaska Department of Commerce 2010). Remnants of caribou fences and corral structures used by the Gwich'in people can be found throughout much of the current southern range of the Porcupine caribou herd (Warbelow et al. 1975). In the proposed East Fork Chandalar wild river corridor, there are multiple caribou fences, cemeteries, and other examples of subsistence use.





In 1863, Archdeacon McDonald of Fort Yukon observed that the Chandalar Gwich'in were important providers of caribou meat for the residents of Fort Yukon. Currently, residents of various Native villages trade their area's subsistence resources for those found in other areas. For example, residents of Fort Yukon may give salmon to residents of Arctic Village in exchange for caribou. Before trading occurred, Reverend Albert Tritt, a Neets'ait Gwich'in born in 1880, wrote that his people led a nomadic life, traveling to the Arctic coast, Rampart, Old Crow, the Coleen River, and Fort Yukon in the 1880s and 1890s. With the introduction of firearms in the early 1900s, family groups began to gather more permanently at several locations; there was no longer a need to disperse into small groups to hunt caribou. The first permanent resident at the present village site was Chief Christian in 1909. In 1943, the Venetie Indian Reservation was established due to the efforts of several area villagers to protect their land for subsistence use. When the Alaska Native Claims Settlement Act (ANCSA) was passed in 1971, Venetie and Arctic Village opted for title to the 1.8 million acres of land in the former reservation (Alaska Department of Commerce 2010).

Residents continue to use the community as a base of operations from which they pursue seasonal subsistence activities (Alaska Department of Commerce 2010). Certain communities, especially Arctic Village and Fort Yukon, serve as regional providers of localized resources. Caribou, moose, sheep, porcupine, rabbit, and ptarmigan are hunted. Freshwater fish, waterfowl, furbearers, firewood, and berries are also harvested. The school, clinic, village council, and stores are the primary employers. Seasonal employment includes construction, firefighting, and guiding. Some residents trap furbearers or sell firewood for income.

Other Values: There are characteristics of the East Fork Chandalar River unrelated to the river's cultural value that affect the suitability of this segment. The river has a relatively high diversity of fish species and an extensive network of floodplain lakes that provide overwintering habitat to important subsistence fish. The lower portion of the river provides spawning habitat for chum and Chinook salmon. From 2001 to 2003, 40 percent of the fish harvested by the residents of Arctic Village were from this river.

The East Fork Chandalar River corridor is also frequented by caribou from the Porcupine caribou herd and, to a lesser degree, the Central Arctic caribou herd. They use the main river corridor and surrounding watersheds for both wintering and migratory events. While other river corridors in the area are also important, the Porcupine caribou herd has considerably used portions of the East Fork Chandalar corridor during the last few winters. This could be due to habitat quality within the corridor and its size or proximity to the boreal transition zone to the south, which provides additional wintering habitat for caribou (Eric Wald, Wildlife Biologist at Arctic Refuge, pers. comm., June 13, 2012).

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

Approximately 32 miles of the East Fork Chandalar River are located within the boundary of PLO 2214 (the original Arctic Range), while the remaining 171 river miles are located in Refuge lands established by ANILCA. From approximately Arctic Village south, the boundary of the Arctic Refuge follows the thread of the East Fork of the Chandalar. For purposes of title, ownership of the submerged lands (the river bed) beneath the waters of this section of the East Fork depends on a determination of navigability. The navigability status of the East Fork Chandalar River has not been determined. If determined navigable, the State would own the submerged lands beneath the navigable portion of the river to the ordinary high water mark on either side of the river with Arctic Refuge ownership of

uplands on the west bank and the Native Village of Venetie tribal government ownership of uplands on the east bank. If determined non-navigable, the Federal government holds title to the underlying submerged lands adjacent to Arctic Refuge from the thread of the East Fork Chandalar River west, and the Native Village of Venetie tribal government holds title to the underlying submerged lands from the thread of river east.

The Service has not obtained any State-based water rights for the East Fork Chandalar River. Since the headwaters of the East Fork Chandalar are located in the Refuge, it is unlikely that other entities would file for diversionary water rights on upper reaches of this river. On the lower 171 miles, other entities could file water rights applications for water diversions that could affect water quantity.

The Native Village of Venetie tribal government also holds title to the subsurface estate within the former reservation including to the middle of the channel in the East Fork Chandalar River where the former reservation shares the border with the Refuge.

Fifteen Native allotments (totaling 1,172 acres) are within the river study corridor. These are private lands over which the Service has no management authority or property right.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

There are no reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

The Service would work with private landowners, the Native Village of Venetie tribal government, the Arctic Village and Venetie village councils, and the communities of Venetie and Arctic Village to administer the East Fork Chandalar River corridor.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

There are no village corporation lands (conveyed or selected) in the East Fork Chandalar corridor. The Service has acquired allotments along the East Fork and plans to continue to acquire allotments from willing sellers in cooperation with The Conservation Fund.

There are six conveyed and one selected ANCSA 14(h)(1) sites in or near the corridor, and these sites have restrictions contained in the patent that prohibit their development or sale. Therefore, these sites will not be acquired by the Service.

The cost of CRMP development, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with the designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The upper 32.9 miles of the East Fork Chandalar River flow through lands administered under Wilderness Management provisions. The lower 170.8 miles of the Refuge segment

of the East Fork Chandalar flow through lands administered under Minimal Management provisions.

7. Historical or existing rights that could be adversely affected with designation.

There are no historical or existing rights that could be adversely affected with designation. There are 16 known sites that have historical or cultural significance, including caribou fences with associated settlements, historically used camps, clusters of storage caches, kill sites, graves, and prehistoric camps and sites. These sites would not be adversely affected by designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

There are no land use controls or local zoning controls to protect the river's ORVs from incompatible development.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 public scoping period for the Revised Plan, the Refuge received three comments supporting designation of the East Fork Chandalar River and four comments suggesting the need for increased protection of subsistence resources and traditional village uses against general hunters' sometimes unethical hunting practices.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 25 comments for the East Fork Chandalar River from commercial guides, recreational visitors, conservation organizations, a commercial air taxi operator, Arctic Village residents and council members, Native Village of Venetie council members, a member of the Gwich'in tribal government, and other unidentified commenters. Seven comments supported designation of the East Fork Chandalar River, and 18 comments do not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, hunting, fishing, trapping, and subsistence. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (18), recreational (13), scenic (15), geologic (7), cultural (13), fish (11), and historic (7). Stakeholders identified travel, sacred sites, private land ownership, intact wilderness, intact ecological system, and subsistence—both current and historical—as other East Fork Chandalar River values. Specifically, comments noted that the East Fork Chandalar River is, and historically has been, important for subsistence harvest of Dall's sheep, moose, grizzly bear, caribou, wolf, wolverine, red fox, ground squirrel, ptarmigan, porcupine, grayling, whitefish, and waterfowl. It was further noted that the river was a historical trade route between the Gwich'in and the Iñupiat. Stakeholder concerns included cleanliness and sport hunting. Another stakeholder expressed concerns about whether designation would mean additional regulations that could negatively affect a subsistence lifestyle. Stakeholders recommended increasing law enforcement presence.

10. Consistency of designation with other agency plans, programs, or policies.

Wild and scenic river designation of the East Fork Chandalar River would provide a complimentary set of protections to: other Refuge and Service policies and programs; the Wilderness Act; ANILCA; the National Historic Preservation Act of 1966, as amended; the Antiquities Act of 1906, 16 U.S.C. § 433 et seq.; the Native American Graves Protection and

Repatriation Act, 25 U.S.C. § 3001 et seq.; the Archaeological Resources Protection Act, 16 U.S.C. § 470aa et seq.; and, Section 106 of the National Historic Preservation Act of 1966.

11. Contribution to a river system watershed or basin integrity.

The East Fork Chandalar River is an integral part of the Chandalar and Yukon River watersheds. It is part of an intact ecosystem that supports the subsistence and cultural values held by Alaska Natives. This river is unique by supporting the economic basis for Arctic Village and providing subsistence opportunities for the entire Chandalar region. Protecting this river is essential to protecting fish and wildlife populations and their crucial role in subsistence uses and traditional cultures.

12. Other issues and concerns, if any.

There are no additional issues or concerns pertaining to the East Fork Chandalar River.

5.4.3 Preliminary Suitability Determination

The East Fork Chandalar River is preliminarily determined to be not suitable. There are many private parcels along the river, and below Arctic Village, the boundary between the Refuge and lands owned by the Native Village of Venetie tribal government is along the thread of the river. These land ownership patterns make it difficult for the Service to manage use in the river corridor. Where tribal lands are involved, sovereign tribes retain authority over the lands; however, river-administering agencies can seek opportunities to collaborate in protecting values of joint concern (IWSRCC 2011). Permanent protection and enhancement of the East Fork Chandalar River's cultural ORV would require the active involvement and commitment of the Native Village of Venetie tribal government to develop and implement resource protection strategies commensurate with the mandate of the Wild and Scenic Rivers Act. While the tribe has expressed some interest in partnering with the Service, joint management cannot be guaranteed at this time.

Section 10(a) of the Act mandates administration of designated rivers to protect and enhance the values that led to designation, and establishing a wild and scenic river boundary that encompasses the identified ORVs is essential. The boundary delineates the area within which the Service would work with landowners and local communities to develop effective protections and management strategies but does not give the Service the authority to regulate non-Federal lands. Establishing a boundary from the thread of the river westward would not ensure protection and management of the East Fork Chandalar River's cultural outstandingly remarkable value. The Service also considered whether the river could be segmented and a portion of the river recommended as suitable. The cultural ORV of the East Fork Chandalar River exists along its entire extent and particularly in the lower half of the river from its confluence with the Junjik River and south where it borders tribal land. Therefore, it would not be possible to segment the river above its border with tribal land and determine it suitable.

The river valley is wider than one mile for the majority of its length, meaning that a CRMP that protects one-half mile on either side of the river would not be the best management approach to the East Fork Chandalar River and would not be consistent with the Refuge's overarching goals to apply ecosystem- and Refuge-wide management strategies. Other acts and regulations, including ANILCA, provide protections for the cultural ORV that are more restrictive and comprehensive than the Wild and Scenic Rivers Act. Also, the cultural values could be protected more thoroughly through a step-down plan such as a Refuge-wide

Integrated Cultural Resources Management Plan (see Chapter 2, Section 2.1.8 in the Revised Plan). Visitor use could be managed through a Refuge-wide Visitor Use Management Plan (see Chapter 2, Section 2.1.5), the highest priority step-down plan identified in the Revised Plan. Nothing in the wild and scenic river review prevents or prohibits a reexamination of this river. It is quite possible that through continued communication and consultation with the tribe, a partnership will develop that would eventually allow the East Fork Chandalar River to be effectively managed as a wild river.

5.5 Hulahula River

Reach: The Hulahula River originates in the glaciers of the Romanzof Mountains, flows west for a ways, and then sharply turns to the north as it flows between Mt. Chamberlin and Mt. Michelson and out to Camden Bay.

Total River Length:	96.6 miles	Primary Classification:	Wild
Length on Refuge:	96.6 miles	ORVs:	Recreational, Cultural
Length in Wilderness:	66 miles		

5.5.1 Description/Overview

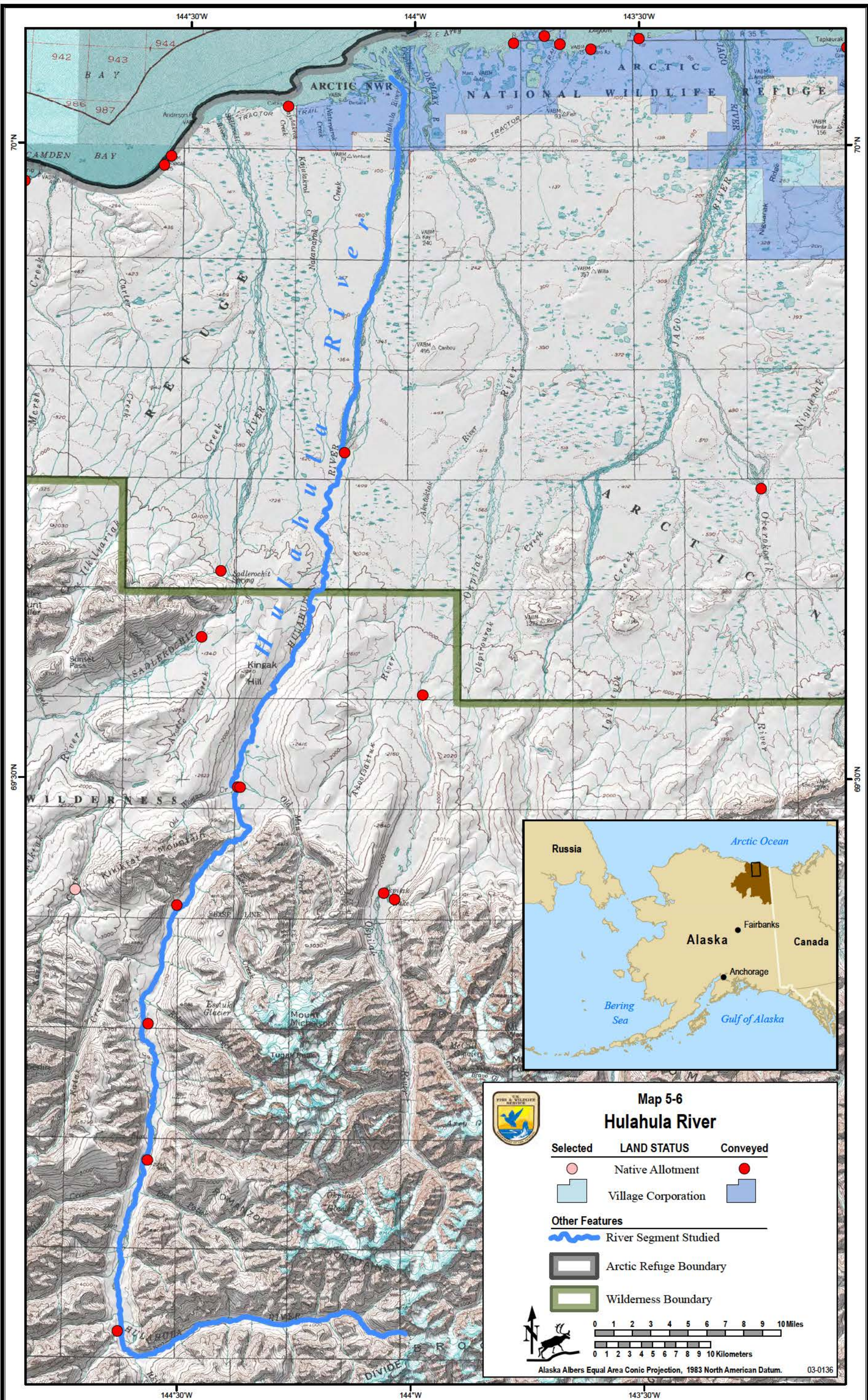
The Hulahula River originates in the highest peaks of the Brooks Range, flows about 40 miles north through steep-walled glacial valleys, and then abruptly breaks out onto the coastal plain (Map 5-6). Swift and turbid with glacial silt in the summer, the river is the most technically challenging of the regularly run north-side rivers. A narrow twisting pass across the Continental Divide between the headwaters of the Hulahula and East Fork Chandalar Rivers provides a natural hiking route and flight path. Due to its scenery, accessibility, and floatability, the Hulahula attracts 10 percent of Refuge visitors.

5.5.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

Cultural Value: The Hulahula River has outstandingly remarkable cultural values that are unique from other rivers in Alaska and those in the NWSRS. Arctic Refuge is known as a cultural crossroads where Eskimo and pre-Eskimo coastal cultures interacted and traded with Indian and pre-Indian cultures from the interior, north, and south. The cultural exchange in both directions has national importance (D. Corbett, Regional Archaeologist, pers. comm., June 9, 2010). Interviews conducted with tribal council members and elders in the Gwich'in community of Arctic Village described their families and ancestors traveling north along the Hulahula River to trade and barter with Iñupiat people. Similarly, interviews conducted with tribal council members in the Iñupiat community of Kaktovik described families and ancestors trading and bartering with the Gwich'in along the Hulahula River. The interviewees also described the river as having numerous Indian place names associated with travel and trade routes.

Additionally, the entire river corridor is intensively used by the Iñupiat people for a variety of subsistence purposes (Exxon Mobil Corporation 2009), there are numerous Native allotments along the corridor, and the river was identified as having important cultural values by both the Iñupiat and Gwich'in. While there are few known archaeological sites along the Hulahula River, there has been little to no survey effort. Given the bicultural importance of the river, it is highly likely the river contains numerous archaeological sites (D. Corbett, Regional Archaeologist, pers. comm., January 11, 2011). Multi-cultural exchange and contemporary cultural values and uses combine to give the Hulahula River outstandingly remarkable cultural values.



Recreational Value: The Hulahula River has outstandingly remarkable recreational values (ORVs) and is unique from other rivers in Alaska and those in the NWSRS. It provides an opportunity to float through a steep-walled, wide glacial valley of the Brooks Ranges that offers challenging whitewater before exploding out onto the coastal plain, where the water character subdues, but the challenge of navigating rapids is exchanged for proper channel selection as the river winds through fields of deceptively dangerous augeis. This river offers an unparalleled northern arctic recreational experience.

Because of its remoteness and lack of roads, the area's wildness in the upper reaches is virtually untouched, except for a few landing zones and evidence of previously used campsites. The northern stretches of the river are dotted with culturally important areas, evidenced by historic and subsistence use cabins and associated structures. Many of these cabins continue to be used as shelter for rural residents who subsistence fish in the winter.

The river is fast and challenging with multiple braided channels and rocky rapids, dropping 2,300 feet over its 100 miles. At average flow rates, the waters are generally class I and II with multiple stretches of class III. Rafters, kayakers, hunters, and hikers from around the world pursue adventure trips on the Hulahula. The average group size is 4.6, and the average trip length is 8.6 days. River trips pass the glaciated peaks of Mt. Michelson and Mt. Chamberlin and often include day hiking trips up side valleys and canyons. Some guide companies also offer winter trips that include winter camping and cross-country skiing.

Recreationists also seek the Hulahula for its wildlife-viewing opportunities. Caribou, grizzly bear, muskoxen, wolves, Dall's sheep, a variety of bird species, and many other wildlife species inhabit this dramatically scenic river corridor.

Other Values: Other characteristics unrelated to the cultural and recreational ORVs also affect the suitability of this river. The Hulahula River is one of the most important subsistence rivers on the north side of the Refuge, particularly for fishing and Dall's sheep hunting by Kaktovik residents.

The Hulahula River has a large run of anadromous Dolly Varden. This population is genetically distinct compared to other North Slope populations (Crane et al. 2005) and is the most comprehensively studied population on the North Slope of Alaska (Nolan et al. 2011). Groundwater-fed overwintering and spawning habitats used by Arctic grayling and anadromous Dolly Varden support high invertebrate densities and are widely dispersed along the river from the coastal plain to mountainous areas in the Brooks Range. In addition to flow from groundwater sources, glacial melt water provides major contributions to the Hulahula's summer flows (Nolan et al 2011). These contributions may be particularly important during late summer when anadromous and resident fish are returning to spawning and overwintering habitat. During 2000 to 2002, all early winter fishing by residents of Kaktovik was at Second Fish Hole on the Hulahula River (Pedersen and Linn 2005).

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The entire length of the Hulahula River is located within the boundary of PLO 2214 (the original Arctic Range). The Kaktovik Iñupiat Corporation (KIC) owns both the uplands and submerged lands along the lower 5.5 miles of the Hulahula River. The Arctic Slope Regional Corporation owns the subsurface beneath KIC lands and may remove sand and

gravel from these lands, provided they follow the stipulations in the 1983 Chandler Lake Exchange agreement that specify how and where sand and gravel pits are located and developed. Oil and gas development on or below KIC lands requires congressional authorization. Under Section 22(g) of ANCSA, development of KIC and ASRC lands will be evaluated for impacts to adjacent Refuge land; these stipulations remain with the land even if it is sold or exchanged. The submerged lands beneath inland coastal waters (bays, estuaries, and lagoons) remain in Federal ownership. With the exception of seven Native allotments totaling 322.05 acres, the Service owns the lands and submerged lands along the remaining 91.2 river miles. The four most northern allotments have oil and gas reserved to the United States.

A 17(b) easement provides legally reserved public access across Kaktovik Iñupiat Corporation lands between the Hulahula and Okpilak Rivers. This easement totals 0.7 miles of trail and a one-acre parcel designated for use by all-terrain vehicles weighing less than 3,000 pounds; snowmobiles; and all non-motorized travel and access on the delta between the two rivers.

The Service has not obtained any State-based water rights for the Hulahula River. Since the entire river is located in the Refuge, it is unlikely that other entities would file for diversionary water rights on this river.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Recreational use and oil and gas exploration and development have the highest potential to be enhanced, foreclosed, or curtailed if the area were included in the NWSRS.

Recreational uses in the Hulahula River corridor include hiking, backpacking, floating, hunting, fishing, and wildlife and bird viewing.

Wild and scenic river designation would require the Refuge to address user capacity as part of a CRMP. Management prescriptions intended to protect social and physical experience dimensions could have a positive and negative impact on recreational use in the Hulahula River corridor. The quality of recreational experiences could be enhanced by limiting or restructuring use. Simultaneously, management structure and perceived controls could detract from the overall experience.

An inventory of water resources completed in 1985 (Tweten 1985) identified the top five rivers in the 1002 Area whose watersheds were threatened by potential water and mineral resource development and non-consumptive uses. There are two forms of non-consumptive use: 1) those related to socioeconomics, such as general and subsistence hunting and fishing, river floating, recreational uses, aircraft landings, and historical and present-day travel; and 2) those related to construction or maintenance, such as gravel extraction from streambeds to build road and other infrastructure, and some forms of dredge mining. The Hulahula River was rated first in this study and was identified: 1) for potential mineral or oil and gas development; 2) as a source of gravel for road development and other uses; 3) as a source of domestic water; 4) as a navigable transportation route; and 5) as having important resource values, including habitat for threatened species; habitat for overwintering, spawning, and smolting fish; wetlands dependent on water flow; historical and cultural values; and subsistence and general fishing values.

Potential threats to the Hulahula River delta from oil and gas development include the “Proposed Consistency Determination – Beaufort Sea Area wide Oil and Gas Lease Sales, 2009–2018,” (Alaska Department of Natural Resources 2009), which includes waters north of and adjacent to the northern boundary of the Refuge. To the extent feasible, the siting of facilities would be prohibited within 500 feet of all fish-bearing streams and water bodies and 1,500 feet from all current surface drinking water sources. The potential for oil and gas development and the associated gravel pits and facilities (including roads, pump stations, landing areas, and storage facilities) in the Hulahula River watershed could have adverse impacts to the recreational values, including adverse impacts on visitor experiences and expectations. Noise and sight pollution, increased air traffic, and visible human influence would negatively affect the remoteness and solitude currently available on the Refuge.

Oil and gas exploration and development in the Hulahula River corridor could be impacted as a result of designation. The Hulahula River is tentatively classified as wild and, as such, would be withdrawn from appropriation under the mining and mineral leasing laws by Sections 9(a) and 15(2) of the Wild and Scenic Rivers Act.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

The Service would work with private landowners, the Native Village of Kaktovik tribal government, KIC, and the community of Kaktovik to administer the Hulahula River.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

There are 2,824.98 acres of KIC lands and allotments in the river corridor. The lands are used by Kaktovik residents for subsistence purposes, and acquisition of such lands would not be necessary to protect the recreational and cultural ORVs on the Hulahula.

The cost of CRMP development, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with the designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The upper 66 miles of the Hulahula River flow through lands administered under Wilderness Management provisions. From the 1002 boundary to the KIC boundary (25.1 miles), the Hulahula River flows through lands administered under Minimal Management provisions. The lower 5.5 miles of the Hulahula River are owned and administered by KIC.

Designation of the polar bear as a threatened species under the Endangered Species Act affords additional Federal protections to any lands and waters identified as critical habitat. Approximately 25 miles of the lower Hulahula River is in polar bear critical habitat. Likely, these protections would benefit other wildlife and fish species in the area.

7. Historical or existing rights that could be adversely affected with designation.

There are no historical or existing rights that would be adversely affected with designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

Under Section 307(c) of the Coastal Zone Management Act of 1972, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. From the Beaufort Sea to 22 miles inland, the Hulahula River is in the coastal zone of the North Slope Borough; however, the Alaska Coastal Management Program was terminated on July 1, 2011, per AS 44.66.030. There are no other local zoning or other land use controls protecting the river's ORVs or preventing incompatible development in the river corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 public scoping period for the Revised Plan, the Refuge received nine comments supporting designation of the Hulahula River and one comment saying that the Native allotments and associated structures would preclude the Hulahula from designation.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 21 comments for the Hulahula River from commercial guides, recreational visitors, conservation organizations, Native Village of Kaktovik tribal council members, a resident of Arctic Village, and other unidentified commenters. Nine comments supported designation of the Hulahula, and 12 comments did not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, hunting, fishing, and subsistence. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (16), recreational (15), scenic (17), geologic (11), cultural (8), fish (11), and historic (2). Additionally, stakeholders identified intact wilderness qualities, intact ecological systems, subsistence, historic trade, private land ownership, and birds as other Hulahula River values. Specifically, comments noted that the Hulahula's scenery includes some of the highest peaks in the Brooks Range, and the river valley supports a high density of Dall's sheep. Comments further noted that the river valley funnels wind in a way that causes snow to melt earlier in the spring, thus creating a longer growing season for plants, including sheep forage. Comments also mentioned that the river's springs provide important overwintering fish habitat, and there are several places with Gwich'in names in the Hulahula River drainage associated with travel and trade routes. Stakeholders are concerned that too many people visit the Hulahula River and that a portion of the river flows through the 1002 Area.

10. Consistency of designation with other agency plans, programs, or policies.

Wild and scenic river designation of the Hulahula would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, the Endangered Species Act, and ANILCA.

11. Contribution to a river system watershed or basin integrity.

The Hulahula River is the main water body in this northern watershed. By protecting it, protections will likely spread to its tributaries. This river is integral to North Slope ecosystems and residents in Arctic Refuge. In addition to flow from groundwater sources, glacial melt water provides major contributions to the Hulahula's summer flows (Nolan et

al 2011). These contributions may be particularly important during late summer when anadromous and resident fish are returning to spawning and overwintering habitat.

12. Other issues and concerns, if any.

There are no additional issues or concerns pertaining to the Hulahula River.

5.5.3 Preliminary Suitability Determination

The Hulahula River is preliminarily determined to be suitable with a wild river classification. There are three segmentation possibilities: 1) do not segment (include the entire river from its headwaters to the Beaufort Sea); 2) segment the river at the 1002 Area boundary (include the river from its headwaters to the 1002 Area boundary); or 3) segment the river at the KIC land boundary (include the river from its headwaters to the KIC boundary). These three segmentation possibilities consider manageability (landowner status) and potential development issues.

The rivers in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. To determine a river suitable, Refuge staff believed it was imperative to: 1) gain additional management tools through potential designation, and 2) avoid creating new management issues by displacing visitor use to other highly desirable and visited river corridors. Determining the Hulahula River as suitable, along with the Kongakut and Marsh Fork Canning Rivers, achieves these goals. The intent driving this determination is to avoid displacing visitor use to similarly desirable river corridors and to promote holistic, ecosystem-wide, effective management strategies. The Hulahula River is the second most visited river on the Refuge's North Slope, and its popularity has been increasing. The Wild and Scenic Rivers Act provides useful management tools to protect the recreational and cultural ORVs and the scenic, wildlife, and fish values of the Hulahula. Airplane access (the primary mode of access to the Hulahula River) occurs almost exclusively within one-half mile of the river; therefore, access could be regulated by the provisions of a CRMP. Wild river designation would increase the protection and Service's manageability of the Hulahula River corridor.

5.6 Jago River

Reach: The Jago River is flanked by the Romanzof Mountains and is fed by the McCall Glacier on Mt. Itso. It flows through the mountains to the coastal plain and finally to the Beaufort Sea.

Total River Length:	83.8 miles	Primary Classification:	Wild
Length on Refuge:	83.8 miles	ORVs:	Wildlife
Length in Wilderness:	39.7 miles		

5.6.1 Description/Overview

The Jago River is fed by the McCall Glacier on Mt. Itso. It flows through the Romanzof Mountains to the coastal plain and finally to the Beaufort Sea (Map 5-7). The Jago River valley has multiple high flanking lateral moraines, recessional moraines, outwash terraces, and glacial lake deposits. Its U-shaped profile was produced by the Hubley, McCall, and Schwanda glaciers flowing onto the Arctic lowland from the Continental Divide. The Jago River valley clearly illustrates the natural forces of permafrost in various forms of icing mounds, pingos, and polygons. Visitors are often surprised to also find sand dunes as the river pours out of the mountains onto the coastal plain. Because of its remoteness and lack of roads, the area feels virtually untouched other than a few discernible landing areas.

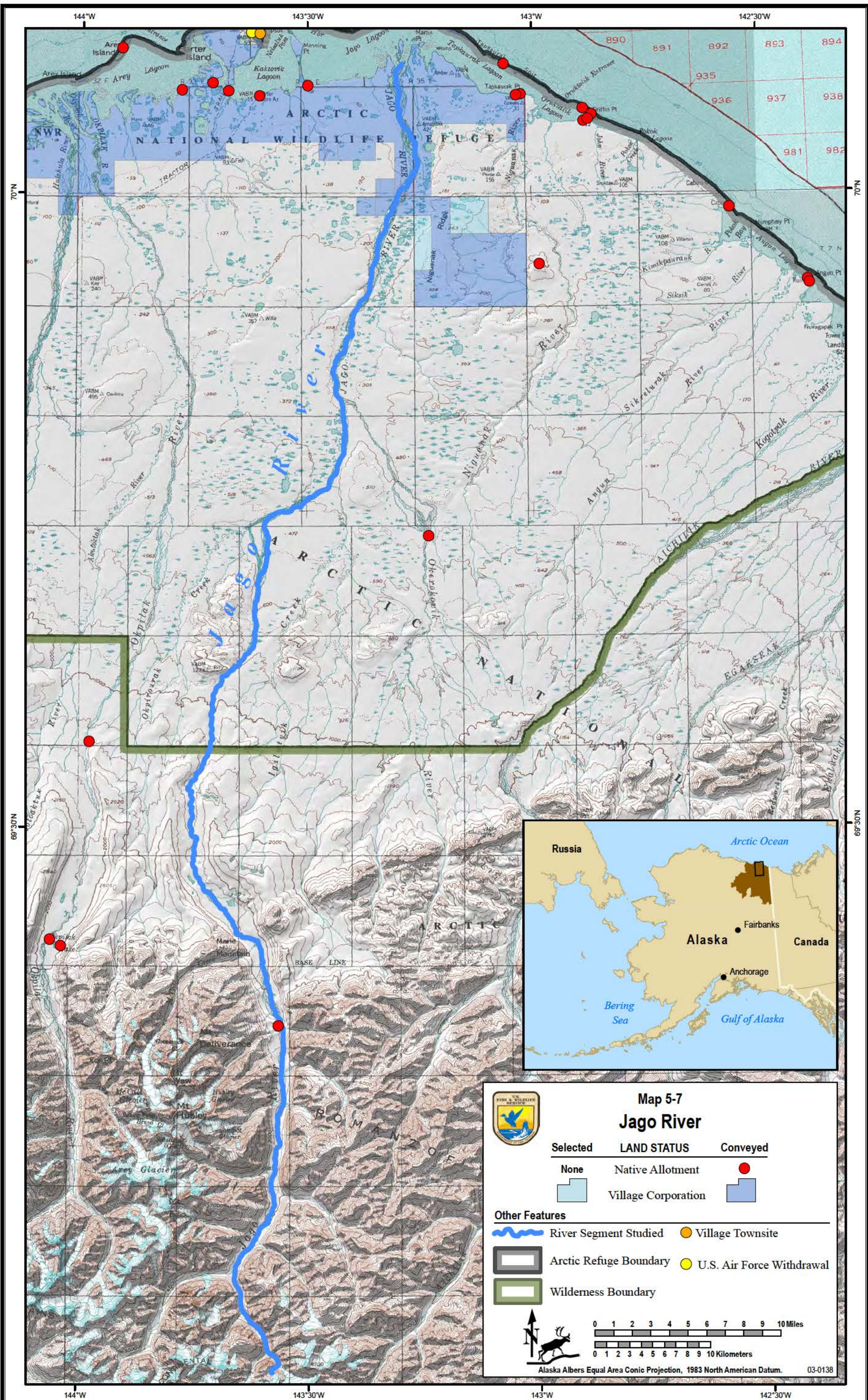
5.6.2 Suitability Factor Assessment


1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

Wildlife Value: The Jago River has outstandingly remarkable wildlife values. The Jago River valley contains many string bogs and seepage areas laced with fens and floodplains. This diversity of vascular flora supports heavy seasonal use by wildlife, including the Porcupine and Central Arctic caribou herds, wolves, muskoxen, and bears. These animals provide a variety of wildlife-viewing and photographic opportunities. The Jago River is one of two rivers in the 2010 suitability study that has been a high density calving area (50 percent of calving) in almost all (13) of the 17 years of a long-term research project (Griffith et al. 2002). Also, the Jago boasts the longest segment (61.8 miles) of polar bear denning habitat on the Refuge.




Small groups of muskoxen are occasionally seen along the Jago River. These animals live year-round in the coastal plain and foothills of the Arctic Refuge. In summer, they forage on willows and other vegetation along river drainages and move into adjacent uplands where they forage on wind-swept ridges in winter.

Another opportunity available on the lower Jago is bird watching. Snow geese begin arriving from their nesting grounds in Canada to the coastal plain in late August, peak in early to mid-September, and begin their migration south to Mexico and California in late September (Brackney 1990). When snow geese feed on the Refuge's coastal plain, the majority of activity is between the Okpilak and Aichilik rivers, an area that includes the Jago River corridor. At this crucial time of year, snow geese rely on thermokarst pits with











Map 5-7 Jago River

Selected	LAND STATUS	Conveyed
None	Native Allotment	
	Village Corporation	

Other Features

-  River Segment Studied
-  Village Townsite
-  Arctic Refuge Boundary
-  U.S. Air Force Withdrawal
-  Wilderness Boundary



0 1 2 3 4 5 6 7 8 9 10 Miles

0 1 2 3 4 5 6 7 8 9 10 Kilometers

Alaska Albers Equal Area Conic Projection, 1983 North American Datum.

03-0138

healthy stands of tall cottongrass for feeding and building fat reserves for migration. These important feeding sites, known as staging areas, make up only three percent of the Refuge's coastal plain, and they primarily occur near the Jago River. After a flock of snow geese feed on a stand of cottongrass, it takes at least four years for the stand to recover (Hupp and Robertson 1998).

Other Values: Characteristics unrelated to the wildlife ORV also affect the suitability of the Jago River. Rare plant taxa, including *Mielichhoferia mielichhoferi*, *Lobaria kurokawae*, *Nephroma isidiosum*, and *Stereocaulon apocalypticum*, occur in the Jago River Valley. Recreational interest and visitation from hikers, backpackers, hunters, birders, and wildlife viewers has increased during the past decade. For most of the ice-free season, the water volume in the Jago is not adequate for floating. People who do float the river typically do so in small, individual size watercraft, such as inflatable kayaks or packrafts. The Jago is also one of the starting points for traverses up the Okpilak and Hulahula River valleys. This river attracts recreationists from around the world who wish to visit the Refuge.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The entire length of the Jago River is located within the boundary of PLO 2214 (the original Arctic Range). KIC owns both the uplands and submerged lands along the lower 9.5 miles of the Jago River. The Arctic Slope Regional Corporation owns the subsurface beneath KIC lands and may remove sand and gravel from these lands, provided they follow the stipulations in the 1983 Chandler Lake Exchange agreement that specify how and where sand and gravel pits are located and developed. Oil and gas development on or below KIC lands requires congressional authorization. Under Section 22(g) of ANCSA, development of KIC and ASRC lands will be evaluated for impacts to adjacent Refuge lands; these stipulations remain with the land even if it is sold or exchanged. The submerged lands beneath inland coastal waters (bays, estuaries, and lagoons) remain in Federal ownership. With the exception of one 38.75-acre Native allotment, the Service owns the lands and submerged lands along the remaining 74.8 river miles.

Two 17(b) easements provide legally-reserved public access across KIC lands along the Jago River and its delta. These easements include 14.4 miles of trail and a one-acre parcel designated for parking and camping at the mouth of the river.

The Service has not obtained any State-based water rights for the Jago River. Since the entire river is located within the boundaries of the Refuge, it is unlikely that other entities would file for diversionary water rights on this river.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Recreational use and oil and gas exploration and development have the highest potential to be enhanced, foreclosed, or curtailed if the Jago were included in the NWSRS.

Potential threats to the Jago River delta from oil and gas development include the "Proposed Consistency Determination – Beaufort Sea Area wide Oil and Gas Lease Sales, 2009–2018," (Alaska Department of Natural Resources 2009), which includes waters north of and adjacent to the northern boundary of the Refuge. To the extent feasible, the siting of facilities would be prohibited within 500 feet of all fish-bearing streams and water bodies and 1,500 feet from all current surface drinking water sources. The potential

for oil and gas development and the associated gravel pits and facilities, including roads, pump stations, landing areas, and storage facilities, in the Jago River watershed could have adverse impacts to the recreational values, including adverse impacts on visitor experiences and expectations. Noise and sight pollution, increased air traffic, and visible human influence would negatively affect the remoteness, solitude, and wildlife-viewing opportunities currently available on the Jago River.

Oil and gas exploration and development in the Jago River corridor could be impacted as a result of designation. The Jago River is tentatively classified as a wild river and, as such, would be withdrawn from appropriation under the mining and mineral leasing laws by Sections 9(a) and 15(2) of the Wild and Scenic Rivers Act.

Recreational uses in the Jago River corridor include hiking, backpacking, floating, hunting, fishing, and wildlife and bird viewing. Wild and scenic river designation and subsequent protection of the wildlife ORV likely would not affect recreational use of the river corridor.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

The Service would work with private landowners, the Native Village of Kaktovik tribal government, KIC, and the community of Kaktovik to administer the Jago River.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

The entire length of the Jago River, excluding KIC lands and the one Native allotment, is managed by the Service. The Service has acquired allotments in the Refuge and plans to continue to acquire allotments from willing sellers in consultation with the Refuge manager and in cooperation with The Conservation Fund. However, acquisition of lands along the Jago would not be necessary to manage it as a wild river.

The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The upper 39.7 miles of the Jago River flow through lands administered under Wilderness Management provisions. From the 1002 boundary to the KIC boundary (33.6 miles), the Jago River flows through lands administered under Minimal Management provisions. The lower 9.5 miles of the Jago River are administered by KIC.

Designation of the polar bear as a threatened species under the Endangered Species Act affords additional Federal protections to any lands and waters identified as critical habitat. Approximately 25 miles of the Jago is in designated polar bear critical habitat. Likely, these protections would benefit other wildlife and fish species in the area.

7. Historical or existing rights that could be adversely affected with designation.

There are three historical cabins located on the Jago River delta in Native corporation lands. These would not be adversely affected by designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

Under Section 307(c) of the Coastal Zone Management Act, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. From the Beaufort Sea to 41.8 miles inland, the Jago River is in the Coastal Management Zone of the North Slope Borough; however, the Alaska Coastal Management Program was terminated on July 1, 2011, per AS 44.66.030. There are no other local zoning or other land use controls protecting the river's ORVs by preventing incompatible development.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 public scoping period for the Revised Plan, the Service received three comments supporting designation of the Jago River.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 13 comments for the Jago River from commercial guides, recreational visitors, conservation organizations, and other unidentified commenters. Seven comments supported designation of the Jago River, and six comments did not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, rafting, hunting, and fishing. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (13), recreational (10), scenic (13), geologic (7), cultural (3), fish (5), and historic (2). Additionally, stakeholders identified intact wilderness qualities and intact ecological systems as Jago River values. Specifically, comments noted that the McCall Glacier is within hiking distance of the river, and the scenery includes mountains Hubley and Waw. Comments also mentioned that the foothills and coastal plain along the Jago are part of the traditional calving grounds of the Porcupine caribou herd and that the river provides wonderful and challenging whitewater.

10. Consistency of designation with other agency plans, programs, or policies.

Wild and scenic river designation of the Jago River would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, the Endangered Species Act, and ANILCA.

11. Contribution to a river system watershed or basin integrity.

The Jago River is the main water body in this northern watershed. By protecting it, protections would likely spread to its tributaries. The river is integral to North Slope ecosystems and residents of Kaktovik. Glacial melt water contributes to summer flows and has been studied intermittently since 1956.

12. Other issues and concerns, if any.

There are no additional issues or concerns pertaining to the Jago River.

5.6.3 Preliminary Suitability Determination

The Jago River is preliminarily determined to be not suitable. The rivers in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. For the Jago River, this is especially true given its location in Arctic Refuge, its low level of visitor use, and its wildlife outstandingly remarkable value. A CRMP would only apply a one-mile wide corridor along the Jago. The Refuge has always taken a holistic approach to wildlife management; therefore, in this situation, the Wild and Scenic Rivers Act does not provide the most appropriate management tool. Protection of the Jago River's wildlife ORV is afforded through other legislation, such as the Endangered Species Act, the Refuge's Revised Plan, and through step-down plans, such as the Inventory and Monitoring Plan (see Chapter 2, Section 2.1.1 and Chapter 6, Section 6.3.3 of the Revised Plan).



5.7 Kongakut River

Reach: The Kongakut River is the only major, floatable North Slope river whose entire watershed is in designated Wilderness. Originating high in the mountains of the eastern Brooks Range, the river flows north through miles of rugged mountains to the coastal plain and empties into the Beaufort Sea.

Total River Length:	116.3 miles	Primary Classification:	Wild
Length on Refuge:	116.3 miles	ORVs:	Recreational, Scenic, Geologic
Length in Wilderness:	116.3 miles		

5.7.1 Description/Overview

The Kongakut River has outstandingly remarkable recreational, scenic, and geologic values that are unique from other rivers in Alaska and those in the NWSRS. The Kongakut River attracts one-quarter of the Refuge's visitors—around 240 people annually. Visitation is driven by two main events: the Porcupine caribou herd migration and the Dall's sheep hunting season. The river provides the longest stretch of floatable water in the Brooks Range before breaking out onto the coastal plain (Map 5-8). The river valley is narrow, and the mountains begin close to the river's banks. Many inviting side valleys create innumerable opportunities for day hikes or multiple-day treks. Because of its remoteness and lack of roads, the area is virtually untouched other than a few landing areas, visible camping sites, and emerging trails.

5.7.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

Recreational Value: The Kongakut River is the most heavily used recreational river in the Refuge, attracting people from around the world who wish to recreate in a stunning viewshed. Nearly one-quarter (24 percent) of the commercially-supported visitors to the Refuge visit the Kongakut River. Group sizes average five people, and trip lengths average 9.3 days. At average flow rates, the waters are generally class I and II, but there are stretches of class III where the river narrows into a canyon section.

Water levels and weather patterns are not sufficient to permit water-based recreation year-round; therefore, intense use occurs between mid-June and early September. In those months, most use is concentrated in two key time periods—the weeks that offer the highest likelihood of viewing the Porcupine caribou herd migration and the earlier weeks of the Dall's sheep hunting season. Backpacking trips make up at least 12 percent of the commercially-supported use of the Kongakut River, with many visitors focusing on the opportunity to observe the Porcupine caribou herd's migration.

Other recreational opportunities also attract visitors. The Kongakut's terminus at the Beaufort Lagoon allows a boater the unique opportunity to journey along Icy Reef, an approximately 20-mile-long barrier reef in the Beaufort Sea. Visitors come to the Kongakut River for hiking, backpacking, floating, hunting, dog mushing, and wildlife viewing. As a secondary summer activity, many people fish the Kongakut for its healthy

population of Arctic grayling and char. Birders seek out two particular species: the gray-headed chickadee and Smith's longspur. They also hope to catch a glimpse of a bluethroat (Steve Kendall, Refuge Ornithologist, pers. comm. 2010). Wildlife viewers hope to see caribou, muskox, wolves, and brown and polar bears. Recreation on the Kongakut allows visitors to experience many of these activities in a single trip.

Scenic Value: The Kongakut River provides spectacular views throughout its entire length as it travels by steep-walled canyons, landslide features, side canyons, and contorted rock formations. Bathtub Ridge and Dar Hill are two particularly stunning formations. The river offers expansive views from the mountains to the coastal plains to the Beaufort Sea. The Kongakut estuary forms a distinct habitat of extensive mud flats, polygonal ground, and aeolian landforms that add to the visual diversity of the area. The extensive lagoon system (known as the Beaufort Lagoon), delta, perennial aufeis field, and Icy Reef also add to the viewshed. Photographic opportunities with the combination of landforms and wildlife are limitless.

Geologic Value: The Kongakut River Valley consists of steep canyons littered with contorted rock formations; the coastal plain alluvial delta; 12-foot high canyons of aufeis; a spectacular landslide near Drain Creek that removed half of an unnamed mountain; and the unusual topography of Bathtub Ridge; these are just a few of the geologic features found in the Kongakut River corridor. Several faults expose thousands of years of geologic processes.

Other Values: Characteristics unrelated to the recreational, scenic, and geologic ORVs also affect the suitability of the Kongakut River. The Kongakut River has a moderate diversity of fish species. The anadromous Dolly Varden population in the Kongakut River is genetically distinct compared to other North Slope populations (Crane et al 2005) and has two distinct life history strategies; their abundance is likely high. Known spawning habitats are widely dispersed along the river from the delta to mountainous sites in the Brooks Range, and two spring-fed spawning and overwintering sites in the river delta are used by anadromous Dolly Varden. There are high densities of invertebrates in groundwater-fed habitats along this river.

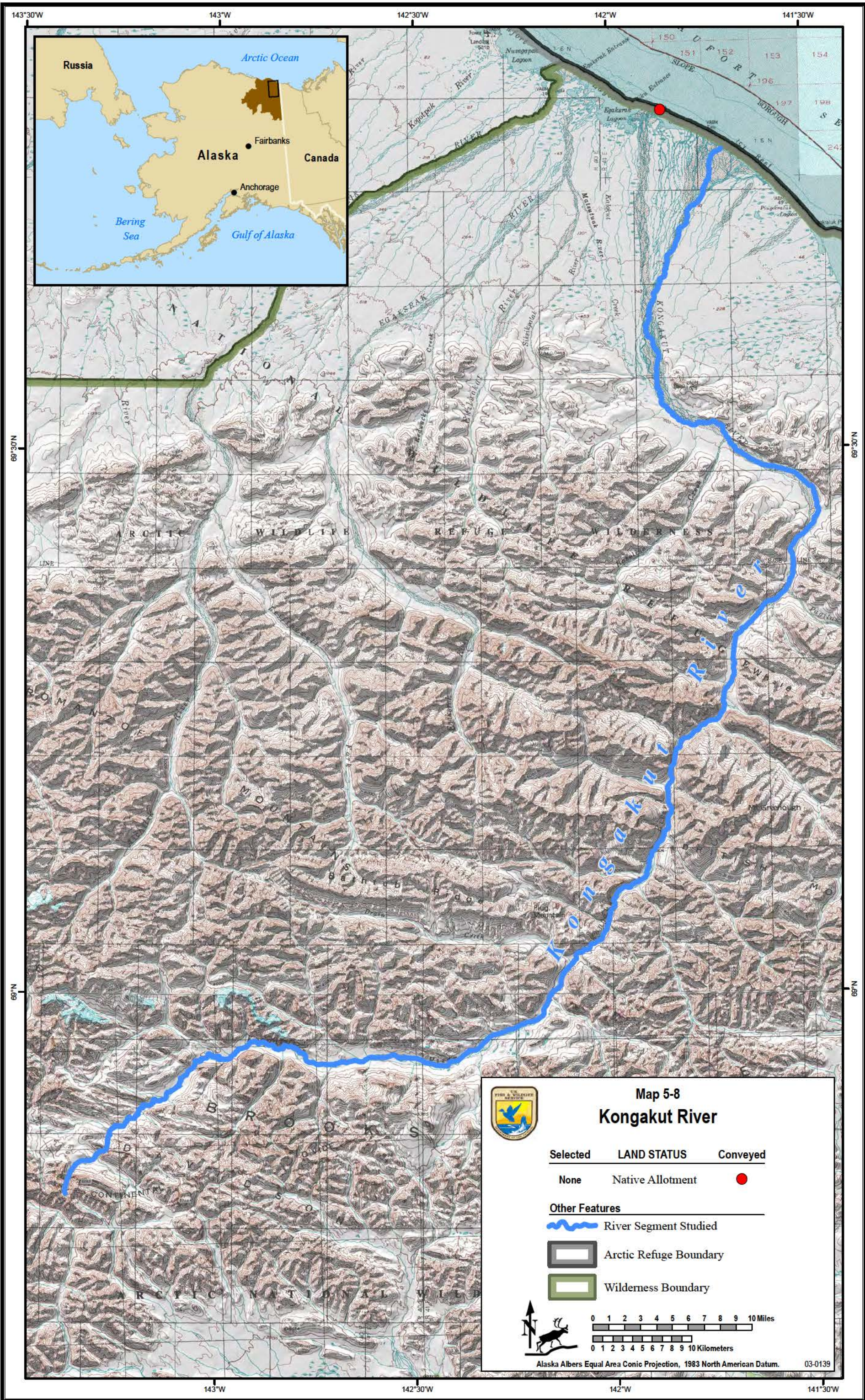
2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The Kongakut River is the only major, floatable North Slope river whose entire course is in designated Wilderness and is managed exclusively by the Refuge. The entire length of the Kongakut is within the boundary of PLO 2214 (the original Arctic Range). There are no inholdings, Native corporation lands, or Native allotment lands in the river corridor.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Recreational use and oil and gas exploration and development of the Kongakut River have the highest potential to be enhanced, foreclosed, or curtailed if the area were included in the NWSRS. Recreational uses include hiking, backpacking, floating, hunting, fishing, and wildlife and bird viewing.

The 1988 Plan identified the Kongakut River as an area experiencing minor adverse impacts on recreational and wilderness values due to increased visitor use. More recent evaluations reveal these impacts are now major. Wild and scenic river designation would require the Refuge to address user capacity as part of a CRMP. Management



prescriptions intended to protect social and physical experience dimensions could have a positive and negative impact on recreational use of the Kongakut River. The quality of recreational experiences could be enhanced by limiting or restructuring use. Simultaneously, management structure and perceived controls could detract from the overall experience.

Wild and scenic river designation would have no impacts on water developments (to date, no water developments or diversions have been proposed). The Service completed a reservation order for water rights under PLO 2214 on December 6, 1960, and has unquantified water rights for habitat protection. The State of Alaska does not have any water rights on the Kongakut River. Designation would not affect the annual mean flow or water quality as defined in Childers et al. 1977 or Tweten 1985.

Potential threats to the Kongakut River delta from oil and gas development include the “Proposed Consistency Determination – Beaufort Sea Area wide Oil and Gas Lease Sales, 2009–2018,” (ADNR 2009), which includes waters north of and adjacent to the northern boundary of the Refuge. To the extent feasible, the siting of facilities would be prohibited within 500 feet of all fish-bearing streams and water bodies and 1,500 feet from all current surface drinking water sources. The potential for oil and gas development and the associated gravel pits and facilities, including roads, pump stations, landing areas and storage facilities, in the Kongakut River watershed could have adverse impacts to the recreational values, including visitor experiences and expectations. Noise and sight pollution, increased air traffic, and visible human influence would negatively affect the remoteness and solitude currently available on the Refuge.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

All the land in the Kongakut River corridor is managed by the Service; therefore, the Service would be responsible for administering the Kongakut River corridor.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

Regardless of designation, the Refuge would have costs associated with managing this river, including increased costs for monitoring impacts and implementing visitor use surveys. However, the costs associated with a CRMP are likely to be notably higher. New regulations, permit conditions, and potential visitor restrictions could require extensive outreach, education, and enforcement. The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

There are no lands or interests in lands or waters that need to be acquired by the agency to effectively manage the Kongakut as a designated wild and scenic river.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The entire 116.3 miles of the Kongakut River flows through lands administered under Wilderness Management provisions.

In 2004, the Refuge began requiring all commercial air operators to restrict landings to barren soils or gravel bars in the Kongakut River corridor. Public comments indicate that the current regulations on commercial operators are not sufficient to protect the river from overuse or to provide opportunities for solitude.

The Service currently does not have a visual resource management program or other mechanism to protect the scenic values along this segment. However, protection of visual resources would likely be derived from the Revised Plan and other management authorities.

Designation of the polar bear as a threatened species under the Endangered Species Act affords additional Federal protections to any lands and waters identified as critical habitat. Approximately 42 miles of the Kongakut is in designated polar bear critical habitat. Likely, these protections would benefit other wildlife and fish species in the area.

7. Historical or existing rights that could be adversely affected with designation.

There are no historical or existing rights in the river corridor.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

Under Section 307(c) of the Coastal Zone Management Act, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. From the coast to about 18.5 miles south, the Kongakut is in the Coastal Management Zone of the North Slope Borough; however, the Alaska Coastal Management Program was terminated on July 1, 2011, per AS 44.66.030. There are no other local zoning or other land use controls protecting the river's ORVs to prevent incompatible development in the river corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 public scoping period for the Revised Plan, the Refuge received 13 comments supporting designation of the Kongakut River, 2 asking for increased resource protection, and 13 expressing concern about human impacts on the Kongakut river corridor and its related resources.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 18 comments for the Kongakut River from commercial guides, recreational visitors, conservation organizations, a Native Village of Kaktovik tribal council member, and other unidentified commenters. Nine comments supported designation of the Kongakut River, and nine comments did not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, hunting, fishing, and rafting. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (16), recreational (15), scenic (16), geologic (13), cultural (7), fish (13), and historic (5). Additionally, stakeholders identified intact Wilderness character, intact ecological systems, birds, and subsistence as other Kongakut River values. Specifically, comments noted that caribou heavily use the lands along the Kongakut River for migration, calving, and post-calving, and the river's springs provide overwintering fish habitat. Comments also mentioned that aufeis fields on the river bars provide mineral salts for Dall's sheep, and there are old sod house sites along the delta's coast. One stakeholder wrote, "To me,

this experience is the quintessential Arctic Refuge; to experience mountains, alpine tundra, coastal plain, coastal estuary, and barrier islands.” One stakeholder suggested restricting activity at Caribou Pass while the first 1,000 caribou migrate through to avoid interfering with the start of their migration across the river. Stakeholder concerns for the Kongakut River include too many visitors and a warming climate, evidenced by the intrusion of balsam poplar on the Kongakut and its side tributaries.

10. Consistency of designation with other agency plans, programs, or policies.

Wild and scenic river designation of the Kongakut would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, the Endangered Species Act, and ANILCA.

11. Contribution to a river system watershed or basin integrity.

Wild river designation of the Kongakut would aid in protecting a watershed important to the Porcupine caribou herd while also providing recreational access to the area. The headwaters of the Kongakut nearly touch the Sheenjek River—a designated wild river—at a meadow pass that defines the continental divide of the Brooks Range. This presents a rare opportunity to tie two unique and interrelated river systems together under the Wild and Scenic Rivers Act.

12. Other issues and concerns, if any.

There are no additional issues or concerns pertaining to the Kongakut River.

5.7.3 Preliminary Suitability Determination

The Kongakut River is preliminarily determined to be suitable with a wild river classification. The rivers in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. To determine a river suitable, Refuge staff believed it was imperative to: 1) gain additional management tools through potential designation, and 2) avoid creating new management issues by displacing visitor use to other highly desirable and visited river corridors. Determining the Kongakut River suitable, along with the Hulahula, Marsh Fork Canning, and Atigun rivers, achieves these goals. The intent driving this determination is to avoid displacing visitor use to similarly desirable river corridors and to promote holistic, ecosystem-wide, effective management strategies. The Kongakut River is by far the Refuge’s most visited river, and the high levels of visitation have visibly affected the land, thus affecting the river’s recreational and scenic ORVs. The Wild and Scenic Rivers Act provides useful, meaningful, and additional legally binding management tools to protect the Kongakut’s ORVs. In its mountainous stretches (where most visitation occurs), the river valley is narrow, and access and camping locations are within one-half mile of the river. Therefore, a CRMP is an appropriate and necessary tool to ensure that the Kongakut’s ORVs are protected. Wild river designation would increase the protection and Service’s manageability of the Kongakut River corridor.

5.8 Okpilak River

Reach: The silt-laden Okpilak River begins in the heart of the most active glacial area of the Refuge. Its rugged, steep terrain and melting icy masses create a torrent of water in the headwaters that is channeled through a vertical canyon and then abruptly flattens as it flows onto the coastal plain to the Beaufort Sea.

Total River Length:	73.3 miles	Primary Classification:	Wild
Length on Refuge:	73.3 miles	ORVs:	Scenic, Geologic
Length in Wilderness:	36.5 miles		

5.8.1 Description/Overview

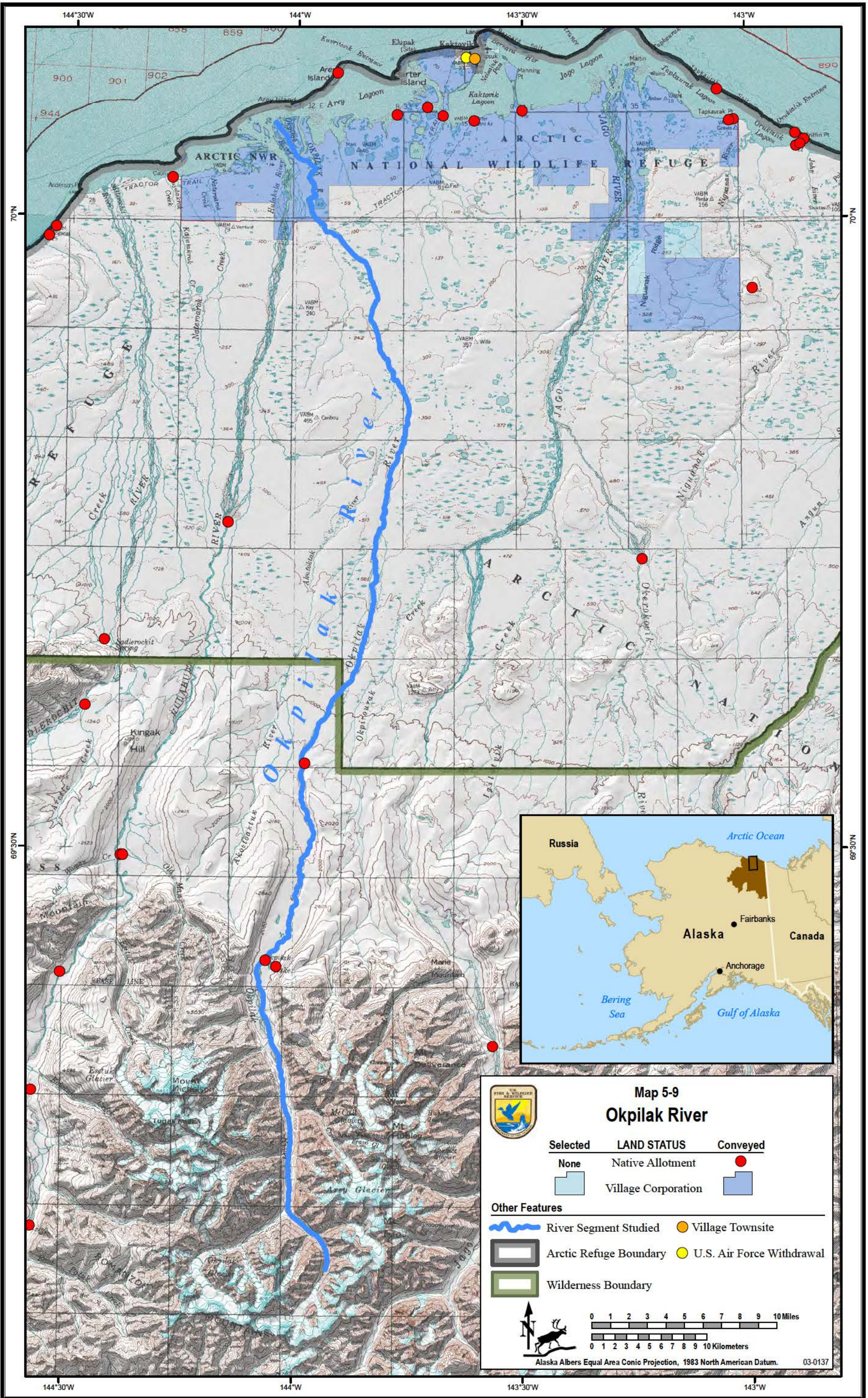
The Okpilak River has outstandingly remarkable scenic and geologic values that are distinctly different from other rivers in Alaska and those in the NWSRS. The Okpilak River flows north through a classic U-shaped valley in the heart of the most active glacial area of the Refuge (Map 5-9). The silt-laden river was recommended as a national landmark because of its prominent moraines, fans, sand dunes, outwashes, and other glacial features. The upper river is too wild and dangerous for almost all river floaters, and the terrain precludes aircraft access. Only the most adventurous boaters willing to carry their boats upstream would attempt this section of river. These factors, however, offer hikers and backpackers an uncommonly tranquil and scenic experience.

5.8.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

Geologic Value: Compared to other rivers in the Refuge, the Okpilak contains the largest amount of glacial features, including moraines, fans, kames, sand dunes, and outwashes. The river is fed by hanging glaciers that appear precariously attached to stark, steep, rocky mountain sides. Located in the Romanzof Mountains of the eastern Brooks Range, the river's headwaters are found in two different glaciers in two different valleys. The river's flow is then supplemented by melting ice of the Split, Arey, and Leffingwell glaciers downstream of the headwaters. The glacially fed streams join to form the Okpilak River, which then cuts a 10- to 40-foot-deep postglacial canyon for a distance of roughly 4.4 miles. In the mountains, the valley walls are covered with massive lateral moraines that rise to over 980 feet and postglacial alluvial-colluvial cones or fans that rise above the broad valley floor upwards of 490 feet. Further northward, the valley is mantled by a series of end, recessional, ground, terminal, and lateral moraines, kames, and glaciofluvial outwash.

Scenic Value: Where vegetated, the high mountainous terrain is blanketed with lichens and mosses; otherwise it's full of frost-shattered bedrock and fell-field. The Okpilak is located on the east flank of snow-capped Mt. Michelson, where multiple-crested lateral moraines emerge from tributary valleys with visible cirques. The lower river corridor contains small lakes, including the east and west Okpilak lake systems. The coastal plain offers beautiful expansive views in all directions. The hot springs allow soakers to watch Dall's sheep and caribou while looking over the floodplain.



Other Values: Characteristics unrelated to the scenic and geologic ORVs also affect the suitability of the Okpilak River. Visitors usually access the Okpilak by portaging from the Hulahula or Jago River or by flying to the mid-valley landing area. Exploring the upper river valley feels like retreating to the prehistoric age due to the pure lack of human presence. Because the river flows from some of the highest mountains, this valley is rarely used as a flight path, and the only landing area is where the mountains abruptly meet the coastal plain; therefore, noise pollution is kept to an absolute minimum. Also, recreationists visiting one of Alaska's "best kept secret" valleys may treat themselves to a soak in one of the North Slope's only true hot springs. The wildness and supreme, stark beauty of the area is unmatched by other Refuge river valleys.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The entire length of the Okpilak River is located within the boundary of PLO 2214 (the original Arctic Range). KIC owns both the uplands and submerged lands along the lower 7.1 miles of the Okpilak River. The Arctic Slope Regional Corporation owns the subsurface beneath KIC lands and may remove sand and gravel, from these lands, provided they follow the stipulations in the 1983 Chandler Lake Exchange agreement that specify how and where sand and gravel pits are located and developed. Oil and gas development on or below KIC lands requires congressional authorization. Under Section 22(g) of ANCSA, development of KIC and ASRC lands will be evaluated for impacts to adjacent Refuge lands; these stipulations remain with the land even if it is sold or exchanged. The submerged lands beneath inland coastal waters (bays, estuaries, and lagoons) remain in Federal ownership. With the exception of two² Native allotments totaling 117.64 acres, the Service manages the lands and submerged lands along the remaining 66.2 river miles. The United States reserved oil and gas on all three allotments.

Two 17(b) easements provide legally reserved public access across KIC lands along the Okpilak River. These easements—7.36 miles of trail and a one-acre parcel—were designated for use by all-terrain vehicles weighing less than 3,000 pounds, snowmobiles, and all non-motorized travel and access located on the delta between the Hulahula and Okpilak Rivers.

The Service has not obtained any State-based water rights for the Okpilak River. Since the entire river is located within the boundaries of the Refuge, it is unlikely that other entities would file for diversionary water rights on this river.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Recreational use and oil and gas exploration and development have the highest potential to be enhanced, foreclosed, or curtailed if the Okpilak were included in the NWSRS.

Potential threats to the Okpilak River delta from oil and gas development include the "Proposed Consistency Determination – Beaufort Sea Areawide Oil and Gas Lease Sales, 2009–2018" (Alaska Department of Natural Resources 2009) which includes waters north

² While there are three Native allotments along the Okpilak River, only two are inside the review area boundary.

of and adjacent to the northern boundary of the Refuge. To the extent feasible, the siting of facilities would be prohibited within 500 feet of all fish-bearing streams and water bodies and 1,500 feet from all current surface drinking water sources. The potential for oil and gas development and the associated gravel pits and facilities, including roads, pump stations, landing areas, and storage facilities, in the Okpilak River watershed could have adverse impacts to the scenic values and would likely have an impact on visitor experiences and expectations. Noise and sight pollution, increased air traffic, and visible human influence will have an adverse impact on the sense of remoteness and solitude currently available in the Okpilak River valley.

An inventory of water resources completed in 1985 (Tweten 1985) identified the top five rivers in the 1002 Area whose watersheds were threatened by potential water and mineral resource development and non-consumptive uses. There are two forms of non-consumptive use: 1) those related to socioeconomics, such as general and subsistence hunting and fishing, river floating, recreational uses, aircraft landings, and historical and present-day travel; and 2) those related to construction or maintenance, such as gravel extraction from streambeds to build road and other infrastructure, and some forms of dredge mining. The Okpilak River was rated third in this study and was identified: 1) for potential mineral or oil and gas development; 2) as a source of gravel; and 3) as having important resource values, including habitat for overwintering, spawning, and smolting fish, and wetlands dependent on water flow.

The Okpilak River is tentatively classified as a wild river and, as such, would be withdrawn from appropriation under the mining and mineral leasing laws by Sections 9(a) and 15(2) of the Wild and Scenic Rivers Act. Designating the Okpilak as a wild river would foreclose all oil and gas development, mineral exploration, dredge mining, and the removal of gravel from the river bed and surrounding delta in the river corridor.

Recreational uses in the Okpilak River corridor include hiking, backpacking, hunting, and wildlife and bird viewing. Wild and scenic river designation and subsequent protection of the scenic and geologic ORVs likely would not affect recreational use of the river corridor.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

The Service would work with private landowners, the Native Village of Kaktovik tribal government, KIC, and the community of Kaktovik to administer the Okpilak River.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

The entire length of the Okpilak River, excluding KIC lands and the two Native allotments, is managed by the Service. KIC owns both the uplands and submerged lands along the lower 7.1 miles of the Okpilak River. Allotment owners own a portion of the submerged lands.

The Service has acquired allotments in the Refuge and plans to continue to acquire allotments from willing sellers in consultation with the Refuge manager and in cooperation with The Conservation Fund. However, acquisition of lands in the Okpilak River corridor would not be necessary to manage it as a designated wild and scenic river.

The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The upper 36.5 miles of the Okpilak River flow through lands administered under Wilderness Management provisions. From the 1002 Area boundary to the KIC boundary (29.65 miles), the Okpilak River flows through lands administered under Minimal Management provisions. The lower 7.1 miles of the Okpilak River are owned and administered by KIC.

The Service currently does not have a visual resource management program or other mechanism to protect the scenic values along this segment. However, protection of visual resources would likely be derived from the Revised Plan and other management authorities.

Designation of the polar bear as a threatened species under the Endangered Species Act affords additional Federal protections to any lands and waters identified as critical habitat. Approximately 27 miles of the Okpilak is in designated polar bear critical habitat. Likely, these protections would benefit other wildlife and fish species in the area.

7. Historical or existing rights that could be adversely affected with designation.

There are no historical or existing rights that would be adversely affected with designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

Under Section 307(c) of the Coastal Zone Management Act, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. From the Beaufort Sea to 30.9 miles inland, the Okpilak River is in the Coastal Management Zone of the North Slope Borough; however, the Alaska Coastal Management Program was terminated on July 1, 2011, per AS 44.66.030. There are no other local zoning or other land use controls protecting the river's ORVs by preventing incompatible development in the river corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 public scoping period for the Revised Plan, the Refuge received four comments supporting wild river designation for the Okpilak River.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 11 comments for the Okpilak River from conservation organizations, commercial guides, recreational visitors, and other unidentified commenters. Seven comments supported designation of the Okpilak River, and four comments did not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and rafting. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (10), recreational (7), scenic (10), geologic (7), cultural (4), fish (4), and historic (1).

Additionally, stakeholders identified intact wilderness qualities and intact ecological systems as other Okpilak River values. Specifically, comments noted that the foothills and coastal plain along the Okpilak are important calving and post-calving grounds for the Porcupine caribou herd, and that subsistence use occurs along the Okpilak delta. Comments also mentioned that the coastal plain is an important staging area for white-fronted snow geese, and the river provides challenging whitewater. One stakeholder mentions that the Okpilak contains “the most beautiful view from a hot springs anywhere in North America,” and it should be nominated for a National Natural Landmark.

10. Consistency of designation with other agency plans, programs, or policies.

Wild river designation of the Okpilak would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, the Endangered Species Act, and ANILCA.

11. Contribution to a river system watershed or basin integrity.

The Okpilak River is the main water body in this northern watershed. By protecting it, protections would likely spread to its tributaries. The river is integral to North Slope ecosystems and residents of Kaktovik.

12. Other issues and concerns, if any.

There are no additional issues or concerns pertaining to the Okpilak River.

5.8.3 Preliminary Suitability Determination

The Okpilak River is preliminarily determined to be not suitable. The rivers in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. For the Okpilak River, this is especially true given its location in Arctic Refuge, its extremely low level of visitor use, and its scenic and geological ORVs. The Okpilak’s scenery and geology are already protected through other mechanisms, and their continued protection would be addressed more adequately through the Revised Plan and its associated step-down plans, such as the Wilderness Stewardship Plan and Visitor Use Management Plan (see Chapter 6, Sections 6.3.1 and 6.3.2 of the Revised Plan). These two plans have the highest priority of all step-down plans identified in the Revised Plan.

5.9 Neruokpuk Lakes Complex

Reach: The Neruokpuk Lakes complex (which includes Carnivore Creek, Lake Peters, Lake Schrader, and the Kekiktuk River) includes the two largest and most northern arctic alpine lakes in North America. These connected lakes are surrounded by steep slopes rising to some of the highest peaks in the Brooks Range.

Total River Length:	32.2 miles	Primary Classification:	Wild
Length on Refuge:	32.2 miles	ORVs:	Scenic, Geologic, Fish
Length in Wilderness:	32.2 miles		

5.9.1 Description/Overview

The Neruokpuk Lakes complex has outstandingly remarkable scenic, geologic, and fish values that are unique from other waters in Alaska and those in the NWSRS. Lake Peters and Lake Schrader are the two largest, deepest, most northern arctic alpine lakes in North America, are exceptionally long, and are part of a water system that connects the headwaters of Carnivore Creek above the lakes to the Kekiktuk River and other downstream rivers (Map 5-10). They lie north of the Brooks Range between the Canning and Hulahula Rivers. Their stunning beauty and central location for many recreational activities, including hiking, mountain climbing, wildlife viewing, fishing, and hunting, have attracted visitors from around the world.

5.9.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

Geologic Value: Lakes Peters and Schrader are the two largest, deepest, and most northern arctic alpine lakes in North America and have been recognized for their ecological uniqueness and significance by many scientists. Lakes Peters and Schrader were named for William John Peters (1863–1942), a USGS topographer, and Frank Charles Schrader (1860–1944), a USGS geologist, who explored this region in 1901 on a reconnaissance led by Peters. The significance of the lakes was first recognized in 1968 by Dr. Frederick C. Dean, who recommended Lakes Peters and Schrader for designation as a National Natural Landmark. Bliss and Gustafson (1981) identified the site as having a high degree of national significance and recommended it a second time as a National Natural Landmark.

The Neruokpuk Lakes are surrounded by some of the highest peaks in the Brooks Range. Lake Schrader is roughly five miles long and one mile wide and is confined by the Itkillik terminal and lateral moraine remnants. It is fed primarily by Whistler and Coke creeks and Lake Peters. Glacial features dominate the valley scenery. Large boulder fields on rolling tundra, the Chamberlin glacial drift sheet with visible lateral moraines, coalescing alluvial fans, and fresh talus slopes can all be seen from the lakes' shores. A delta has formed between the two lakes where they drain into the Kekiktuk River basin.

Lake Peters, located at the foot of the tallest mountain in the Refuge (Mt. Chamberlin), is 3.85 miles long and is connected to the south end of Lake Schrader by a narrow channel approximately 1.2 miles long. Lake Peters is naturally dammed—in part by till and outwash

and in part by the broad delta of Whistler Creek. Lake Peters is fed primarily by Carnivore and Chamberlin Creeks, and the valley is predominantly in low-grade metamorphic rocks of the Neruokpuk Formation.

Scenic Value: The scenic value of the Neruokpuk Lakes and river complex is the highest of any of the waterways evaluated on the north side of the Refuge. The complex has rich flora and fauna and textbook geologic features associated with glaciers and permafrost (Murray 1979). The lakes and surrounding area were designated by the Service as the Neruokpuk Lakes Public Use Natural Area in 1977, and Gordon and Shaine (1978) listed the area as one of the State's outstanding scenic complexes. The two turquoise-colored, arctic alpine lakes in this complex lie in a narrow, U-shaped valley with ridges and peaks rising over 4,900 feet on either side. The lakes complex is surrounded by prominent glacial features, including Chamberlin Glacier, aretes, hanging glacial valleys, cirque glaciers, and surficial glacial deposits.

The scenery in this complex is highly varied, ranging from the high alpine fell-fields and rock deserts above Lake Peters to the low rolling expanses of tussocks on the hillsides surrounding Lake Schrader and the Kekiktuk River. The two glacially-fed lakes have distinct scenic differences, including the water itself: Lake Peters is turbid, while Lake Schrader is exceptionally clear. With steep mountain views to the north, expansive views to the south, turquoise waters, a historical research facility, and diverse flora and fauna, this complex of headwater tributaries, lakes, and rivers provides an unforgettable scenic experience.

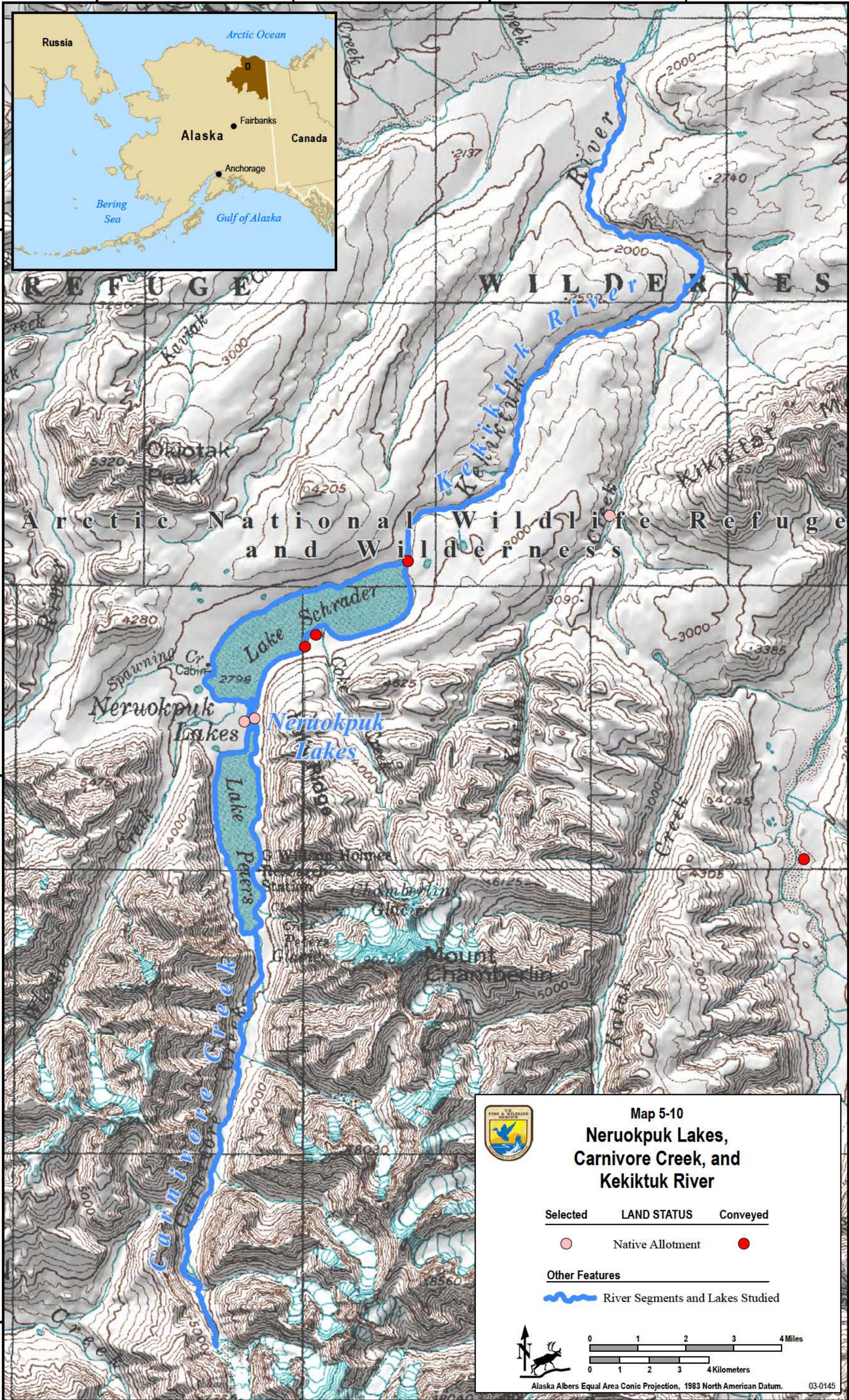
Fish Value: The exceptionally large, nearly 200-foot-deep, connected lakes support the largest population of lake trout north of the Brooks Range. These fish are lake residents and have been isolated from other populations for several centuries. The Neruokpuk Lakes' lake trout population and lower trophic levels in the complex are relatively well studied. Available data suggest the population has a high weight-to-length ratio relative to populations in three other lakes on the North Slope of the Brooks Range.

Lake Peters, Lake Schrader, and the Kekiktuk River support Arctic grayling. Both the lakes support Arctic char, and the lakes are also a known wintering site for Dolly Varden. Availability of overwintering habitat is considered the major limiting factor for populations of Arctic fishes (Craig 1989). On the North Slope of Alaska, including Arctic Refuge, freshwater spawning and overwintering sites are few in number and restricted in area. The Neruokpuk Lakes complex provides the largest volume of overwintering habitat on the Refuge and possibly the largest in the region of comparison.

Other Values: The Neruokpuk Lakes complex was an International Polar Year site in the 1950s and has historical value as a place of scientific research.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The Neruokpuk Lake complex is located within the boundary of PLO 2214 (the original Arctic Range). Title to the submerged lands beneath the Neruokpuk Lake complex is apportioned between the Service and three patented allotments. There are two allotments totaling 79.99 acres on the south side and one allotment of 159.98 acres on the northeast shore of Lake Schrader. There is one application for an 80-acre allotment that, if conveyed, would occupy both sides of the stream that connects Lake Peters with Lake Schrader. In the event the allotment is conveyed, the submerged land bordering the allotment would be owned by the



allotment owner. If patented, this parcel would have ownership of the submerged lands in the segment of stream bordered by the allotment.

The Service has not obtained any State-based water rights for the water bodies in the Neruokpuk Lake complex.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Intensive winter subsistence fishing and caribou hunting occur in and around this lake complex. Inclusion in the NWSRS could enhance the protections of these traditional uses.

Recreational use also has the potential to be enhanced, foreclosed, or curtailed if the area were included in the NWSRS. Recreational uses include hiking, backpacking, mountain climbing, hunting, and fishing.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

The Service would work with private landowners to administer the Neruokpuk Lake complex.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

Excluding the three Native allotments, the entire Neruokpuk Lake complex is managed by the Service. The Service has acquired allotments in the Refuge and plans to continue to acquire allotments from willing sellers in consultation with the Refuge manager and in cooperation with The Conservation Fund. However, acquisition of lands around the Neruokpuk Lakes complex would not be necessary to manage it as a designated wild and scenic river.

The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The entire 32.2 miles of the Neruokpuk Lakes complex lies in lands administered under Wilderness Management provisions. The Neruokpuk Lakes Public Use Natural Area was established on May 2, 1977, and encompasses 212,000 acres surrounding the lake complex; its purpose is to preserve essentially unmodified natural areas free of human impacts for public use and research.

The Service currently does not have a visual resource management program or other mechanism to protect the scenic values along this segment. However, protection of visual resources would likely be derived from the Revised Plan and other management authorities.

7. Historical or existing rights that could be adversely affected with designation.

There are no historical or existing rights that could be adversely affected with designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

There are no local zoning or other land use controls in place that would protect the lake complex's ORVs or prevent incompatible development on Native allotments.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 public scoping period for the Revised Plan, the Refuge did not receive any comments supporting designation of the Neruokpuk Lakes complex. However, we received seven comments supporting or opposing the need to manage the area as designated Wilderness, and requests to remove the administrative buildings on the shores of Lake Peters.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 11 comments for the Neruokpuk Lakes complex from commercial guides, recreational visitors, conservation organizations, the State of Alaska, the Citizens' Advisory Commission on Federal Areas, the Native Village of Kaktovik tribal president, and other unidentified commenters. Seven comments supported, two comments opposed, and two comments did not clearly mention support or opposition to designation of the Neruokpuk Lakes complex. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, hunting, rafting, and subsistence. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (4), recreational (6), scenic (7), geologic (5), cultural (1), fish (6), and historic (1). Additionally, stakeholders identified intact Wilderness character, intact ecological systems, and subsistence as Neruokpuk Lakes complex values. Specifically, comments supporting designation noted that the lakes are an outstanding example of post-glacial scenery, including views of Mt. Chamberlin. Comments also mentioned that the lakes are important to waterfowl and are part of a designated Public Use Natural Area. Comments opposing designation questioned whether the Neruokpuk Lakes complex qualifies to be considered under the Wild and Scenic Rivers Act because Section 16(a) defines the term "river" as "[...] small lakes," but the Service describes the Neruokpuk Lakes as "the two largest and most northern alpine lakes in North America." One stakeholder recommended removing any structures on the lakes.

10. Consistency of designation with other agency plans, programs, or policies.

Wild and scenic river designation of the Neruokpuk Lakes complex would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, and ANILCA.

11. Contribution to a river system watershed or basin integrity.

As one of the key overwintering sites on the North Slope for Arctic grayling, Arctic char, and lake trout, protection of the Neruokpuk Lakes complex is essential to the health and integrity of Arctic fish populations across the North Slope. The Neruokpuk Lakes complex is integral to the entire Arctic coastal plain; the complex connects to the Sadlerochit River, which flows through the Refuge before emptying into the Arctic Ocean.

12. Other issues and concerns, if any.

Refuge facilities located on the eastern shore of Lake Peters were established by the Department of the Navy as a substation of the Naval Arctic Research Laboratory in 1959 and consisted of six buildings. The facility now consists of three buildings and an outhouse and is utilized for wildlife surveys, research projects, field visits by agency leaders and others, and

law enforcement. These buildings may qualify for the National Register of Historic Places. The presence of historical or administrative buildings does not preclude designation.

5.9.3 Preliminary Suitability Determination

The Neruokpuk Lakes complex is preliminarily determined to be not suitable. The waters in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. The fish, scenic, and geologic ORVs of the Neruokpuk Lakes complex are already adequately protected through existing provisions and through Public Use Natural Area and designated Wilderness status. Continued protection of the Neruokpuk Lakes complex's ORVs would be ensured through the Revised Plan and its prescribed step-down plans, such as a Wilderness Stewardship Plan and a Visitor Use Management Plan (see Chapter 6, Sections 6.3.1 and 6.3.2 of the Revised Plan). These two plans have the highest priority of all step-down plans identified in the Revised Plan. A Refuge-wide approach to visitor use, natural resource, and fish and wildlife management would be more effective than wild river designation for managing this lake complex.



5.10 Porcupine River

Reach: The Porcupine River is one of the largest tributaries of the Yukon River and is a historically important travel route. The Refuge portion begins at the United States-Canada border and flows downstream for approximately 85 miles.

Total River Length:	476 miles	Primary Classification:	Wild
Length on Refuge:	85 miles	ORVs:	Historic, Cultural, Geologic, Wildlife
Length in Wilderness:	0 miles		

5.10.1 Description/Overview

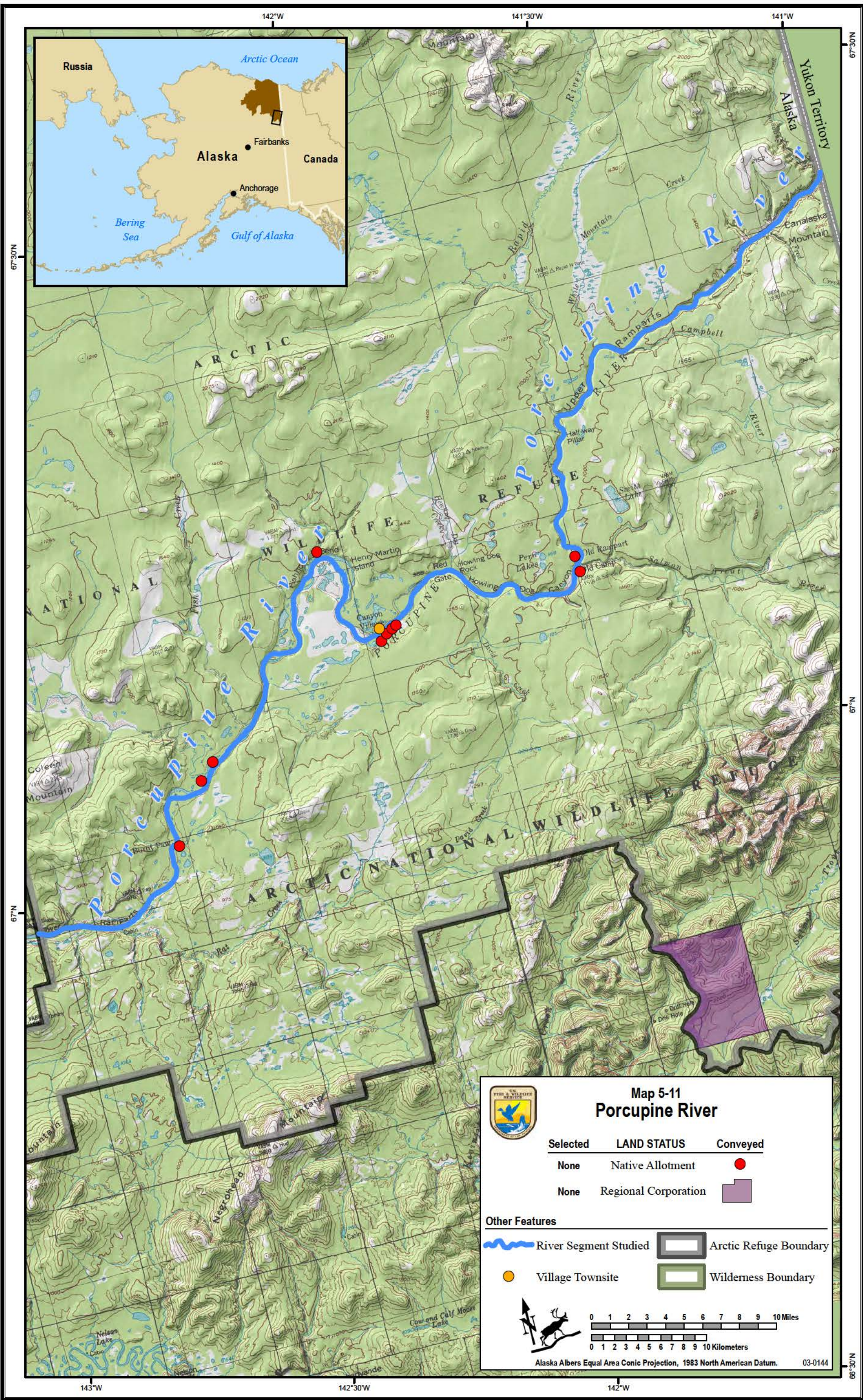
ANILCA (1980) mandated that the Porcupine River (Map 5-11) be evaluated for its eligibility and suitability for inclusion in the National Wild and Scenic Rivers System. The National Park Service (1984b) concluded with an eligible but non-suitable determination for two main reasons. First, the Porcupine River serves as an essential water highway for local travel and commerce, and there was concern that designation might constrain uses of the river for transportation purposes. Second, there was no support for designation from either the State of Alaska, who owns the river bed from bank to bank at ordinary high water, or from private landowners, who have extensive inholdings along the river, particularly along its lower reaches.

The Porcupine River has outstandingly remarkable historic, cultural, geologic, and wildlife values; the combination of values is similar to other major river segments in Alaska that have been designated into the NWSRS. The entire study area possesses these ORVs, but they are more prevalent, or at least more universally recognized, in and between the upper and lower Ramparts. Because of its remoteness and lack of roads, the river's wildness is virtually untouched despite the presence of some small cabin developments. Much of the following description was taken from the National Park Service suitability study of the Porcupine River (National Park Service 1984a).

5.10.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

Historic Value: As an important travel route, the Porcupine River filled a chapter in the history of Alaska and the Yukon Territory. Most notable was its role during the heyday of trapping and the activities of the Hudson's Bay Company. Today, the river is important to local people who rely on it as a means for travel and for pursuing a more traditional way of life. The river provides a traveler the opportunity to experience the voyages of the explorers and fur traders of the mid-1800s, when the Porcupine River was the main corridor to Alaska's interior. Old Rampart and Burnt Paw were once Hudson's Bay Company trading posts. Other settlements, including Seventeen-Mile, Rampart House, Old Village, and 25 to 30 trapper cabin sites scattered along the banks, represent a period when the river was heavily traveled and these areas were frequented as stopover sites. In 1890, J.H. Turner of the U.S. Coast and Geodetic Survey travelled up the Porcupine River and onto the Arctic coastal plain via the Firth River. The Porcupine River is the point of British incursion into Alaska.



Map 5-11
Porcupine River

Selected	LAND STATUS	Conveyed
None	Native Allotment	●
None	Regional Corporation	■

Other Features

River Segment Studied
 Arctic Refuge Boundary

Village Townsite
 Wilderness Boundary

0 1 2 3 4 5 6 7 8 9 10 Miles

0 1 2 3 4 5 6 7 8 9 10 Kilometers

Alaska Albers Equal Area Conic Projection, 1983 North American Datum.

03-0144

As recorded in a geological survey in 1940, the Porcupine River historically was a focus for tourists to access the area using canoes or folding boats. Also, freight for settlements on the Porcupine was brought down the Yukon by river steamer to Fort Yukon. It was then reshipped up the Porcupine River using shallow-draft launches pushing 30 to 40 foot scows carrying 80 tons or more of cargo. The first steamer travelled up the Porcupine River above the Ramparts in 1889.

Cultural Value: The Porcupine River possesses cultural importance and notable archeological resources. The river was ice-free during the late Pleistocene, making it a focus of research into the earliest peoples of the New World. Archeological sites range in age from relatively modern historic sites to those reaching at least 9,000 years into the past. Stratified sites are extremely rare in interior Alaska; several sites along the Porcupine hold a unique record of human cultural change and adaptation in the region.

Wildlife Value: The Porcupine River provides wildlife habitat for many species, including large mammals (moose, caribou, brown and black bears, wolf, and wolverine), smaller mammals (furbearing species) and birds (waterfowl, birds of prey, and upland game birds). The winter range of the Porcupine caribou herd extends into the upper Porcupine River drainage. All or part of the herd occasionally crosses the river during spring and fall migrations, often near the Canadian border. Brown bears are common along the river corridor. Wolves roam the Porcupine drainage and use the river as a travel corridor, especially in winter. Waterfowl and other water birds nest, feed, and raise broods in habitat provided by oxbow lakes, ponds, and quiet stretches of the river. The river is also an important waterfowl migration route in the spring and fall. The cliffs in the upper Ramparts are considered important habitat for peregrine falcons, which nest there. Raptor nesting density along that portion of the Porcupine River in Arctic Refuge is among the highest known in the State (Payer et al. 2009).

Geologic Value: The Porcupine River can be divided into five well-defined areas, each with distinctive physiography, bedrock geology, and surficial sediments. Geological studies suggest an interesting pattern of geological events in the Porcupine River valley and northern Yukon Territory. There are terraces in the valley that exhibit characteristics of a fast, deep, turbulent river. These characteristics are unlike those created by a broad, relatively placid river, which is what the Porcupine resembles today.

Other Values: Characteristics unrelated to the historic, cultural, wildlife, and geologic ORVs also affect the suitability of the Porcupine River. The Porcupine River has a high diversity species of fish species. Chum and Chinook salmon may spawn in the main channel inside the Refuge near the international border. The Porcupine River is an important migratory corridor for anadromous salmon and whitefish en route to Old Crow Basin in Canada. Maintaining this corridor is important for fulfilling international treaty obligations, specifically the Yukon River Salmon Agreement.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The Porcupine River is located outside the boundary of PLO 2214 (the original Arctic Range). It was determined navigable to the Canadian Border in 2005, confirming the State's title to the submerged lands beneath that portion of the river. There are no Native corporation lands in the Refuge river corridor; there are 11 allotments totaling 733 acres.

If any marketable deposits of oil and gas or other mineral resources were found on private land, these could be developed. Depending upon future discoveries of resources, pipelines might be constructed across or along the river corridor. Additional land-based support facilities would probably be contained on private lands.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Access to the river corridor is currently by aircraft, snowmobile, or boat. The river serves as an essential water highway for local travel and commerce. Land use for recreational and subsistence activities, access to seasonal residences, and resource exploration is characterized as occasional and intermittent. Outside the concentrations of residential, service, and industrial land use by residents of Arctic Village, Chalkyitsik, Fort Yukon, and Venetie, few families and individuals reside year round. Designation would likely not affect local travel, commerce, or boating activities.

The Porcupine River is an integral part of the land and water resource base for the subsistence economy of residents of the Yukon Flats, particularly those of Fort Yukon and Chalkyitsik. Portions of the river, especially near its mouth, are extensively used by local people for travel, trapping, hunting, wood gathering, and other uses.

There are no proposed water resource developments, such as dams or diversions. Wild river designation would preclude any future oil and gas leasing or development on Federal lands along this section of river.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

The Service would work with private landowners, the State of Alaska, and subsistence communities and their governments to administer the Porcupine River.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

Most of the uplands in the study area are managed by the Service. The submerged lands beneath the navigable portions of the Porcupine River (all lands located between the ordinary high water marks of the river) are owned by the State of Alaska (Alaska Statehood Act, Public Law 85-508; Federal Submerged Lands Act of 1953, PL 83-31).

Land or scenic easement acquisition would not be required to manage the study area as a designated wild and scenic river. However, private and State lands along the river could be acquired with the consent of the owner through the purchase of fee title or easements or through trade.

The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The entire 85-mile Arctic Refuge segment of the Porcupine River flows through lands administered under Minimal Management provisions.

State ownership of the bed of the Porcupine River may restrict the ability of the Service to effectively manage the Porcupine River as a wild and scenic river. Section 13(f) of the Wild and Scenic Rivers Act says that a State's existing rights, including the right of access with respect to the beds of navigable streams and rivers, shall not be affected by designation.

7. Historical or existing rights that could be adversely affected with designation.

The Porcupine River divides the RS 2477 Rampart House-Demarcation Point and Nation River-Rampart House trail claims, which traverse the Canada-Alaska border.

All historic or existing rights associated with subsistence, travel, and access would be protected under other authorities (ANILCA, Alaska Statehood Act, and Submerged Land Act) and would not be adversely affected by designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

Infrastructure associated with mineral extraction or oil exploration is an incompatible development that could affect the river's ORVs. However, no developments have been made or proposed, and exploration has been sparse.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 public scoping period for the Revised Plan, the Refuge received two comments supporting designation of the Porcupine River and five comments indicating the importance of and need for protection of wildlife, fish, and subsistence resources in the Porcupine River area. The comments also included several references to the importance of the Porcupine River for cultural, scenic, geologic, and historical resources.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 27 comments for the Porcupine River from commercial guides, recreational visitors, the State of Alaska, the Citizens' Advisory Council for Federal Areas, a member of the Gwich'in tribal government, and other unidentified commenters. Six comments supported, 3 comments opposed, and 18 comments did not clearly mention support or opposition to designation. Stakeholder comments indicated that river uses include commercial and non-commercial recreation, hunting, fishing and subsistence. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (22), recreational (16), scenic (18), geologic (7), cultural (17), fish (21), and historic (17). Additionally, stakeholders identified intact wilderness qualities, intact ecological systems, private land ownership, travel, sacred sites, subsistence, trapping, and hunting as other Porcupine River values.

Specifically, comments supporting designation noted that the ramparts of the Porcupine River provide a scenic setting for river travelers. The State of Alaska commented that they oppose designation of the Porcupine River because it was previously studied and found eligible but not suitable due to the river being legally defined as navigable. As such, the lands comprising the river bed and both banks below the ordinary high water mark are owned by the State of Alaska. The State also commented that the BLM filed a recordable disclaimer of interest for the Porcupine River, disclaiming all Federal property interest in the river's submerged lands.

The Citizens' Advisory Commission on Federal Areas echoed the comments of the State and added that because the National Park Service already completed the study of the Porcupine River, the Service exceeded its authority under both ANILCA and the Wild and Scenic Rivers Act by reviewing the river for designation as part of the Revised Plan. Regardless of designation, the State of Alaska's jurisdiction and management of fish and wildlife, water quality, and similar river resources would not be affected.

Several comments expressed how important the Porcupine River is for people dependent on subsistence and that subsistence rights need to be protected. Stakeholder concerns for the Porcupine River included sport hunting, illegal hunters and trappers, oil drilling, and cleanliness. Several stakeholders mentioned concerns about how forest fires around the Porcupine River are allowed to burn out naturally rather than be actively extinguished. Another commenter urged the Service to keep the Porcupine River wild and allow for recreational uses. Stakeholders suggested increasing law enforcement presence, closing the river to sport hunting and oil drilling, protecting traditional hunting grounds, and regulating trash backhaul.

10. Consistency of designation with other agency plans, programs, or policies.

Wild and scenic river designation of the Porcupine would provide a complimentary set of protections to other Refuge and Service policies and programs; ANILCA, the National Historic Preservation Act of 1966, as amended; the Antiquities Act of 1906, 16 U.S.C. § 433 et seq.; the Native American Graves Protection and Repatriation Act, 25 U.S.C. § 3001 et seq.; the Archaeological Resources Protection Act, 16 U.S.C. § 470aa et seq.; and Section 106 of the National Historic Preservation Act.

11. Contribution to a river system watershed or basin integrity.

The entire Porcupine River, including the portion in Canada, drains an area of about 46,000 square miles (Selkregg 1976). The Porcupine River is one of the two largest tributaries in the Yukon River basin. It is joined by the Coleen and Sheenjek rivers and supplies nearly 10 percent of the flow to the Yukon River. It is an integral part of the Yukon River watershed and holds extreme cultural and subsistence values by the Alaskan Native and Canadian First Nation communities. Protecting this river is essential to protecting fish and wildlife populations and the biological diversity of the region.

12. Other concerns, if any.

There are no additional issues or concerns pertaining to the Porcupine River.

5.10.3 Preliminary Suitability Determination

The Porcupine River is preliminarily determined to be not suitable. The extensive review of the Porcupine River conducted between 1981 and 1984 concluded that the Porcupine River was not suitable for designation under the Wild and Scenic Rivers Act. The situation in 2012 does not differ enough from 1984 to warrant an opposing conclusion. The Porcupine River is a navigable river, and as such, the State of Alaska owns the submerged lands under the river. Permanent protection and enhancement of the Porcupine River's ORVs would benefit from the active involvement and commitment of the State of Alaska to develop and implement resource protection strategies commensurate with the mandate of the Wild and Scenic Rivers Act. The State of Alaska is opposed to any new wild and scenic river designations in Arctic Refuge and would not be willing to work with the Service to manage the Porcupine River as a wild river.

Section 13(f) of the Wild and Scenic Rivers Act states that nothing in the Act affects the existing rights of any State, including the right of access with respect to the beds of navigable waterways. Further, State ownership of submerged lands on navigable waterways does not preclude a river-administering agency from regulating uses on the water column as necessary to meet the purposes of the Act (IWSRCC 2011). However, the Porcupine River's status as navigable would make it difficult for the Service, without cooperation from the State of Alaska, to develop and execute an effective management plan that would protect all the river's values.

Currently available mechanisms are sufficient to protect the Porcupine River's historic, geologic, cultural, and wildlife ORVs. The continued protection of these values will be addressed more adequately through the Revised Plan and its proposed step-down plans, such as an Inventory and Monitoring Plan, Fire Management Plan, and Integrated Cultural Resources Management Plan (see Chapter 6, Sections 6.2.1, 6.3.3, and 6.3.5).



6. Conclusions

Preliminary suitability determinations considered all 12 criteria for each river and the full analysis presented earlier in this report. However, three factors heavily influenced our determinations. First, we considered whether designation would result in a useful suite of management tools that would help the Refuge better manage a river corridor. Second, we considered whether designation might create new management issues, such as displacing visitor use to other rivers or areas of the Refuge. Third, we considered our ability to manage the river as a wild and scenic river in light of land ownership patterns and the willingness of other land owners to cooperate with and participate in wild and scenic river management.

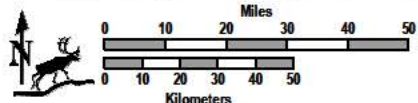
Preliminarily, four Refuge rivers were determined suitable: Atigun, Marsh Fork Canning, Hulahula, and Kongakut (Map 6-1). Suitability determinations will be finalized with the record of decision on the Revised Plan.

Map 6-1

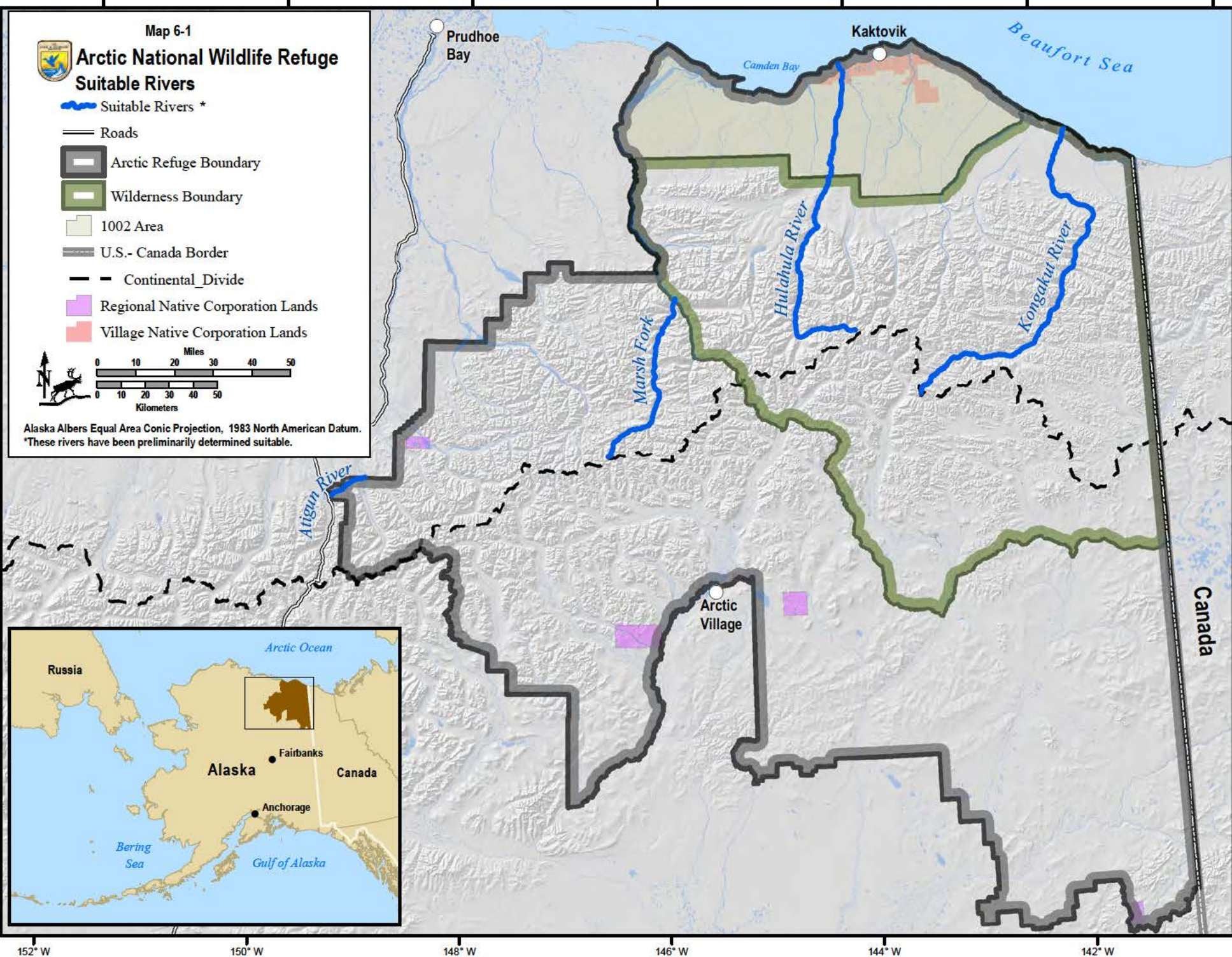


Arctic National Wildlife Refuge Suitable Rivers

- Suitable Rivers *
- Roads
- Arctic Refuge Boundary
- Wilderness Boundary
- 1002 Area
- U.S.- Canada Border
- Continental Divide
- Regional Native Corporation Lands
- Village Native Corporation Lands



Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
*These rivers have been preliminarily determined suitable.



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Appendix A. Definitions for Outstandingly Remarkable Values

SCENIC

The landscape elements of landform, vegetation, water, color, and related factors result in notable or exemplary visual features and/or attractions. When analyzing scenic values, additional factors such as scale and diversity of view, special features, seasonal variations in vegetation, and cultural modifications may be considered. Scenic and visual attractions may be highly diverse over the majority of the river or river segment. Highly scenic, pristine rivers are of higher value compared to rivers that are visually monotonous or developed.

Region of Comparison

In Arctic Refuge, rivers north of the Continental Divide were compared to each other (with one exception—the Firth River was grouped with south side rivers because of the spruce trees), and rivers south of the Continental Divide were compared to each other.

Diversity of View

Consider the presence of high relief; severe surface variation; rich color combinations (i.e., high variety, vivid colors); pleasing contrast in soil, rock, vegetation, and water; views that greatly enhance visual quality; and still or cascading water that is dominant in the landscape. River corridors with the greatest diversity and variety of views and those providing a sense of vastness of scale are of higher value.

Special Features

Consider outstanding natural features; landforms with unusual or outstanding topographic features (e.g., gorges, high relief, rock outcrops, canyons, falls, rapids, springs, color, vegetation, plains, permafrost, wetlands, rolling hills, ridges, mountains, tundra, glaciers, flats, tundra benches, vast valleys, pingos, aufeis, etc.). River corridors with high relief and focal points that are visually striking, particularly memorable, or rare in the region are of higher value.

Seasonal Variations

Consider diversity of vegetation types in interesting patterns, textures, color, and contrast. River corridors with the greatest seasonal variation and diversity are of higher value.

RECREATIONAL

Arctic Refuge rivers offer nationally- and internationally- renowned recreational opportunities that are unique enough to attract visitors from outside of the geographic region. Visitors travel long distances to use the river resources for recreational purposes, including but not limited to wildlife observation, photography, hiking, fishing, hunting, and boating.

Region of Comparison:

Recreation values were evaluated across the entire Arctic National Wildlife Refuge.

Flow

Consider the reliability of flow during runnable seasons. Rivers with enough flow to be reliably runnable are of higher value.

Character of Run

Consider the level to which the run maintains interest and provides challenge to the boater by evaluating the diversity of channel structure (braiding, canyons, rapids, etc.), river bed materials, and characteristics of the current. Rivers with more interesting and challenging runs are of higher value.

Access

Consider ease and reliability of access to, and use of, the river corridor. Rivers with the most reliable and easiest access are of higher value.

Level of Use

Consider the number of people using the river corridor. Rivers with the most use are of higher value.

Associated Superlative Opportunities

Consider rivers with superlative recreational opportunities. Rivers with the greatest variety, frequency, and quality of opportunities are of higher value.

Attraction

Consider the ability to attract visitors from outside the geographic region. Rivers that attract a variety of users who are willing to travel some distance with their primary intent to use the river for water-oriented recreation and rivers that provide a setting for nationally- and internationally-renowned opportunities are of higher value.

GEOLOGIC

The river corridor contains geologic features, processes, or phenomena that are unique, rare, or representative in the region of comparison (ROC). The feature(s) may be in an unusually active stage of development and/or represent a unique, rare, or representative combination of geologic or hydrologic features.

Region of Comparison

Geology values were evaluated across the entire Refuge.

Feature Abundance

Consider landforms with unusual or outstanding geologic or hydrologic features (e.g., caves, relic shoreline, waterfalls, canyons, springs, pingos, active glaciers, rare fossils, unique rock formations, and outcrops). River corridors with an abundance of unusual, unique, and distinctive geologic features are of higher value.

Diversity of Features

Consider the number and variety of special geologic or hydrologic features and the value of these features to the ROC. Consider the unique or rare combination of geologic or hydrologic features (e.g., erosional, volcanic, and glacial). River corridors with the greatest diversity of geologic or hydrologic features are of higher value.

Educational/Scientific

Geologic and/or hydrologic features clearly and graphically reveal interesting and/or unique educational or scientific aspects of Earth's history. River corridors that contain rare, one-of-a-kind, or common features that are the best representative example of a geologic feature in the ROC are of higher value.

FISH

Fish populations on the Refuge remain wild and retain their natural population dynamics and cycles. In that context, fish values will be judged on the relative merits of fish populations and habitat. The river contains internationally, nationally, or regionally important populations of resident and/or anadromous species of indigenous fish. Of particular significance is the presence of rare species (federally listed, State-listed, or candidate threatened or endangered species). Diversity of species is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Region of Comparison

Fish values were evaluated in two sub-regions in the State of Alaska: the North Slope of the Brooks Range and the Yukon River Basin.

Habitat

The river provides exceptionally high quality habitat for fish of national or regional significance, or may provide unique or particularly valuable habitat for rare species (federally listed, State-listed, or candidate threatened or endangered species). Diversity of habitats is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Habitat Quality

Consider the presence, extent, and carrying capacity of spawning areas, rearing areas, and adult habitat; and habitat for wild stocks and rare species (federally listed, State-listed, sensitive species, or candidate species). Areas with the greatest amount and best habitat, especially for wild stock and rare species, are of higher value.

Diversity of Species

Consider the number of species present and the value of these species. Rivers with greater diversity of species, including wild stocks and rare species, are of higher value.

Abundance of Fish

Rivers with more fish are of higher value.

WILDLIFE

Wildlife populations on the Refuge retain their natural interactions, population dynamics, and cycles. In that context, values shall be judged on the relative merits of populations and habitat.

Populations

The river corridor contains nationally or regionally important populations of indigenous wildlife species. Of particular significance are species considered to be unique or rare (federally listed, State-listed, or candidate threatened or endangered species). Diversity of species is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Habitat

The river corridor provides exceptionally high-quality habitat for wildlife of national or regional significance, or may provide unique habitat or a critical link in habitat conditions for rare species (federally listed, State-listed, or candidate threatened or endangered species). Contiguous habitat conditions are such that the biological need of the species are met.

Region of Comparison

Wildlife values were evaluated in two sub-regions in the State of Alaska: the North Slope of the Brooks Range and the Yukon River Basin.

Habitat Quality

Consider the presence, extent, and carrying capacity of a variety of wildlife habitats, including winter range, summer range, transition zones, travel corridors, and calving, denning, or nesting areas. Consider unique habitats or critical links in habitat for rare species (federally listed, State-listed, sensitive species, or candidate species). Areas with the greatest and best habitat, contiguous habitat, and habitat for rare species are of higher value.

Species Diversity

Consider the number and variety of species present and the value of these species. Rivers with the greatest diversity of species, including rare species, are of higher value.

Species Abundance

Rivers with the greatest number of wildlife in the river corridor are of higher value.

HISTORIC

The river corridor contains a site(s) or feature(s) associated with a notable event, an important person, or a cultural activity of the past that was rare; one-of-a-kind; or common but the best representative example in the ROC. Many such sites are listed on the Alaska Heritage Resources Survey or on the National Register of Historic Places. A historic site(s) and/or features(s) is 50 years old or older in most cases.

Region of Comparison

Historic values were evaluated across the State of Alaska.

Historical Importance

Consider river corridors that contain a site or feature associated with a historically important event, person, or activity of the past. Rare, unique, or unusual sites or features in the ROC are of higher value.

Site Integrity

Consider the presence of exceptional examples of historic sites that are unmodified and retain their original character. River corridors that contain exceptional sites in exceptional condition are of higher value.

Listing/Eligibility

Consider sites or features that are currently listed in, or are eligible for, the National Register of Historic Places or that have been nominated for or designated as National Historic Landmarks. Rivers with such features, particularly in abundance, are of higher value.

Educational/Interpretation

Consider sites that have regional or national importance for interpreting notable historic events, sites, or people; sites that clearly and graphically reveal an interesting or unique history; and/or sites that have the ability to attract visitors. River corridors that contain the best representative examples of historic events in the ROC are of higher value.

CULTURAL

The river, or area in the river corridor, contains a site(s) with evidence of occupation or use by Alaska Natives. Sites must have unique or rare characteristics or exceptional human interest value(s). Sites may have national or regional importance for interpreting prehistory; may be rare and represent an area where a culture or cultural period was first identified and described; may have been used concurrently by two or more cultural groups; may have been used by cultural groups for rare or sacred purposes; and/or may have exceptional subsistence value. Sites may be listed in the Alaska Heritage Resources Survey or the National Register of Historic Places.

Region of Comparison

Athabascan cultural values were evaluated in the Athapaskan language region in Alaska, north of the Alaska Range. Iñupiat cultural values were evaluated in the Iñupiaq language region in Alaska.

Notable Occupation

Consider evidence of important occupation and use by Alaska Natives or other prehistoric cultures (i.e., Iñupiat or Athabascan prehistory sites, prehistoric sites, ceremonial areas, fishing areas, sacred religious sites). Consider sites that are notable in the archaeological record, are rare, or represent an area where a culture was first identified. Rare, notable, unique, or unusual sites or features in the Region are of higher value.

Cultural/Subsistence Importance

Consider areas of exceptional human interest values. River corridors with notable quality, quantity, or variety of cultural or subsistence uses; or river corridors used for rare or sacred purposes are of higher value.

Number of Cultures

River corridors that represent more than one culture or cultural period that may have been used concurrently by more than two culture groups are of higher value.

Site Integrity

Consider the presence of exceptional examples of Alaska Native or prehistoric features or remains from an important period in history; sites that are unmodified and retain their original character; and features in excellent condition that provide an exceptional example in the ROC. River corridors containing exceptional sites in excellent condition are of higher value.

Listing/Eligibility

Consider corridors that contain sites or features that are currently listed in, or are eligible for, the National Register of Historic Places of National Historic Landmarks. Rivers with such features, particularly in abundance, are of higher value.

Educational/Interpretation

Consider sites that have regional or national importance for interpreting important prehistoric events, sites, or people; sites that clearly and graphically reveal an interesting or unique history; and/or sites that have the ability to attract visitors. River corridors that contain the best representative examples of Alaska Native or other prehistoric culture in the ROC are of higher value.

Appendix B. Detailed Analyses of Each Outstandingly Remarkable Value

B.1 Scenic Outstandingly Remarkable Value

The Scenic ORV has three components: diversity of view, special features, and seasonal variations. Data were gathered for each component, and each component was analyzed separately. For each component, north-side rivers were evaluated separately from south-side rivers to reflect the ROC for the Scenic ORV.

Diversity of View: The sub-definition for Diversity of View identifies that river corridors with the greatest diversity and variety of views have the highest value. The team gathered narrative descriptions for each river from a variety of published literature and agency reports. Institutional knowledge was solicited from staff members by interviewing those who have worked for the Refuge for more than 10 years or those who have a great deal of on-the-ground experience in the Refuge, especially on its rivers. Individual team members then ranked each river on a scale of zero (no scenic diversity) to five (outstanding scenic diversity) based on the overall sense of diversity of view from literature, staff descriptions, and the personal knowledge of team members. The final ranks were averaged across the team. If a staff member had mentioned one or more of the rivers as their choice for most scenically diverse, then those mentions were included in the final average.

Special Features: The sub-definition for Special Features states that corridors with high relief and focal points that are visually striking, particularly memorable, or rare in the region have the highest value. This component of the Scenic ORV was interpreted to be the superlative scenic features in each river corridor, especially the types of features identified in the component definition. Examples of features included in the component definition have been used as a guide for the type of features to include in the list.

Once the list was compiled, the number of superlative features was totaled. For north-side rivers, the number of special features ranged from one to nine. The number of features was ranked according to the following scale: five points for nine or more features; four points for seven to eight features; three points for five to six features; two points for three to four features; one point for one to two features; and zero points for zero features. For south-side rivers, the number of special features ranged from zero to 15. However, 15 was considered an outlier—it was magnitudes higher than the next highest number. The ranking used for south-side rivers was equal to the number of special features in each river corridor: rivers with five or more features received five points, rivers with four features received four points, etc.

Seasonal Variations: The component definition for Seasonal Variations explains that river corridors with the greatest seasonal variation and diversity are of higher value. The number of vegetation and habitat types provided insight as to the visual diversity afforded by seasonal changes—the more vegetation types in a corridor and the greater diversity among the plant communities, the more diverse the seasonal changes of color and pattern would likely be in the corridor. Because the number of vegetation and habitat types is highly correlated with the length of each river, the number of types was divided by river miles to have a more reliable measure of vegetational variety.

The number of habitat or vegetation types per river mile ranged from a low of 0.07 to a high of 1.26. Rivers received five points for one or more habitat types per mile; four points for 0.75 to

0.99 habitat types per mile; three points for 0.5 to 0.74 types per mile; two points for 0.25 to 0.49 types per mile; one point for 0.1 to 0.24 types per mile; and zero points for less than 0.1 habitat or vegetation types per river mile.

Final Score: Once all three components had been ranked, the scores for the components were compiled for each river. From this point forward, the analysis encompassed all 20 rivers, rather than looking at north-side rivers separately from south-side rivers.

Total scores for the Scenic ORV ranged from 4 to 13 points. The highest possible score for the Scenic ORV was 15 points, and 70 percent of 15 is 10.5. Thus, any river with a score greater than 10.5 was considered to have the Scenic ORV. While other evaluated waters certainly have scenic value, the results of the analysis using currently available data identify the following as having the Scenic ORV.

Table B-1. Scores by river for the Scenic outstandingly remarkable value

Scenic Outstandingly Remarkable Value (ORV) Results				
River	Components			ORV Score
	Diversity of View	Special Features	Seasonal Variations	
Aichilik River	2.0	1	1	4.0
Atigun River	2.8	2	5	9.8
Canning River	3.4	3	1	7.4
Marsh Fork Canning River	4.6	2	2	8.6
Coleen River	3.6	1	0	4.6
East Fork Chandalar River	3.2	1	0	4.2
Middle Fork Chandalar River	4.0	1	2	7.0
Firth River	3.3	2	2	7.3
Hulahula River	4.4	2	1	7.4
Jago River	2.1	1	1	4.1
Joe Creek	2.8	1	3	6.8
Junjik River	2.6	1	1	4.6
Spring Creek	2.3	0	4	6.3
Kongakut River	5.0	5	1	11.0
Okpilak River	4.6	5	1	10.6
Sadlerochit River	2.8	2	1	5.8
Neruokpuk Lakes complex	5.0	3	5	13.0
Porcupine River	3.0	5	1	9.0
Sagavanirktok River	3.5	1	2	6.5
Turner River	1.3	1	4	6.3

B.2 Recreational Outstandingly Remarkable Value

The Recreational outstandingly remarkable value has six components: flow, character of run, access, level of use, associated superlative opportunities, and attraction. Data were gathered and analyzed for each component separately. Recreational values were evaluated across the Refuge for each component, reflecting the ROC for the Recreational value.

Flow: The component definition for Flow indicates that rivers with enough flow to be reliably runnable are of higher value. One information set was analyzed for this component: a qualitative description of the reliability of each river's flow within the open water season. Consideration was given to aufeis, seasonal ice, dry channels, and too much flow. Using best professional judgment, the team ranked each river as having high, medium, or low reliability of flow. A river with high reliability of flow was given five points, a river with medium reliability of flow was given three points, and a river with low reliability of flow was given one point. The scores for this component ranged from one to five points.

Character of Run: The component definition for Character of Run directed the team to consider the level to which a run maintains interest and provides challenge to a boater. Rivers with more interesting and challenging runs are of higher value. Two information sets were used to evaluate this component: 1) the highest whitewater classification on the river, capturing the challenge of the run, and 2) a qualitative description characterizing the overall interest of the run.

To evaluate the challenge of the run, the team considered the highest whitewater classification of each river. These were then ranked according to the following scale: five points for whitewater class V, four points for whitewater class IV, three points for class III, two points for class II, and one point for whitewater class I. Only the runnable portions of rivers were ranked; class VI (unrunnable) portions of rivers were not ranked.

To evaluate interest of the run, the team considered: how incised or braided a river is; whether there are variations to the whitewater class or whether the river is much the same along its length; whether the river is straight, curving, or highly sinuous; and whether there are features such as canyons, aufeis fields, or boulders that increase interest and/or affect the current. The team then used their best professional judgment to rank interest of the run from one to five points based on a low, medium-low, medium, medium-high, and high scale. Scores for this component ranged from one to five points.

The points from the two information sets were averaged to come up with a component score for Character of Run. Component scores ranged from 1 to 4.5.

Access: This component definition considers ease and reliability of access to the river corridor. Rivers with the most reliable and easiest access are of higher value. One information set was analyzed for this component: a qualitative description of the condition and reliability of access sites; drop-off and pick-up options; and the accessible portion of the season.

The primary mode of access for all rivers in the Refuge is via bush plane. However, the condition of landing areas (e.g., wet, dry, length, etc.) and accessibility (e.g., covered in aufeis, free of obstruction), and the availability of drop-off and pick-up locations along the extent of the river corridor affects the accessibility of some of the rivers in Arctic Refuge. One of the rivers evaluated (Atigun River) can be accessed by dirt road, about one-quarter mile off the Refuge. While the Atigun is eight hours north of the nearest city (Fairbanks), this river is considered to be the most accessible river on the Refuge, year round. The team used their best

professional judgment to evaluate the narrative descriptions of access and assigned each river a rank of high, medium to high, medium, medium to low, or low accessibility. These ranks were then converted to a one to five point scale for the score of the Access component: five points were assigned to the most accessible rivers, and one point was assigned to the least accessible rivers. Component scores ranged from one to five points.

Level of Use: The component definition says to consider the number of people using the river corridor and that rivers with the most use are of higher value. The team considered two information sets for this component: 1) the number of commercially-supported visitors to each river, and 2) independent, non-commercially-supported use of each river corridor.

Refuge staff tracks all commercially-supported use of Arctic Refuge by issuing special use permits and requiring detailed annual reports on those permits. The first information set we used for Level of Use is the number of people using the river corridor for river-related activities each year, averaged over a nine-year period (2001–2009). Rivers used by an average of 81 or more people each year received five points. Rivers with an average of 61–80 people received four points; rivers with an average of 41–60 people received three points; rivers with an average of 21–40 users were given two points; and rivers with 1–20 visitors received one point.

The Refuge does not have the ability to track the total number people who access the Refuge completely on their own without the benefit of a commercial air operator and/or a guide. Therefore, the team provided a narrative description of what we know about independent use for each river, including known independent visitation where documented. We then used our best professional judgment to rank the descriptive information into high, medium to high, medium, medium to low, and low level of independent river-related use. If the level of independent use is somewhat low but trending upwards, that river was given a medium rank. Ranks were then converted to a value between one and five points, with five points assigned to high independent use and one point assigned to low independent use.

To score the component, the team compared the ranks assigned to commercially-supported and independent use, and then selected the higher of the two ranks for each river. Component scores for Level of Use ranged from one to five points.

Associated Superlative Opportunities: The team considered the types of activities recreationists engage in while in the river corridors. Activities such as hiking, hunting, and floating are available on nearly all of the Refuge's rivers. However, there are certain activities that are available on only a select few of the evaluated rivers. These activities were deemed "superlative"—specific reasons why people come to Arctic Refuge. Four superlative opportunities associated with rivers were identified by Refuge staff: viewing the Porcupine caribou herd, float hunting, a visit to "see the Refuge before oil development occurs," and unique birding activities (gray-headed chickadees and Smith's longspurs—the premier bird species associated with the Refuge). The number of opportunities was tallied and component scores were assigned: five points for four opportunities, three points for three opportunities, one point for one to two opportunities, and zero points for zero opportunities.

Attraction: This component definition considers a river's ability to attract visitors from outside the geographic region. Rivers that attract a variety of users who are willing to travel some distance with their primary intent to use the river for water-oriented recreation and rivers that provide a setting for nationally- and internationally-renowned opportunities are of higher value.

Two types of information were researched for use in the analysis of the Attraction component: 1) the most commonly requested rivers, and 2) the percent of users from distant locations.

Detailed river-specific information about where visitors originate from was unavailable. However, through interviews with three of our longest-serving permittees, general visitation patterns are available: 1–10 percent of the Refuge’s users are international residents, 35–75 percent come from areas of the United States outside of Alaska, and 15–60 percent of Refuge users are Alaska residents. The ranges are broad because different permittees cater to different clientele. The Arctic Interagency Visitor Center survey (BLM 2005) says two percent of use is international, 61 percent is from the United States outside of Alaska, and 37 percent of users are Alaska residents. Although the Refuge is an international destination and the Refuge’s rivers attract people from outside the Refuge’s geographic region, specific visitor surveys would need to be completed to determine visitor use origination patterns river by river.

In addition to asking about the geographic origin of visitors, the team asked the three permittees which five rivers visitors most commonly request. Ultimately, the team decided that a sample of three permittees was not sufficient to rank this part of the component.

Therefore, we did not score the Attraction component. Attraction was not included in any of our computations and is not included in the final score for any river.

Final Score: The scores of the five evaluated components were totaled for each river. Total scores for the Recreational outstandingly remarkable value ranged from 4.5–23 points. The highest possible score for Recreational value was 25 points (five points for each of five scored components), and 70 percent of 25 is 17.5. Thus, any river with an overall score greater than 17.5 was considered to have outstandingly remarkable Recreational value. The Atigun, Canning, Hulahula, Kongakut, and Marsh Fork Canning rivers were determined to be outstandingly remarkable, with scores of 20.5, 18, 21, 23, and 18, respectively. While other Refuge rivers have recreational values, these five rivers were determined to have outstandingly remarkable recreational values.

Table B-2. Scores by river for the Recreational outstandingly remarkable value

Recreational Outstandingly Remarkable Value (ORV) Results							
River	Components						
	Flow	Character of Run	Access	Level of Use	Associated Opportunities	Attraction	ORV Score
Aichilik River	1.0	1.5	3.0	3.0	1.0	--	9.5
Atigun River	5.0	4.5	5.0	5.0	1.0	--	20.5
Canning River	5.0	2.0	4.0	4.0	3.0	--	18.0
Marsh Fork Canning River	5.0	3.0	4.0	5.0	1.0	--	18.0
Coleen River	5.0	1.5	4.0	3.0	1.0	--	14.5
East Fork Chandalar River	5.0	2.0	3.0	4.0	0.0	--	14.0
Middle Fork Chandalar River	3.0	3.0	2.0	1.0	0.0	--	9.0
Firth River	1.0	1.5	1.0	1.0	0.0	--	4.5
Hulahula River	5.0	4.0	4.0	5.0	3.0	--	21.0
Jago River	5.0	3.5	3.0	3.0	1.0	--	15.5
Joe Creek	1.0	1.5	1.0	1.0	0.0	--	4.5
Junjik River	3.0	2.0	4.0	1.0	0.0	--	10.0
Spring Creek	1.0	2.0	3.0	3.0	0.0	--	9.0
Kongakut River	5.0	4.0	4.0	5.0	5.0	--	23.0
Okpilak River	3.0	4.5	2.0	1.0	1.0	--	11.5
Sadlerochit River	1.0	2.5	1.0	1.0	1.0	--	6.5
Neruokpuk Lakes complex	3.0	2.0	3.0	1.0	0.0	--	9.0
Porcupine River	5.0	1.0	4.0	1.0	0.0	--	11.0
Sagavanirktok River	3.0	3.0	4.0	4.0	1.0	--	15.0
Turner River	1.0	1.5	1.0	1.0	1.0	--	5.5

B.3 Geologic Outstandingly Remarkable Value

The Geologic ORV has three components: feature abundance, diversity of features, and educational and/or scientific importance. Both quantitative and qualitative data were used to evaluate geology in the river corridors. Data were gathered for each component, and each component was analyzed separately. Geologic values were evaluated across the Refuge for each component, reflecting the ROC for the Geologic ORV.

Feature Abundance: The component definition considers landforms with unusual or outstanding geologic or hydrologic features and river corridors with an abundance of unusual, unique, and distinctive geologic features to be of higher value. Sufficient data is not available to analyze both the abundance and diversity of features in each river corridor. The ability to identify the types of features in or near each river (e.g., pingos, springs, etc.) but not the total number of each feature type for each river (e.g., two pingos, five springs, etc.) limits Feature Abundance to the number of feature types rather than the true abundance of these features.

Using narrative descriptions of river geology and hydrology from published literature and unpublished agency reports, along with institutional knowledge, the types of unusual, unique, and distinctive geologic and hydrologic features in each river corridor were identified. Five points were assigned for 10 or more feature types; four points for 8–9 feature types; three points for 6–7 feature types; two points for 4–5 feature types; one point for 2–3 feature types; and zero points for 0–1 feature types.

Diversity of Features: Sufficient data to analyze both the diversity and abundance of geologic and hydrologic features in each river corridor is not available, so bedrock data as depicted in the Generalized Geologic Map of the Arctic National Wildlife Refuge (Imm et al. 1993) was analyzed. The rivers evaluated originate in the Brooks Range, cutting through steep, mountainous areas with minimal vegetation. Bedrock is frequently exposed. Further, vegetation that is present is highly correlated with the underlying geology in the river corridor, including the lower reaches of rivers that extend outside the Brooks Range.

The number of different bedrock types occurring in each corridor was identified as one measure of geologic diversity. Because patchiness also provides a measure of diversity, the number of bedrock patches was also identified. However, the number of patches was divided by river miles to remove any correlation between the number of bedrock patches and the length of each river.

The number of bedrock types ranged from 1 to 12 per river. Rivers with 11 or more bedrock types were given five points; rivers with 9–10 types received four points; 7–8 types received three points; 5–6 types got two points; 3–4 bedrock types were given one point; and 0–2 types received zero points. The number of bedrock patches per mile ranged from 0.05–0.59. Rivers with 0.36 or more patches per mile received five points; rivers with 0.29–0.35 patches per mile received four points; 0.22–0.28 patches per mile received three points; 0.15–0.21 patches per mile received two points; 0.08–0.14 patches per mile received one point; and rivers with 0.07 or fewer patches per mile received zero points.

The scores for number of bedrock types and the number of bedrock patches per mile were averaged to obtain a final score for the Diversity of Features component. Scores ranged from zero to 4.5 for this component.

Educational/Scientific: The component definition considers geologic and hydrologic features that clearly and graphically reveal interesting or unique educational or scientific aspects of earth's history. River corridors that contain rare, one-of-a-kind, or common but representative examples of a geologic feature in the region of comparison are of higher value. The team used the narrative information evaluated under the Feature Abundance component to extract superlative or exceptional geologic values. The team then collectively ranked the rivers' educational and scientific merits using best professional judgment. Those rivers with truly exceptional, rare, one-of-a-kind, or representatively common geologic or hydrologic features received a score of five points. Rivers with moderate educational or scientific values were given a score of three points; rivers with low educational or scientific geologic values were given a single point; and rivers without any superlative or exceptional geologic or hydrologic values received zero points.

Final Score: Once all three components had been ranked, the scores for the components were added up river by river. Total scores for the Geologic ORV ranged from 1–12 points. The highest possible score for the Geologic ORV was 15 points, and 70 percent of 15 is 10.5. Thus, any river with a score equal to or greater than 10.5 was considered to have the Geologic ORV.

Table B-3. Scores by river for the Geologic outstandingly remarkable value

Geologic Outstandingly Remarkable Value (ORV) Results				
River	Components			
	Feature Abundance	Diversity	Education/Scientific	ORV Score
Aichilik River	1	3.5	0	4.5
Atigun River	3	3.0	5	11.0
Canning River	3	1.5	5	9.5
Marsh Fork Canning River	1	3.0	0	4.0
Coleen River	2	2.0	1	5.0
East Fork Chandalar River	0	2.0	3	5.0
Middle Fork Chandalar River	1	1.5	3	5.5
Firth River	1	0.0	1	2.0
Hulahula River	5	3.0	1	9.0
Jago River	4	2.5	3	9.5
Joe Creek	0	2.0	0	2.0
Junjik River	0	2.0	0	2.0
Spring Creek	0	3.0	0	3.0
Kongakut River	4	4.5	3	11.5
Okpilak River	5	1.0	5	11.0
Sadlerochit River	2	2.5	3	7.5
Neruokpuk Lakes complex	4	2.5	5	11.5
Porcupine River	3	2.5	5	10.5
Sagavanirktok River	1	2.5	0	3.5
Turner River	0	0.0	1	1.0

B.4 Fish Outstandingly Remarkable Value

The definition for the Fish ORV considers population and habitat data for resident freshwater and anadromous fish species, including rare species. There are four components to the Fish ORV: habitat, habitat quality, diversity of species, and abundance of fish. Because there are no federally listed, State-listed, or candidate threatened or endangered species on Arctic Refuge or in the regions of comparison (R. Brown, Fish Biologist, Fairbanks Fish and Wildlife Field Office, March 2012, pers. comm.), the habitat component was not evaluated.

Fish data are limited for the Refuge. The locations of some overwintering and spawning sites are known, as are the number of fish species and the sizes of the populations for some of these species. Further, the type and reliability of data varies between rivers. The Fish ORV was rated using best professional judgment, supported by available data on the primary fish species in each drainage; abundance; and what is known about species diversity in each river corridor. Rivers that flow north from the Continental Divide were evaluated relative to other freshwater bodies on the North Slope of the Brooks Range in Alaska. Rivers that flow south from the Continental Divide were evaluated relative to other waters in the Interior Yukon River Basin of Alaska.

Two water bodies were determined to have the Fish ORV: the Neruokpuk Lakes complex and the Canning River. The Neruokpuk Lakes complex supports what is probably the largest, healthiest population of lake trout north of the Brooks Range. The Canning River has high species diversity relative to other waters on the North Slope, as well as a large run of Dolly Varden char.



Table B-4. Scores by river for the Fish outstandingly remarkable value.

Fish Outstandingly Remarkable Value (ORV) Results		
River	Components	
	ORV Score 0 - 5	Best Professional Judgment
Aichilik River	2	<ul style="list-style-type: none"> - Two known overwintering sites and one spawning site - Moderate to low species diversity - Fairly low Dolly Varden Char run (1,000 - 4,000)
Atigun River	1	<ul style="list-style-type: none"> - Moderate species diversity - No abundance data
Canning River	5	<ul style="list-style-type: none"> - Extensive overwintering and spawning areas - Highest species diversity on the north side of the Refuge - Largest run of Dolly Varden Char on the Refuge (7,000 – 39,000)
Marsh Fork Canning River	3	<ul style="list-style-type: none"> - Extensive overwintering sites - Moderate species diversity - No abundance data.
Coleen River	1	<ul style="list-style-type: none"> - One known overwintering site - Moderate species diversity - No abundance data
East Fork Chandalar River	4	<ul style="list-style-type: none"> - Extensive overwintering habitat - Relatively high species diversity - No abundance data
Middle Fork Chandalar River	1	<ul style="list-style-type: none"> - Low species diversity - No abundance data
Firth River	1	<ul style="list-style-type: none"> - Moderate to low species diversity - No abundance data
Hulahula River	4	<ul style="list-style-type: none"> - Widely dispersed overwintering and spawning sites along the entire river - Moderate species diversity - Moderate to high run of Dolly Varden Char (4,900 – 23,000)
Jago River	1	<ul style="list-style-type: none"> - No known spawning or overwintering sites - Moderate to low species diversity - Low run of Dolly Varden Char.
Joe Creek	1	<ul style="list-style-type: none"> - Low species diversity - No abundance data; however, best professional judgment indicates there are probably very few fish in this creek
Junjik River	1	<ul style="list-style-type: none"> - Low species diversity - No abundance data
Spring Creek	1	<ul style="list-style-type: none"> - Low species diversity - No abundance data; however, best professional judgment indicates there are probably very few fish in this creek

Kongakut River	4	<ul style="list-style-type: none"> - Two known overwintering sites - Widely dispersed spawning sites throughout the river - Moderate species diversity - Moderate run of Dolly Varden Char (more than 8,900) based on one year's data; however, best professional judgment indicates that abundance likely would be higher, possibly similar to the Hulahula
Okpilak River	1	<ul style="list-style-type: none"> - Okpilak Lake is connected to the river and provides overwintering habitat - Low species diversity - No abundance data
Sadlerochit River	3	<ul style="list-style-type: none"> - Overwintering and spawning habitat in many areas - Moderate species diversity - No abundance data
Neruokpuk Lakes	5	<ul style="list-style-type: none"> - Largest overwinter volume of water on the north side of the Refuge - Lake trout population has high weight to length ratio compared to the North Slope of the Brooks Range - Moderate species diversity - High abundance (7,000 lake trout)
Porcupine River	4	<ul style="list-style-type: none"> - Spawning habitat for chum and Chinook salmon - Migratory habitat for regionally important Chinook salmon (U.S. and Canada have a treaty to help ensure Chinook salmon escapement) - High species diversity - Moderate abundance (35,000 chum salmon)
Sagavanirktok River	1	<ul style="list-style-type: none"> - Low to moderate species diversity - No abundance data
Turner River	1	<ul style="list-style-type: none"> - Low species diversity - No abundance data

B.5 Wildlife Outstandingly Remarkable Value

The definition for the Wildlife ORV considers wildlife population and habitat data, including those species that are considered to be unique, rare, State-listed, federally listed, threatened, or endangered. There are three components to the Wildlife ORV: habitat quality, diversity of species, and species abundance. Rivers that flow north from the Continental Divide were evaluated relative to other water bodies on the North Slope of the Brooks Range in Alaska. Rivers that flow south from the Continental Divide were evaluated relative to other waters in the interior Alaska.

Habitat Quality: Three datasets were used to evaluate Habitat Quality: 1) miles of potential polar bear habitat in each river corridor, 2) number of raptor nesting sites, and 3) the number of habitat types in each corridor. Because polar bear habitat is only found north of the Continental Divide, north-side rivers were evaluated for polar bear habitat, raptor nests, and the number of habitats in each corridor. For south-side rivers, only raptor nests and the number of habitat types were used to evaluate habitat quality.

The Refuge contains more than 53 percent of polar bear critical denning habitat. Polar bear critical habitat correlates with the topography, wind patterns, and soil development in river corridors. The total miles of polar bear denning habitat along the length of each river and within one-half mile of either side of ordinary high water was calculated using Geographic Information System (GIS). Rivers received five points for 61 or more miles of polar bear denning habitat in the corridor; four points for 46–60 miles; three points for 31–45 miles; two points for 16–30 miles; one point for 1–15 miles; and zero points for zero miles of polar bear denning habitat in the river corridor.

At a statewide level, the Refuge has notable nesting raptor habitat. In some locations, raptor nesting densities are among the highest in the State. Raptor nests tend to be concentrated in the river corridors of the Refuge, especially if cliffs or cliff-like geologic features are found in the corridor. The number of known nest sites was totaled for each river. A river received five points for 50 or more nest sites; four points for 25–49 nests; three points for 10–24 nests; two points for 5–9 nest sites; one point for 1–4 nests; and zero points if there are no known raptor nests in the river corridor.

The number of habitats in each river corridor was calculated using scientific procedures (Homer et al. 2004) and GIS. A river scored five points for 19–21 habitat types; four points for 17–18 habitats; three points for 14–16 habitats; two points for 12–13 habitats; and one point for 10–11 habitat types in the river corridor.

Three datasets were averaged for north-side rivers, and two datasets were averaged for south-side rivers, to arrive at the component scores for Habitat Quality. Scores ranged from 0.3 to four points.

Diversity of Species: Two datasets were used for the Diversity of Species component score: 1) total number of species, and 2) the number of rare, sensitive, threatened, or endangered species. Both datasets were generated by considering the known range and distribution of mammals and birds across the Refuge and using best professional judgment to decide whether the rivers under consideration were included in these distributions. If a species was known to use a river corridor for all or a portion of its life cycle, that species was included in the count.

North-side rivers were ranked according to the total number of species occupying each corridor using the following scale: five points for rivers with 90 or more species; four points for

80–89 species; three points for 70–79 species; two points for 60–69 species; and one point for 50–59 species. South-side rivers had very similar totals for the number of species, ranging from 122–128 species and, as a result, were all assigned a score of three points. The team assumed that these species were typical for the ROC.

Twelve of the species either listed as threatened under the Endangered Species Act (Service 2010a), species on the Audubon Watchlist (Audubon 2010), species on the International Union for Conservation of Nature red list (International Union for Conservation of Nature 2010), or species of special concern by the State of Alaska (ADFG 2010), are known to occur on the North Slope of the Brooks Range: red-throated loon, yellow-billed loon, arctic peregrine falcon, whimbrel, red knot, dunlin, buff-breasted sandpiper, arctic tern, Smith's longspur, spectacled eider, polar bear, and tiny shrew. North-side rivers were given five points if nine or more of these rare, sensitive, threatened, or endangered species use all or a portion of any of the evaluated rivers. Four points were awarded to rivers with seven to eight species; three points for five to six species; two points for three to four species; one point for one to two species; and zero points if no rare, sensitive, threatened, or endangered species use a river corridor.

Twelve of the species either listed as threatened under the Endangered Species Act (Service 2010), species on the Audubon Watchlist (Audubon 2010), species on the International Union for Conservation of Nature redlist (International Union for Conservation of Nature 2010), or species of special concern by the State of Alaska (ADFG 2010) are known to occur south of the Continental Divide in the Yukon River basin of interior Alaska: horned grebe, peregrine falcon, solitary sandpiper, lesser yellowlegs, upland sandpiper, whimbrel, Hudsonian godwit, red knot, short-billed dowitcher, olive-sided flycatcher, Smith's longspur, and rusty blackbird. South-side rivers were given five points if seven or more of these species use all or a portion of any of the evaluated rivers. Four points were given for five to six species; three points for three to four species; two points for two species; one point for one species; and zero points if no rare, sensitive, threatened, or endangered species use a river corridor. The ranks for the two datasets were averaged for north-side rivers and for south-side rivers. Component scores for Diversity of Species ranged from 0.5 to five points.

Species Abundance: This component was not evaluated. No data are available that describe species abundance in the Refuge in each river corridor.

Final Score: The results for the two evaluated components were compiled. From this point forward, the analysis combined north-side rivers with south-side rivers. Total scores for the Wildlife ORV ranged from 0.8 to nine points. The highest possible score for the Wildlife ORV was 10 points, and 70 percent of 10 is seven. Thus, any river with a score greater than seven was considered to have the Wildlife ORV.

Table B-5. Scores by river for the Wildlife outstandingly remarkable value

Wildlife Outstandingly Remarkable Value (ORV) Results			
River	Components		
	Habitat Quality	Diversity of Species	ORV Score
Aichilik River	3.0	3.5	6.5
Atigun River	1.3	1.0	2.3
Canning River	4.0	5.0	9.0
Marsh Fork Canning River	1.3	0.5	1.8
Coleen River	2.5	3.5	6.0
East Fork Chandalar River	2.0	3.5	5.5
Middle Fork Chandalar River	1.5	3.5	5.0
Firth River	1.0	1.5	2.5
Hulahula River	2.3	4.5	6.8
Jago River	3.3	4.0	7.3
Joe Creek	0.3	0.5	0.8
Junjik River	1.5	3.0	4.5
Spring Creek	1.5	2.5	4.0
Kongakut River	2.7	4.0	6.7
Okpilak River	2.3	4.0	6.3
Sadlerochit River	2.3	4.0	6.3
Neruokpuk Lakes complex	0.3	4.0	4.3
Porcupine River	4.0	4.0	8.0
Sagavanirktok River	0.7	1.0	1.7
Turner River	1.0	2.0	3.0

B.6 Historic Outstandingly Remarkable Value

The definition for the Historic ORV considers historic sites or features in each river corridor that are associated with a notable event, an important person, or a cultural activity of the past. Sites or features should be rare, one-of-a-kind, or the best representative of a common site or feature. There are four component definitions: historical importance, site integrity, listing or eligibility, and educational and/or scientific importance.

There are few historic data for Arctic Refuge. This is due in part to the lack of historic use of the Refuge's lands and waters but also to a lack of historical research completed in the area. The team relied on best professional judgment supported by qualitative information obtained from Regional Archaeologist Debbie Corbett, published literature, agency reports, and institutional knowledge to evaluate the Historic ORV. Rivers were evaluated on a high (five points), medium (three points), and low (one point) scale based on the team's assessment of how important the gathered historical information was relative to the history of the State of Alaska (the ROC for the Historic ORV).

Only the Porcupine River was determined to have a Historic ORV. The Porcupine River was (and is today) a major travel corridor that fills an important chapter in the history of Alaska and the Yukon Territory of Canada (National Park Service 1984a). The Porcupine River provided Europeans a natural trade route into the Yukon River basin. The Hudson's Bay Company set up trading posts on the Porcupine River, exchanging goods such as beads and cloth for furs. Hudson's Bay Company posts also provided a means of travel for scientists and ministers to the Porcupine and Yukon River regions, and the posts represent the farthest western reach of the British monarchy. Buildings associated with the Hudson's Bay Company posts near Howling Dog Rock and the confluence of the Salmon Trout River are still visible.

The Porcupine River was also involved in other aspects of Alaskan and arctic history, including whaling, exploration, the Klondike gold rush, and early steamboat and gas-powered river boat navigation (National Park Service 1984a). The Porcupine River remains important to local people who rely on it as a means for travel and for pursuing a more traditional way of life, and it provides visitors the opportunity to experience the voyages of the explorers and fur traders of the mid-1800s. It is the most important arctic river route after the Yukon River.

B.7 Cultural Outstandingly Remarkable Value

The definition for the Cultural ORV considers evidence of occupation or use by Alaska Natives, with weight given to rare, unique, exceptional human interest, and/or national or regional importance for interpreting prehistory. There are six component definitions: notable occupation, cultural and/or subsistence importance, number of cultures, site integrity, listing or eligibility, and educational and/or scientific.

No systematic archaeological studies or historical research projects have been conducted across the Refuge. The information available for the eligibility analysis is derived from those studies that have been conducted and the expert knowledge of Regional Archaeologist Debbie Corbett. The data used for the Cultural ORV might not fully depict the cultural and archaeological resources in river corridors or yet-to-be-determined culturally important locations. However, it does represent the best available data. North-side rivers were evaluated separately from south-side rivers to reflect the ROC for the Cultural ORV.

Notable Occupation: The component definition considers evidence of important occupation and rates rare, unique, notable, or unusual sites higher than other sites. Regional Archaeologist Debbie Corbett provided the team with the number and type of prehistoric sites in each river corridor. The team decided to use two datasets to evaluate Notable Occupation: 1) the number of known sites, and 2) the number of different types of sites. We assumed that rivers with a large number of archaeological sites had a higher value than rivers with few or no known prehistoric sites. The other assumption made was that those sites having a variety of occupational evidence, especially those suggesting camps or housing, were of higher value than sites with fewer types of archaeological resources and no evidence of longer-term occupation.

The number of known sites in each corridor ranged from 0–67. The team decided 67 was an outlier, because the next highest number was 21. The number of sites was ranked according to the following scale: five points for 20 or more sites; four points for 15–19 sites; three points for 10–14 sites; two points for 5–9 sites; one point for 1–4 sites; and zero points for zero sites.

Types of sites ranged from flake scatters to tent rings to settlements. The number of types ranged from zero to six types, so these data were evaluated as follows: five points for six types of sites; four points for five types; three points for three to four types; two points for two types; one point for one type; and zero points if no site types have been identified.

The ranks for the two datasets were averaged for north-side rivers and for south-side rivers. Component scores for Notable Occupation ranged from zero to five points.

Cultural/Subsistence Importance: The component definition states that river corridors with notable Alaska Native quality, quantity, or variety of cultural or subsistence uses; or river corridors used for rare or sacred purposes are of higher value. The team interpreted this component to be the contemporary cultural value associated with each river corridor.

Three datasets were used to evaluate contemporary cultural values: 1) the number of subsistence uses, 2) the number of sites with current or recent historical value (e.g., cemetery sites), and 3) the presence or absence of rare, sacred, or other sites of important contemporary cultural value.

Data on the subsistence use of south-side rivers were obtained from the Yukon Flats Land Exchange Environmental Impact Statement (Service 2010b). Rivers on the south side of the Refuge are used by residents of four villages (Arctic Village, Venetie, Fort Yukon, and

Chalkyitsik) for 10 types of subsistence resources: caribou, moose, sheep, bear, wildfowl (e.g., waterfowl), small mammals, furbearers, fish, vegetation (e.g., berry picking), and woodcutting. The numbers of subsistence types were counted for each river. Five points were given to rivers with nine or more identified subsistence use types; four points for seven to eight types; three points for five to six types; two points for three to four types; one point for one to two types; and zero points if a river corridor is not used for any identified subsistence type.

Subsistence data for north-side rivers were extracted from the draft Point Thomson EIS (Exxon Mobil Corporation 2009). North-side rivers are used by the residents of Kaktovik for caribou, fish, sheep, and furbearers. Exxon Mobil Corporation (2009) also indicates if an area is used intensively for any of the subsistence uses, and it provides the specific locations for important subsistence sites. The north-side rivers were scored using all three types of data: a point for any of the four subsistence species, a point for any specific location in a corridor, and a point if all or a portion of any river corridor is intensively used. Rivers were then ranked according to the following scale: a score of five for rivers with nine or more subsistence points; a score of four for seven to eight subsistence points; a score of three for five to six subsistence types; a score of two for three to four subsistence points; a score of one for one to two subsistence points; and a score of zero if a river corridor is not used for any identified subsistence type.

Another measure of contemporary cultural values is to look at known sites with important cultural values. These sites include cemetery sites; 14(h)(1) sites—those that Native village corporations have purchased from the Federal government because they contain important cultural values; historic sites (sites from the last 150 to 100 years) that are associated with Native culture; and the number of Native allotments in each river corridor. A point was given to each site in a river corridor. Points ranged from 0–15. Rivers were ranked according to the following scale: a score of five for rivers with nine or more sites; a score of four for seven to eight sites; a score of three for five to six sites; two points for three to four sites; one point for one to two sites; and zero points if no cemetery, 14(h)(1) sites, historic sites, or Native allotments are located in the river corridor.

A final measure of contemporary cultural value is the presence of any rare, sacred, or other highly valued cultural site in the river corridor. Refuge staff interviewed nine tribal members and elders in Arctic Village and four in Kaktovik about whether any of the Refuge's river corridors contain important contemporary cultural values. If a site or river was mentioned, we assigned the river a yes or no, which was scored as five or zero points, respectively.

The ranks for the three datasets were averaged for north-side rivers and for south-side rivers. Component scores for Cultural/Subsistence Importance ranged from zero to five points.

Number of Cultures: The regional archaeologist provided a list of the cultures known to have used, or believed to have used, each river corridor. To evaluate Number of Cultures, the cultures identified in each corridor were counted. In some cases, both “modern” and “historic” Iñupiat or Gwich'in cultures were listed. For the purpose of this evaluation, “modern” and “historic” are being considered as one culture. For example, modern and historic Iñupiat received a single point—not two. For some of the rivers, the data identified “possible” cultures. These possible cultures were given one-half point because the available archaeological data is inconclusive. Rivers received five points for five cultures, four points for four cultures, etc.

Listing/Eligibility: According to the regional archaeologist, all known sites are eligible for listing in the National Register of Historic Places. This component does not allow comparisons of the rivers, so it was not included in the evaluation.

Site Integrity: The regional archaeologist identified all cultural sites in the Refuge as having high site integrity. Relatively few visitors or developments in the Refuge leave most sites undisturbed. Further, arctic conditions tend to preserve archaeological remains. Some sites have been lost along the coast because of erosion, and additional sites could be lost in the future. The water column in highly braided rivers meanders back and forth and can scour and erode cultural sites. The Site Integrity component does not allow comparisons of the rivers, so it was not included in our evaluation.

Educational/Interpretation: According to the regional archaeologist, the Refuge has two types of cultural resource sites that have national, if not global, significance: caribou fences and thousands of years of intercultural exchange.

The Refuge has the biggest known concentration of caribou fences in the United States. They are known from as far south as Eagle, Alaska, and they extend east into Canada. Archaeologists do not know how far west they extend, but some caribou fences are known to exist in Kanuti National Wildlife Refuge. These fences were very central to the cultures that used them. They appeared about 1,000 years ago and are likely Athabascan. The Refuge caribou fence complex is of national significance, according to the regional archaeologist, and the complex of fences would be eligible as a National Historic Landmark. A river received five points if one or more caribou fences are located in its corridor and zero points if there are no caribou fences.

The Refuge is not considered to be a center of prehistoric Eskimo culture or innovation. However, it was a site from which Eskimo culture expanded from Alaska into Canada and Greenland to the east. The other aspect of prehistory that is notable in the area of the Refuge is 10,000 years of Eskimo and Athabascan interaction. Thus, the Refuge represents a cultural crossroads: north to south and back again, as well as west to east. The cultural exchange in both directions has national, if not global, significance. A river received five points if there are one or more sites in the corridor where it has been documented that Iñupiat, Eskimo, and/or Denbigh cultures used the site, as well as Gwich'in, Athabascan, and/or Paleoindian cultures. These sites are artifacts of the cultural crossroads for which the Refuge is known. A river received zero points if there were no documented sites of intercultural use.

The two datasets were totaled, rather than averaged, because there were no rivers that had both caribou fences and sites of cultural interchange. Thus, the component total represents a yes or no dataset, with five points for yes and zero points for no.

Final Score: The results for the four evaluated components were totaled by river. From this point forward, the analysis combined the north-side and south-side rivers.

Total scores for the Cultural ORV ranged from 0–15 points. The highest possible score for the Cultural ORV was 20 points, and 70 percent of 20 is 14. Thus, any river with a score greater than 14 was considered to have the Cultural ORV.

It was striking to the team that two communities and two cultures brought up the cultural importance of the Hulahula River, yet the river was not identified as having a Cultural ORV based on points alone. We provided the regional archaeologist with the interview information we obtained, and she told us that few archaeological surveys have been conducted on the Hulahula River. It is clear from the data we provided that the river has been used for multi-

cultural exchange and barter for several generations, and there are likely many archaeological sites along the river's extent. In the regional archaeologist's professional judgment, the Hulahula has cultural importance in our regions of comparison, and it does have the Cultural ORV (D. Corbett, Regional Archaeologist, pers. comm., Jan. 11, 2011).



Table B-6. Scores by river for the Cultural outstandingly remarkable value

Cultural Outstandingly Remarkable Value (ORV) Results					
River	Components				
	Notable Occupation	Cultural/Subsistence Importance	Number of Cultures	Educational/Scientific	ORV Score
Aichilik River	2.5	2.7	1.0	0	6.2
Atigun River	4.5	0.0	2.0	5	11.5
Canning River	2.0	2.7	5.0	5	14.7
Marsh Fork Canning River	0.0	0.0	0.0	0	0.0
Coleen River	2.0	1.3	1.0	0	4.3
East Fork Chandalar River	4.0	5.0	1.0	5	15.0
Middle Fork Chandalar River	2.0	0.7	1.5	0	4.2
Firth River	0.0	0.0	0.0	0	0.0
Hulahula River	2.0	4.7	2.0	5	13.7
Jago River	1.0	1.3	1.0	0	3.3
Joe Creek	2.5	0.0	1.0	5	8.5
Junjik River	2.5	4.0	2.0	5	13.5
Spring Creek	1.0	1.0	1.0	5	8.0
Kongakut River	1.0	0.7	1.0	0	2.7
Okpilak River	1.0	0.7	2.0	0	3.7
Sadlerochit River	3.0	1.7	4.0	5	13.7
Neruokpuk Lakes complex	2.5	3.7	3.0	0	9.2
Porcupine River	5.0	2.3	3.5	5	15.8
Sagavanirktok River	3.5	0.0	1.0	0	4.5
Turner River	1.0	0.0	1.0	0	2.0

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Appendix C. Consultation and Coordination

C.1 Introduction

The U.S. Fish and Wildlife Service (Service) made a determined effort to consult with those having a direct or indirect legal or administrative interest in the results of the wild and scenic river review process (stakeholders) on Arctic National Wildlife Refuge (Arctic Refuge, Refuge). After the eligibility report was drafted, a letter was sent to 379 stakeholders on October 6, 2010, requesting comments about the review process.

In addition, a 45-day tribal consultation period was held regarding the internal review draft of the Revised Plan. Formal letters were sent to nine tribal council leaders of federally-recognized tribal governments in or near Arctic Refuge on November 1, 2010. On November 3–6, 2010, Arctic Refuge Manager Richard Voss and Assistant Manager Hollis Twitchell consulted in person with local government officials, village elders, and residents of the villages of Venetie, Arctic Village, and Kaktovik.

C.2 Persons, Groups, Agencies, and Governments Consulted

The following people, groups, agencies, and governments were consulted during the wild and scenic river review process:

Federal Government

Environmental Protection Agency
Federal Subsistence Board
Gates of the Arctic National Park
National Marine Fisheries Service
National Park Service
North Slope Science Initiative
Office of Environmental Policy and Compliance
U.S. Arctic Research Commission
U.S. Bureau of Indian Affairs
U.S. Bureau of Land Management
U.S. Coast Guard
U.S. Department of the Interior,
Regional Solicitor
U.S. Department of the Interior,
Senior Advisor to the Secretary for Alaska
U.S. Fish & Wildlife Service
U.S. Forest Service
U.S. Geological Survey
U.S. Minerals Management Service
Yukon Flats National Wildlife Refuge

Alaska State Government

Alaska Board of Fisheries

Alaska Board of Game
Alaska Bureau of Wildlife Enforcement
Alaska State Troopers
Alaska Department of Commerce,
Community, and Economic
Development
Alaska Department of Fish and Game
Alaska Department of Natural
Resources
ANILCA Program

Local Governments

Arctic Village Council
Canyon Village Traditional Council
Chalkyitsik Village Council
Chalkyitsik Traditional Council
City of Fort Yukon
City of Kaktovik
Gwichyaa Zhee Gwich'in Tribal
Government
Native Village of Kaktovik
Native Village of Kotzebue
North Slope Borough
Tuntutuliak Traditional Council
Village of Venetie Tribal Government
Village of Venetie Village Council

Vuntut Gwitchin First Nation

Tribal Consultation

Anaktuvuk Tribal President
Arctic Village First Chief
Beaver Traditional Council First Chief
Birch Creek Tribal First Chief
Chalkyitsik Traditional Council First Chief
Circle Traditional Council First Chief
Fort Yukon Tribal First Chief
Kaktovik Tribal Administer
Stevens Village Tribal First Chief
Venetie Tribal First Chief

Native Corporations

Chalkyitsik Native Corporation
Doyon Ltd.
Kaktovik Iñupiat Corporation
Nana Regional Corporation
Arctic Slope Regional Corporation

Native Organizations

Alaska Federation of Natives
Alaska Inter-Tribal Council
Council of Athabascan Tribal Governments
Gwich'in Steering Committee
Inuit Circumpolar Council
Tanana Chiefs Conference

Other Organizations/Associations

Aircraft Owners and Pilots Association
Alaska Oil and Gas Association
Alaska Air Carriers Association
Citizens' Advisory Commission on Federal Areas
Polar Bears International
Rural Cap
Safari Club International
Sierra Club
Sustainable Arctic Tourism Association
Wilderness Society
Wilderness Watch

Councils/Committees

Fairbanks Fish and Game Advisory Committee

North Slope Regional Advisory Committee
Western Interior Regional Advisory Council
Yukon Flats Resource Conservation and Development

Businesses/Industry

Alyeska Pipeline Service Company
Arctic Power, Inc.
Chignik Airways, Inc.
Coldfoot Camp
Deadhorse Camp
Everts Air Service
North Star Terminal & Stevedore Co., LLC
Kavik River Camp

Arctic Refuge Special Use Permit Holders

Authorized air operators
Authorized hunting guides
Authorized recreational and educational guides

Individuals

Native allottees

Other

Nomads Online Classroom Expeditions
Parks Canada, Western Arctic Field Unit
Parks Canada, Vuntut National Park
Porcupine Caribou Management Board
University of Alaska, Fairbanks – Institute of Arctic Biology, Toolik Field Station

Appendix D. Stakeholder Outreach

On October 6, 2010, the Refuge sent an outreach letter to 379 stakeholders. The letter informed them of the wild and scenic river review process, the preliminary decisions made for the eligibility phase of the review, and asked them to provide information for use during the suitability study. This appendix contains a copy of the stakeholder letter and its two attachments: 1) an eligibility report summary and, 2) a comment form for suitability criteria.



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United States Department of the Interior



FISH AND WILDLIFE SERVICE

Arctic National Wildlife Refuge

101 12th Avenue, Room 236

Fairbanks, Alaska 99701-6267

(907) 456-0250

October 5, 2010

Dear Interested Party:

The Fish and Wildlife Service (FWS), Arctic National Wildlife Refuge (Refuge), is completing a Wild and Scenic River (WSR) review as part of the revised Comprehensive Conservation Plan (CCP) and Environmental Impact Statement (EIS). The Wild and Scenic Rivers Act requires that such a study be completed whenever Federal agencies revise their land use plans. This multi-step process includes **eligibility** review, **suitability** analysis, and potential Congressional **designation**.

This month the Arctic Refuge completed the **eligibility** report which can be found at <http://arctic.fws.gov/ccp.htm>. The report details which rivers and river systems on FWS lands within the Refuge meet the criteria to be eligible for designation. The eligibility phase of the study is solely an inventory designed to identify outstanding river-related values (ORVs) (which are defined in the Wild and Scenic Rivers Act) and does not examine competing uses for the identified rivers and river systems. A summary of this report, list of eligible rivers, and associated outstanding river-related values is attached.

The FWS is now beginning the next phase of the WSR review. The **suitability** analysis is the process of determining whether each segment identified as eligible would be a worthy addition to the National Wild and Scenic Rivers System. During the initial stage of the suitability process, the FWS is considering a number of suitability criteria such as manageability of each segment, land ownership, use tradeoffs and conflicts, usage levels, and availability of other methods for protecting values, to name a few.

At this time, the FWS is soliciting data from interested stakeholders and partners for each of the eligible rivers. The most helpful data is information that directly addresses the suitability criteria. The FWS will then use these data in making draft suitability determinations during the alternatives analysis for the Draft CCP/EIS. **Please send us your comments regarding the eligible rivers of interest to you by November 12, 2010.** When the Draft CCP/ EIS is published (tentatively scheduled for spring of 2011), the public will have 90-days to comment on the draft suitability determinations.

If you have any questions, please contact Sharon Seim at (907) 456-0501 or e-mail them to ArcticRefugeCCP@fws.gov.

Sincerely,

Richard Voss

Refuge Manager

Enclosures:

Summary of Eligibility Report, List of Eligible Rivers;
Comment Request Form

Attachment #1

Arctic National Wildlife Refuge Eligibility Report Summary

The Wild and Scenic Rivers Act, (Pub. L. 90-543 as amended: 16 U.S.C. 1271-1287) (the Act) establishes a method for providing federal protection for certain free-flowing rivers and preserving them and their immediate environments for the use and enjoyment of present and future generations. The function of the wild and scenic river review is to inventory and study the rivers and water bodies within the boundary of the Arctic National Wildlife Refuge (Refuge) to determine whether they merit inclusion in the National Wild and Scenic River System (NWSRS).

Minimum Wild and Scenic River Criteria

To be eligible for designation as a Wild and Scenic River, a river or river segment and its immediate environment is required to possess at least one “outstandingly remarkable value” (ORV) and be free flowing.

Outstandingly Remarkable Values (ORVs)

The Refuge Wild and Scenic River Eligibility Review evaluated the seven ORVs mentioned in the Act: scenic, recreational, geological, fish, wildlife, historical, and cultural. While the spectrum of resources that may be considered is broad, ORVs must be directly river-related. They should:

- 4) Be located in the river or on its immediate shore;
- 5) Contribute substantially to the functioning of the river ecosystem; and/or
- 6) Owe their location or existence to the presence of the river.

If a river was found to meet the eligibility criteria, it was evaluated to determine the tentative classification.

Wild and Scenic River Classification

“1) **Wild river areas** – *Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.*

“2) **Scenic river areas** – *Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.*

“3) **Recreational river areas** – *Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.”*

A comprehensive list was identified of all named refuge rivers and river segments from the U.S. Geological Survey (USGS) Geographic Names Information System and the National Hydrography Dataset. A total of 160 rivers and creeks were identified, all of which are free flowing. Rivers with known river-related public use were identified to be reviewed further. For a further explanation of the process, see the Arctic National Wildlife Refuge Eligibility Report (at <http://arctic.fws.gov/ccp.htm>). The findings of that report are included in the following summary table.

Eligible Rivers				
River System	Description	*Segment Length	Preliminary Classification	Remarkable Values
Atigun River	The Atigun River flows into the refuge from bordering State and BLM lands and can be accessed by the Dalton Highway. The portion that's on the refuge is often referred to as Atigun Gorge. The Gorge ends just before the confluence with the Sagavanirktok River.	11.08	Wild	Geology
Canning River	The Canning River is the longest north flowing river within the Refuge. It forms the western boundary of the Refuge as it flows through mountains, to foothills, to the coastal plain, and finally to the arctic coast.	125.50	Wild	Wildlife, Fish
Marsh Fork – Canning River	The Marsh Fork begins and ends in the precipitous Phillip Smith Mountains, flowing through spectacular vistas of rocky peaks. Just before reaching the foothills, the Marsh Fork joins the main stem of the Canning.	53.84	Wild	Recreation
East Fork – Chandalar River	The East Fork has its headwaters near the Romanzof Mountains in the eastern Brooks Range. It's surrounded by Refuge until Arctic Village, where it then forms the Refuge's southern boundary. The East Fork eventually flows into the main stem of the Chandalar River.	203.71	Wild	Culture
Hulahula River	The Hulahula begins in glaciers of the Romanzof Mountains, flows west and then about 100 miles north, through valleys between Mt. Chamberlin and Mt. Michelson, onto the coastal plain, and ending in Camden Bay.	96.64	Wild	Recreation
Jago River	The Jago River is flanked by the Romanzof Mountains and is fed by the McCall Glacier on Mt. Itso. It flows through the mountains to the coastal plain and finally to the arctic coast.	83.77	Wild	Wildlife
Kongakut River	The Kongakut is the only major refuge river whose entire course is within designated wilderness. Originating high in the mountains of the eastern Brooks Range, the river flows generally north through miles of rugged mountains to the coastal plain and emptying into Beaufort Sea.	116.27	Wild	Recreation, Scenery, Geology

Eligible Rivers				
River System	Description	*Segment Length	Preliminary Classification	Remarkable Values
Okpilak River	The silt-laden Okpilak begins in the heart of the most active glacial area of the Refuge. The river churns as it flows north through a classic U-shaped valley containing moraines, fans, sand dunes and other glacial features. The water then abruptly flattens as it flows onto the coastal plain to the arctic coast.	73.25	Wild	Scenery, Geology
Neruokpuk Lakes	These lakes are the two largest and most northern arctic alpine lakes in North America. The two large, deep, connected lakes are surrounded by steep slopes rising to some of the highest peaks in the Brooks Range.	9.86	Wild	Scenery, Geology, Fish
Porcupine River	The Porcupine is one of the largest tributaries of the Yukon River and a historically important travel route. The Refuge portion begins at the Canada/US border and flows downstream for approximately 85 miles.	84.77	Wild	History, Culture, Geology, Wildlife, Fish

* Segment Length is approximate

** Preliminary classifications are interim classifications and can change through Suitability, Recommendation or Designation.

Attachment #2

Arctic National Wildlife Refuge – Wild and Scenic River Review Stakeholder Comments on Suitability Criteria

Are any of the Refuge's Eligible Rivers of specific interest to you? If so, please mark the river values that are important to you.

River	River Values							
	Recreation	Scenery	History	Culture	Geology	Wildlife	Fish	Other
Atigun River								
Canning River								
Marsh Fork – Canning River								
East Fork – Chandalar River								
Hulahula River								
Jago River								
Kongakut River								
Okpilak River								
Neruokpuk Lakes								
Porcupine River								

Do you own land or an allotment adjacent to or near one or more of these rivers? ☐ Yes ☐ No Which ones?

Do you have a claim or existing right associated with any of these rivers? ☐ Yes ☐ No Explain.

Do you use or plan to use any of these rivers for commercial use, hunting, recreation, subsistence etc.?

☐ Yes ☐ No Explain.

Are the river values you selected above at risk? ☐ Yes ☐ No Explain.

How do you think the river and/or river values you selected above should be protected? Explain.

Do you have additional questions or concerns about designation and how it may impact you, your community, your authority, or use of these rivers?

Anything else we should know? Are there other rivers with similar values that you think the Refuge should consider for further protections?

Your comments or questions are welcome anytime.

Please contact Sharon Seim (907) 456-0501 for more information or visit our website at <http://arctic.fws.gov/ccp.htm>.

Use additional paper if necessary or email your responses, comments, or questions to ArcticRefugeCCP@fws.gov

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Appendix E. Comments on Non-Eligible Rivers

The Service received comments about 15 rivers that were not determined to be eligible: the Aichilik, Coleen, Ivishak, Junjik, Katakturuk, Middle Fork Chandalar, Okerokovik, Sadlerochit, Sagavanirktok, Salmon Trout, Sheenjek (already a designated wild river), Tamayariak, and Turner rivers; and Joe and Spring creeks. Comments came from 10 stakeholders, including commercial guides, recreational visitors, conservation organizations, residents of Arctic Village, Arctic Village council members, the Native Village of Kaktovik tribal president, and a Native Village of Venetie council member. While the State of Alaska and the Citizens' Advisory Commission on Federal Areas did not comment on the following rivers, they stated they're opposed to wild and scenic river designation of any river in the Refuge. For information about general wild and scenic river comments and/or comments pertaining to eligible rivers, please refer to Section 4.6.5.2 and Section 5 of this review. The Refuge received the following comments about non-eligible rivers.

E.1 Aichilik River

During the 2010 stakeholder comment period regarding suitability criteria, the Service received six comments for the Aichilik River from a commercial guide, recreational visitors, conservation organizations, and the Native Village of Kaktovik tribal president. Five comments support considering the Aichilik for designation and one comment does not clearly mention support for or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, fishing, and subsistence. In their comments, stakeholders identified the following values with the corresponding frequencies: scenic (4), geologic (2), wildlife (4), fish (4), and cultural (1). Additionally, stakeholders identified intact wilderness, intact ecological systems, and subsistence as other Aichilik River values. Specifically, comments note that the river provides backpacking, rafting, and wildlife-viewing opportunities and is well known for its wolves; the migrating Porcupine caribou herd; cliff nesting raptors; and a concentration of nesting tundra swans, geese, and other waterfowl and shorebirds at its delta. Comments also note that the river contains dramatic scenery with mountain spires, aufeis fields, Dryas terraces, and gravel bars full of coral and other fossils. Comments also mention that the river should be recommended for designation because it forms the Wilderness boundary of the Refuge and because the river corridor was part of the range for herding reindeer.

E.2 Coleen River

During the 2010 Refuge comment period regarding suitability criteria, the Service received five comments from commercial guides, a recreational visitor, and conservation organizations. All five comments support considering the Coleen River for designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (3), scenic (2), geologic (5), wildlife (5), fish (2), cultural (5), and, historic (1). Additionally, stakeholders identify intact wilderness, intact ecological systems, and remoteness as other Coleen River values. Specifically, comments note that the Coleen River should be eligible for wild river status because it contains many ORVs such as archeological evidence of Iñupiat cultures;

special geological features like Conglomerate Mountain and Bear Mountain; and wildlife habitat for caribou and migratory moose populations.

E.3 Ivishak River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments for the Ivishak River from a commercial guide, a recreational visitor, and conservation organizations. Ivishak River is already designated as a wild river. The four comments support extending designation to the Ivishak River's tributaries. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (3), scenic (4), geologic (2), and wildlife (4). Additionally, stakeholders identify intact wilderness and intact ecological systems as other Ivishak River values. Specifically, comments note that the river provides special recreational opportunities because it is near Dalton Highway.

E.4 Joe Creek

During the 2010 Refuge comment period regarding suitability criteria, the Service received one comment from a commercial guide who supports considering Joe Creek for designation. The stakeholder identified wildlife, fish, and intact wilderness as Joe Creek values. The comment notes that Joe Creek is an important international caribou migration corridor linking the Firth River with points east.

E.5 Junjik River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments for the Junjik River from a commercial guide, an Arctic Village resident, Arctic Village council members, and a Venetie tribal government council member. Three comments support considering the Junjik River for designation, and one comment does not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial recreation and subsistence. In their comments, stakeholders identify the following values with the corresponding frequencies: recreational (1), wildlife (1), and cultural (3). Additionally, stakeholders identify intact wilderness and subsistence as other Junjik River values. Specifically, comments note that the Junjik River should be designated as a wild river due to its variety of resources; concentration of Native allotments, which represent high use areas for subsistence; seasonal habituation of families; and unique water qualities (the Gwich'in believe the Junjik possesses mineral and medicinal health qualities). Comments also note that resources harvested along the river include Dall's sheep, moose, grizzly bear, caribou, wolf, wolverine, red and arctic fox, ground squirrel, ptarmigan, porcupine, grayling, whitefish, and waterfowl.

E.6 Katakturuk River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments for the Katakturuk River from a commercial guide, a recreational visitor, and conservation organizations. All comments support considering the river for designation. One

stakeholder indicates that river uses include commercial and non-commercial recreation. Stakeholders identified the following values with the corresponding frequencies: recreational (2), scenic (4), geologic (4), wildlife (4), fish (3), and cultural (2). Additionally, stakeholders identified intact wilderness and intact ecological systems as other Katakturuk River values. Specifically, comments note that the Katakturuk River provides calving and post-calving habitat for the Porcupine caribou herd and the summer range for the Central Arctic herd; and habitat for fish, Dall's sheep, wolves, and grizzly bears. Comments also note that the river offers hiking opportunities and scenic views of mountains and a canyon.

E.7 Middle Fork Chandalar River

During the 2010 Refuge comment period regarding suitability criteria, the Service received one comment from a conservation organization supporting wild and scenic river consideration for the Middle Fork Chandalar. The stakeholder identifies wildlife and scenery as values of the river.

E.8 Okerokovik River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments from a commercial guide, a recreational visitor, and conservation organizations. All comments support considering the river for designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation. In their comments, stakeholders identify the following values with the corresponding frequencies: recreational (1), scenic (2), geologic (1), wildlife (4), cultural (1), and historic (1). Additionally, stakeholders identify intact wilderness and intact ecological systems as other Okerokovik River values. Specifically, comments note that the Okerokovik River provides calving and post-calving habitat for the Porcupine caribou herd and contains an aufeis field and a large spring. Comments also noted that wildlife sightings include grizzly bears, wolverine, and a wolf.

E.9 Sadlerochit River

During the 2010 Refuge comment period regarding suitability criteria, the Service received five comments from a commercial guide, a recreational visitor, conservation organizations, and the Native Village of Kaktovik tribal president. Four comments support considering the river for designation. One comment does not clearly mention support for or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (2), scenic (3), geologic (4), wildlife (4), fish (4), cultural (1), and historic (1). Additionally, stakeholders identify intact wilderness and intact ecological systems as other Sadlerochit river values. Specifically, comments note that: 1) the river contains diverse scenery with the Brooks Range, braided channels, and polygonated tundra; 2) the river contains Fire Creek Canyon, which is a geologic ORV; 3) the river historically was used for reindeer herding; 4) Sadlerochit Springs has been nominated as a National Natural Landmark, is one of the largest perennial springs on the North Slope, and hosts several unique plant and bird species; 5) the springs and river provide important spawning, rearing, and overwintering habitat for Dolly Varden and Arctic grayling; 6) both the river and springs

are important to many other species, including birds and muskoxen; 7) the river can act as a scientific control, which may be important for climate change research; 8) designation is feasible because the river system is almost entirely in Federal ownership; and 9) consideration should be given to connect the river with Neruokpuk Lakes for designation.

E.10 Sagavanirktok River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments for the Sagavanirktok River from a commercial guide, a recreational visitor, and conservation organizations. All four comments support considering the river for designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (4), scenic (4), geologic (2), wildlife (4), and fish (1). Additionally, stakeholders identify intact wilderness and intact ecological systems as other Sagavanirktok River values. Specifically, comments note that the river provides wildlife habitats for caribou, Dall's sheep, and moose; and it is important for general hunting. Comments also note that the river has added recreational value due to its proximity to Dalton Highway.

E.11 Salmon Trout River

During the 2010 Refuge comment period regarding suitability criteria, the Service received one comment from a conservation organization that supports considering the Salmon Trout for designation. The stakeholder identified scenery, wildlife, fish, and history as river values.

E.12 Sheenjek River

During the 2010 Refuge comment period regarding suitability criteria, the Service received one comment from a Venetie tribal government council member noting that the Sheenjek River should have an ORV for subsistence and cultural use. The portion of the Sheenjek that flows through Arctic Refuge is already designated as a wild river. The stakeholder noted that the Sheenjek River is so important that it was seriously considered as the permanent location for what is now Arctic Village.

E.13 Spring Creek

During the 2010 Refuge comment period regarding suitability criteria, the Service received two comments for Spring Creek from a commercial guide and a resident of Arctic Village. One comment supports considering Spring Creek for designation, and one comment does not clearly mention support for or opposition to designation. In their comments, stakeholders identified the following values with the corresponding frequencies: recreational (1), wildlife (1), and cultural (1). Additionally, one stakeholder identified intact wilderness as another value of the creek. One comment notes that Spring Creek has a natural warm spring and four Native allotments along its waterway.

E.14 Tamayariak River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments for the Tamayariak River from a commercial guide, a recreational visitor, and conservation organizations. All comments support considering the Tamayariak River for designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (1), scenic (1), geologic (1), wildlife (4), and fish (3). Additionally, stakeholders identify intact wilderness and intact ecological systems as other Tamayariak River values. Specifically, comments note that lakes in the Tamayariak River delta contain adequate, clean water important to birds and fish and that the river provides habitat for caribou and muskoxen. Comments also note that the river's tributaries and complex of lakes, wetlands, and mudflats provide outstanding habitat for migratory birds and that the Tamayariak's tributaries should also be considered for designation.

E.15 Turner River

During the 2010 Refuge comment period regarding suitability criteria, the Service received three comments for the Turner River from a commercial guide, a recreational visitor, and conservation organizations. All comments support considering the Turner River for designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (1), scenic (2), wildlife (3), and cultural (2). Additionally, stakeholders identify intact wilderness and intact ecological systems as additional Turner River values. Specifically, comments note that the river's proximity to Demarcation Bay and nearby barrier islands makes it especially productive for wildlife and waterfowl. Comments also note that it contains a diversity of landscapes and is highly used by the Porcupine caribou herd during the calving and post-calving seasons.



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Appendix F. Interim Management Prescriptions for Suitable/Recommended Rivers Pending Designation

F.1 Introduction

Interim management to adequately protect a candidate river's free flow, water quality, outstandingly remarkable values, and preliminary or recommended classification is derived from an agency's existing authorities and subject to existing private rights. The intent of interim protective management is to assure that a river maintains its suitable status while Congress reviews and considers a river for designation. Interagency guidance (IWSRCC 1999) directs land managers to develop interim management prescriptions for suitable rivers. The intent of the prescriptions is to maintain, not enhance, the current condition and values of each suitable river.

The following prescriptions were developed from the Management Guidelines and Policies discussed in Chapter 2 of the Arctic National Wildlife Refuge (Arctic Refuge, Refuge) Revised Comprehensive Conservation Plan (Plan, Revised Plan).

The Kongakut River and the upper portion of the Hulahula River flow through lands designated as Wilderness. The interim management prescriptions for these river segments were drawn from the Refuge's Wilderness Management category. The Atigun and Marsh Fork Canning rivers, and the lower portion of the Hulahula River, flow through lands managed as Minimal Management. The interim prescriptions for these river segments were derived from the Refuge's Minimal Management category.

The two sets of interim management prescriptions are similar whether the river flows wholly or partially within designated Wilderness. The primary difference between the prescriptions is that activities and uses conducted by the Service in designated Wilderness are subject to a minimum requirement analysis (MRA), which is a decision making process to determine if the proposed activities are necessary to administer the area as designated Wilderness and to accomplish the purposes of the Refuge, including the purposes of the Wilderness Act. Terms used in the following table are defined as:

- Allowed – Activity, use, or facility is allowed under existing NEPA analysis, appropriate use findings, Refuge compatibility determinations, and applicable laws and regulations of the Service, other Federal agencies, and the State of Alaska
- May be Allowed – Activity, use, or facility may be allowed subject to site-specific NEPA analysis, an appropriate use finding (when required), a specific Refuge compatibility determination (when required), and compliance with all applicable laws and regulations of the Service, other Federal agencies, and the State of Alaska
- May be authorized – Activity, use, or facility may only be allowed with a required special use permit or other authorization
- Not allowed – Activity, use, or facility is not allowed

Table F-1. Interim Management Prescriptions for Suitable and Recommended Rivers

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
ECOSYSTEM, HABITAT, FISH and WILDLIFE MANAGEMENT		
Collecting Information on and Monitoring Ecosystem Components Data gathering, monitoring, and maintaining a comprehensive database of selected ecosystem components (e.g., plants, animals, fish, water, air)	Allowed (subject to MRA)	Allowed
Research and Management <i>By the Service:</i> Access and collection of data necessary for management decisions or to further science	Allowed (subject to MRA)	Allowed
<i>By the Alaska Department of Fish and Game:</i> Access and collection of data necessary for management decisions or to further science	Allowed (subject to MRA)	Allowed
<i>By Other Researchers:</i> Access and collection of data necessary for management decisions or to further science	May be authorized (subject to MRA)	May be authorized
Research and Management Facilities May be permanent or temporary structures or camps, including weirs, counting towers, and sonar counters	May be allowed (subject to MRA)	May be allowed
Describing, Locating, and Mapping Habitats Development of quantitative, written, and graphic descriptions of fish and wildlife habitat, including water, food, and shelter components	Allowed (subject to MRA)	Allowed
Habitat Management <i>Mechanical Treatment:</i> Activities such as cutting, crushing, or mowing of vegetation; water control structures; fencing; artificial nest structures	Not allowed, with exceptions	Not allowed, with exceptions
<i>Chemical Treatment:</i> Use of chemicals to remove or control non-native species	May be allowed (subject to MRA)	May be allowed

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Manual Treatment: Use of hand tools to remove, reduce, or modify hazardous plant fuels or exotic plant species, or to modify habitats (e.g., remove beaver dams)	May be allowed (subject to MRA)	May be allowed
Aquatic Habitat Modifications Activities such as stream bank restoration, passage structures, fish barriers, or removal of obstacles that result in physical modification of aquatic habitats to maintain or restore native fish species	May be allowed (subject to MRA)	May be allowed
Fire Management Prescribed Fires: Fire ignited by management actions to meet specific management objectives	May be allowed (subject to MRA)	May be allowed
Wildland Fire Use: The planned use of any wildland fire to meet management objectives	May be allowed (subject to MRA)	May be allowed
Fire Suppression: Management actions intended to protect identified values from a fire, extinguish a fire, or confine a fire	Allowed	Allowed
Non-native and Pest Plant Control Monitoring, extirpation, control, removal and/or relocation, and other management practices for pest and non-native plant species	May be allowed (subject to MRA)	May be allowed
Water Quality and Quantity Management Monitoring of water quality and quantity to identify baseline data and for management purposes; includes installation of gauging stations	Allowed (subject to MRA)	Allowed
Reintroduction of Species The reintroduction of native species to restore diversity of native fish, wildlife, and habitats	May be allowed (subject to MRA)	May be allowed

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Fish and Wildlife Control The control, relocation, sterilization, removal, or other management of native species, including predators, to maintain diversity of native fish, wildlife, and habitats; favor other fish or wildlife populations; protect reintroduced, threatened, or endangered species or to restore depleted native populations	May be allowed (subject to MRA)	May be allowed
Non-native Species Management The removal or control of non-native species (including predators)	May be allowed (subject to MRA)	May be allowed
Pest Management and Disease Prevention and Control Relocation or removal of organisms that threaten human health or survival of native fish, wildlife, or plant species; management practices directed at controlling pathogens that threaten fish, wildlife, and people, such as rabies and parasite control	May be allowed (subject to MRA)	May be allowed
Fishery Restoration Actions taken to restore fish access to spawning and rearing habitat, or actions taken to restore populations to historic levels; includes harvest management, escapement goals, habitat restoration, stocking, egg incubation boxes, and lake fertilization	May be allowed (subject to MRA)	May be allowed
Fishery Restoration Facilities Fisheries facilities may be permanent or temporary and may include hatcheries, fish ladders, fish passages, fish barriers, and associated structures	May be authorized (subject to MRA)	May be authorized
Fishery Enhancement Activities applied to a fish stock to supplement numbers of harvestable fish to a level beyond what could be naturally produced based upon a determination or reasonable estimate of historic levels	Not allowed	Not allowed

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Fishery Enhancement Facilities May be permanent or temporary and may include hatcheries, egg incubation boxes, fish ladders, fish passages, fish barriers, and associated structures	Not allowed	Not allowed
Non-native Species Introductions Introduction of species not naturally occurring within the Refuge	Not allowed	Not allowed
SUBSISTENCE		
Fishing, Hunting, Trapping, and Berry Picking The taking of fish, wildlife, and other natural resources for personal consumption, as provided by law	Allowed	Allowed
Collection of House Logs and Firewood Harvesting live standing timber greater than 6 inches diameter at breast height for personal or extended family use	May be authorized	May be authorized
Collection of House Logs and Firewood Harvesting live standing timber between 3 and 6 inches diameter at breast height for personal or extended family use	20 trees or less per year allowed; more than 20 trees per year may be authorized	20 trees or less per year allowed; more than 20 trees per year may be authorized
Collection of Plant Materials Harvesting trees less than 3 inches diameter at breast height, dead standing or downed timber, grass, bark, and other plant materials used for subsistence purposes	Allowed	Allowed
Temporary Facilities – see Temporary Facilities (Public Use)		
Subsistence Cabins – See Cabins (Public Use)		

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Access for Subsistence Use of snowmobiles, motorboats, and other means of surface transportation traditionally employed for subsistence purposes	Allowed	Allowed
PUBLIC ACCESS		
Foot	Allowed	Allowed
Dogs and Dog Teams	Allowed	Allowed
Domestic Sheep, Goats, and Camelids (e.g., llamas and alpacas)	Not allowed (requires new regulations for non-commercial uses)	Not allowed (requires new regulations for non-commercial uses)
Other Domestic Animals Includes horses and mules (pelletized weed-free feed required)	Allowed	Allowed
Non-motorized Boats Includes canoes, kayaks, rafts, etc.	Allowed	Allowed
Motorized Use of snowmobiles, motorboats, airplanes, and non-motorized surface transportation methods for traditional activities and for travel to and from villages and home sites	Allowed	Allowed
Highway Vehicles	Not allowed	Not allowed
Off-Road Vehicles (All-Terrain Vehicles) Includes air boats and air-cushion vehicles	Not allowed, with exceptions	Not allowed, with exceptions
Helicopters Includes all rotary-wing aircraft	Not allowed, with exceptions	Not allowed, with exceptions
PUBLIC USE, RECREATION, and OUTREACH ACTIVITIES		
Hunting, Fishing, Wildlife Observation, Wildlife Photography, Interpretation, and Environmental Education Note: All activities listed are priority public uses	Allowed	Allowed
Trapping, Walking, Hiking, Camping at Undeveloped Sites, and Dog Sledding	Allowed	Allowed
General Photography See also COMMERCIAL USES	Allowed	Allowed

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Outreach Activities	Allowed	Allowed
All Weather Roads And associated developments, including bridges	Not allowed	Not allowed
Unimproved Roads Note: While unimproved roads are not allowed in Minimal, Wilderness, and Wild River Management categories, roads may exist; in these management categories, the roads would not be designated for use or maintained	Not allowed	Not allowed
Designated Off-Road Vehicle (All-Terrain Vehicle) Routes and Areas	Not allowed	Not allowed
Roadside Exhibits and Waysides	Not applicable	Not applicable
Constructed and Maintained Landing Areas	Not allowed	Not allowed
Cleared Landing Area	Existing areas allowed to remain, new areas not allowed	May be allowed
Constructed Hiking Trails Includes bridges, boardwalks, trailheads, and related facilities	May be allowed (subject to MRA)	May be allowed
Designated Hiking Routes Unimproved and unmaintained trails; may be designated by signs, cairns, and/or on maps	Allowed	Allowed
Boat Launches and Docks (Public) Designated sites for launching and storing watercraft or tying up a float plane	Not allowed (subject to MRA)	Not allowed
Visitor Contact Facilities A variety of staffed and unstaffed facilities providing information on the Refuge and its resources to the public; facilities range from visitor centers to kiosks and signs	Not allowed (subject to MRA)	Not allowed
Campgrounds Developed sites accessible by highway vehicles	Not applicable	Not applicable

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Hardened Campsites Areas where people can camp that are accessible by vehicle or on foot but where the only facilities provided are for public health and safety and/or resource protection; may include gravel pads for tents, hardened trails, and/or primitive toilets	May be allowed (subject to MRA)	May be allowed
Temporary Facilities Includes tent frames and platforms, caches, and other similar or related facilities; does not include cabins. See also COMMERCIAL USES and Administrative Facilities	Tent platforms left in place more than 12 months may be authorized; all others may be allowed	Tent platforms left in place more than 12 months may be authorized; all others may be allowed
Public Use Cabin A cabin administered by the Service and available for use by the public; intended only for short-term public recreational use and occupancy	Not allowed	Not allowed
Administrative Cabin Any cabin primarily used by Refuge staff or other authorized personnel for the administration of the Refuge	May be allowed (subject to MRA)	May be allowed
Subsistence Cabin Any cabin necessary for health and safety and to provide for the continuation of ongoing subsistence activities; not for recreational use	Existing cabins allowed to remain; new cabins may be authorized	Existing cabins allowed to remain; new cabins may be authorized
Commercial Cabin Any cabin that is used in association with a commercial operation, including but not limited to commercial fishing activities and recreational guiding services	Existing cabins allowed to remain; new cabins not allowed	Existing cabins allowed to remain; new cabins may be authorized
Other Cabins Cabins associated with authorized activities or uses by other government agencies	May be authorized	May be authorized

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Administrative Field Camps Temporary facilities used by Refuge staff and other authorized personnel to support individual (generally) field projects; may include, but not limited to, tent frames and temporary or portable outhouses, shower facilities, storage and/or maintenance facilities, and caches	May be allowed (subject to MRA)	May be allowed
Administrative Field Sites Permanent facilities used by Refuge staff or other authorized personnel for the administration of the Refuge; includes administrative cabins and related structures (see Cabins) and larger multi-facility administrative sites necessary to support ongoing field projects, research, and other management activities; temporary facilities, to meet short-term needs, may supplement the permanent facilities at these sites	Use of existing sites allowed including replacement of existing facilities as necessary; new sites may be allowed (subject to MRA)	Use of existing sites allowed including replacement of existing facilities as necessary; new sites may be allowed
Refuge Administrative Office Complex Facilities necessary to house Refuge operations, outreach, and maintenance activities, and associated infrastructure; includes staff offices, storage, maintenance, parking lots, and other similar facilities	Not allowed	Not allowed
Hazardous Materials Storage Sites, including appropriate structures and equipment, necessary for the storage and transfer of fuels and other hazardous materials necessary for administrative purposes; must be in compliance with all Federal and State requirements	May be allowed (subject to MRA)	May be allowed
Residences Residential housing for Refuge staff and their families; includes single and multi-family dwellings	Not allowed	Not allowed
Bunkhouses Quarters to house temporary and similar employees, volunteers, visitors, and other agency personnel	Not allowed	Not allowed

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Aircraft Hangars and Facilities for Storage of Aircraft	Not allowed	Not allowed
Boat Launches and Docks (Administrative) Designated sites for launching and storing watercraft or tying up a float plane	May be allowed (subject to MRA)	May be allowed
Radio Repeater Sites Sites used to maintain radio communications equipment; may include a location for helicopter access	May be allowed (subject to MRA)	May be allowed
COMMERCIAL ACTIVITIES or USES		
Guiding and Outfitting	May be authorized	May be authorized
Transporting	May be authorized	May be authorized
Fixed-Wing Air Taxis	May be authorized	May be authorized
Helicopter Air Taxis	Not allowed	Not allowed
Bus and Auto Tours	Not applicable	Not applicable
Surface Geological Studies Includes surface rock collecting and geological mapping activities (includes helicopter or fixed-wing access)	May be authorized	May be authorized
Geophysical Exploration and Seismic Studies Examination of subsurface rock formations through devices that set off and record vibrations in the earth; usually involves mechanized surface transportation but may be helicopter supported; includes studies conducted for the Department of the Interior	Not allowed	May be authorized
Core Sampling Using helicopter transported motorized drill rig to extract subsurface rock samples; does not include exploratory wells; includes sampling conducted for Department of the Interior	Not allowed, with exceptions	May be authorized
Other Geophysical Studies Helicopter-supported gravity and magnetic surveys and other minimal impact activities that do not require mechanized surface transportation	Not allowed	May be authorized

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Oil and Gas Leasing Leasing, drilling, and extraction of oil and gas for commercial purposes; includes all associated above and below ground facilities.	Not allowed unless authorized by Congress under ANILCA 1003	Not allowed unless authorized by Congress under ANILCA 1003
Sale of Sand, Gravel, and Other Common Variety Minerals Extraction of sand, gravel, and other saleable minerals for commercial purposes; includes commercial use by Federal, State, and local agencies	Not allowed	Not allowed
Other Mineral Leasing Includes the extraction of coal, geothermal resources, potassium, sodium, phosphate, sulfur, or other leasable minerals for commercial purposes; exceptions are available for cases of national need	Not allowed	Not allowed
Mining of Hardrock Minerals Development of valid (pre-ANILCA) mining claims (lode, placer, and mill sites) on Refuge lands for the purpose of extracting hardrock minerals (there are no valid claims on the Refuge)	Not allowed	Not allowed
Commercial Filming, Videotaping, and Audio taping	May be authorized	May be authorized
Grazing	Not allowed	Not allowed
Agriculture (Commercial)	Not allowed	Not allowed
Commercial Fishery Support Facilities At or below 1979 levels	Not applicable	Not applicable
Commercial Fishery Support Facilities Above 1979 levels	Not allowed	May be authorized
Seafood Processing	Not allowed	Not allowed
Aquaculture and Mariculture Support Facilities	Not allowed	Not allowed
Commercial Timber and Firewood Harvest	Not allowed	May be authorized
Commercial Gathering of Other Resources	Not allowed	Not allowed

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Transportation and Utility Systems Includes transmission lines, pipelines, telephone and electrical power lines, oil and gas pipelines, communication systems, roads, landing areas, and other necessary related facilities; does not include facilities associated with on-Refuge oil and gas development	May be authorized by Congress	May be authorized
Navigation Aids and Other Facilities Includes air and water navigation aids and related facilities; communication sites and related facilities; facilities for national defense and related air and/or water navigation aids; and facilities for weather, climate, and fisheries research and monitoring; includes both private and government facilities	May be authorized (subject to MRA)	May be authorized
Major Hydroelectric Power Development Hydroelectric dams creating a change in stream flow with an elevation change and reservoir behind the dam	Not allowed	Not allowed
Small Hydroelectric Power Development Hydroelectric generation by low-head or in-stream structures that do not change the flow of the river	Not allowed	Not allowed

F.2 References

Interagency Wild and Scenic Rivers Coordinating Council. 1999. The wild and scenic river study process. December 1999 Technical Report. Washington, D.C., USA.

Appendix G. Existing Protections

G.1 Introduction

The U.S. Fish and Wildlife Service (Service) management and protection of refuge resources throughout the National Wildlife Refuge System (Refuge System) are influenced by a wide array of laws, treaties, and executive orders and the corresponding regulations and policies used to implement them. Among the most important are: the Refuge System Administration Act, as amended by the Refuge System Improvement Act; the Refuge Recreation Act; the Migratory Bird Treaty Act; and the Endangered Species Act (see Section G.3 of this appendix for more information). Following are some overarching ways that the values and resources of Arctic National Wildlife Refuge (Refuge, Arctic Refuge) are currently protected.

G.2 Laws and Policies Pertaining to Arctic Refuge

G.2.1 *Alaska National Interest Lands Conservation Act*

For national wildlife refuges in Alaska, the Alaska National Interest Lands Conservation Act (ANILCA), as amended, provides key management direction. In 1980, ANILCA established Federal public lands across Alaska, and the Arctic National Wildlife Range (Arctic Range) was incorporated into the newly created Arctic National Wildlife Refuge. The establishing orders under ANILCA outline the purposes for Arctic Refuge and require that these purposes be protected. ANILCA Section 303(B) states:

“The purposes for which the Arctic National Wildlife Refuge is established and shall be managed include-

“(i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char [note in 2001- now mostly called Dolly Varden] and grayling;

“(ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;

“(iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and

“(iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge.”

Additional ANILCA provisions authorize studies and programs related to wildlife and other natural resources, subsistence opportunities, recreational activities, and economic uses. The original Arctic Range was established in 1960 *“for the purpose of preserving unique wildlife, wilderness and recreational values.”* These purposes still attach to those lands and waters that were part of the original Arctic Range, to the extent they are not inconsistent with ANILCA.

G.2.2 Regulations

All refuges are regulated by the Code of Federal Regulations. Title 50 part 36 of the Code of Federal Regulations, General Refuge Regulations, applies specifically to Alaska Refuges. Currently, there are no Arctic Refuge specific regulations. All applicable State and Federal laws apply on Arctic Refuge. The State hunting regulations apply to the general harvest of fish and wildlife, and the Federal subsistence hunting regulations apply to the harvest of fish and wildlife by federally qualified subsistence users.

G.2.3 Special Use Permits

Most visitors access the Refuge using the commercial services of a guide and/or commercial air operator. Conducting a commercial activity on the Refuge requires a special use permit that contains activity-specific conditions (including potential temporal and geographic restrictions). Before issuing a permit, the Refuge manager must determine that the proposed activity is compatible, which is done through a compatibility determination and a Section 810 Analysis. Except for hunting guides, there are no limits to the number of clients an operator may service. However, recreation guides may only have one guided float trip on a river at any given time. Guided float trips are limited to 10 people, and guided land-based activities are limited to 7 people (both limits include guides).

G.2.4 Comprehensive Conservation Plans

Comprehensive conservation plans for Alaska refuges describe broad management categories (Intensive, Moderate, Minimal, Wilderness, and Wild River Management) to outline the types of activities that would be allowed in different areas across a refuge. Although five management categories exist, only the least intrusive are administratively and legally applied on Arctic Refuge: Minimal, Wilderness, and Wild River management. Minimal Management applies to all lands within the Refuge that are not designated Wilderness or are within a designated wild river corridor. Wilderness Management applies to all designated Wilderness areas in the Refuge. Wild River Management applies to the lands and waters within the Refuge's three wild river corridors (Ivishak, Sheenjek, and Wind rivers). Table G-1 outlines the differences between Minimal and Wilderness Management.

Table G-1. Key differences between Minimal and Wilderness Management categories¹

Topic	Minimal Management	Wilderness Management
Management of Area	Managed under ANILCA and other laws and policies	Managed under the Wilderness Act, the exceptions provided by ANILCA, the Service's Wilderness Stewardship Policy, and other laws and policies
Purposes	Managed to achieve establishing purposes of the Refuge	Managed to achieve establishing purposes of the Refuge and Wilderness Act purposes
Refuge Management Activities	No Minimum Requirement Analysis (MRA) required Mechanized and motorized equipment may be allowed when overall impacts are temporary or its use furthers management goals.	Minimum Requirement Analysis (MRA) required for all Refuge management activities Mechanized and motorized equipment would be subject to an MRA or where ANILCA provides exceptions
Public Access	Cleared aircraft landing areas may be allowed ²	Existing cleared aircraft landing areas allowed to remain, but new cleared areas not allowed
Public Use, Recreation, and Outreach Activities	New commercial cabins may be authorized ³	New commercial cabins are not allowed
Public Use of Motorized Generators and Water Pumps	May be allowed	Not allowed
Commercial Activities or Uses	Geophysical exploration and seismic studies, core sampling, and other geophysical studies may be authorized outside the coastal plain (1002 Area) Transportation and utility systems may be authorized by the Service through a Plan amendment	Geophysical exploration and seismic studies, core sampling, and other geophysical studies not allowed Transportation and utility systems may be authorized subject to Presidential and congressional approval

¹ See Revised Plan Chapter 2, Section 2.3.3 Minimal Management, Section 2.3.4 Wilderness Management, and Section 2.4.20 Management of Designated Wilderness

² May be allowed: Activity, use, or facility may be allowed subject to site-specific NEPA analysis, an appropriate use finding (when required), a specific Refuge compatibility determination (when required), and compliance with all applicable laws and regulations of the Service, other Federal agencies, and the State.

³ May be authorized: Activity, use, or facility may only be allowed with a required special use permit or other authorization.

G.3 Laws and Executive Orders

The following list describes some of the laws and executive orders under which the Service operates. This list is not exhaustive; rather, it is meant to represent the types of laws and regulations that currently protect Arctic Refuge's river values. Items are listed in chronologic order (oldest to newest):

Rivers and Harbor Act (1899) (33 U.S.C. 403): Section 10 of this act requires the authorization by the U.S. Army Corps of Engineers prior to any work in, on, over, or under a navigable water of the United States.

Antiquities Act (1906): Authorizes the scientific investigation of antiquities on Federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Migratory Bird Treaty Act (1918): Designates the protection of migratory birds as a Federal responsibility. This act enables the setting of seasons and other regulations, including the closing of areas, Federal or non-Federal, to the hunting of migratory birds.

Migratory Bird Conservation Act (1929): Establishes procedures for acquisition by purchase, rental, or gift of areas approved by the Migratory Bird Conservation Commission.

Fish and Wildlife Coordination Act (1934), as amended (1958): Requires that the Service and State fish and wildlife agencies be consulted whenever water is to be impounded, diverted, or modified under a Federal permit or license. The Service and State agency recommend measures to prevent the loss of biological resources, or to mitigate or compensate for the damage. The project proponent must take biological resource values into account and adopt justifiable protection measures to obtain maximum overall project benefits. A 1958 amendment added provisions to recognize the vital contribution of wildlife resources to the nation and to require equal consideration and coordination of wildlife conservation with other water resources development programs. It also authorized the Secretary of Interior to provide public fishing areas and accept donations of lands and funds.

Migratory Bird Hunting and Conservation Stamp Act (1934): Requires every waterfowl hunter 16 years of age or older to carry a stamp; the act also earmarks proceeds of Duck Stamps to buy or lease waterfowl habitat. A 1958 amendment authorizes the acquisition of small wetland and pothole areas to be designated as 'Waterfowl Production Areas,' which may be acquired without the limitations and requirements of the Migratory Bird Conservation Act.

Historic Sites, Buildings, and Antiquities Act (1935) as amended: Declares it a national policy to preserve historic sites and objects of national significance, including those located on refuges. Provides procedures for designation, acquisition, administration, and protection of such sites.

The Bald and Golden Eagle Protection Act of 1940 (16USC 668 et seq.): Provides protection for bald and golden eagles.

Fish and Wildlife Act (1956): Established a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of refuges.

Fish and Wildlife Coordination Act of 1958: Requires equal consideration and coordination of wildlife conservation with other water resource development programs.

Refuge Recreation Act (1962): Allows the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient funds are available to manage the uses.

Wilderness Act (1964) as amended: Directed the Secretary of Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within National Wildlife Refuge and National Park Systems and to recommend to the President the suitability of each such area or island for inclusion in the National Wilderness Preservation System, with final decisions made by Congress. The Secretary of Agriculture was directed to study and recommend suitable areas in the National Forest System.

National Wildlife Refuge System Administration Act (1966) 16 USC 668dd-668ee: Provides for administration, management, and planning for national wildlife refuges.

National Historic Preservation Act (1966) as amended: Establishes as policy that the Federal government is to provide leadership in the preservation of the nation's prehistoric and historic resources.

National Environmental Policy Act (1969): Requires the disclosure of the environmental impacts of any major Federal action significantly affecting the quality of the human environment.

The Clean Water Act of 1972, Section 404 (33 USC1344 et seq.), as amended: Provides for protection of water quality.

Endangered Species Act (1973): Requires all Federal agencies to carry out programs for the conservation of endangered and threatened species.

Clean Water Act (1977): Requires consultation with the U.S. Army Corps of Engineers for wetland modifications (404 permits) or work in, over, or under navigable waters (402 permits).

Surface Mining Control and Reclamation Act (1977) as amended (Public Law 95- 87): Regulates surface mining activities and reclamation of coal-mined lands. Further regulates the coal industry by designating certain areas as unsuitable for coal mining operations.

Executive Order No. 11593, Protection and Enhancement of the Cultural Environment: States that if the Service proposes any development activities that may affect archaeological or historical sites, the Service will consult with Federal and State historic preservation officers to comply with Section 106 of the National Historic Preservation Act of 1966, as amended.

Executive Order 11988, Floodplain Management (1977): Each Federal agency shall provide leadership and take action to reduce the risk of flood loss and minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplains.

Executive Order 11990, Protection of Wetlands (1977): Order directs Federal agencies to (1) minimize destruction, loss, or degradation of wetlands, and (2) preserve and enhance the natural and beneficial values of wetlands when a practical alternative exists.

Executive Order 12372, (Intergovernmental Review of Federal Programs): Directs the Service to send copies of the environmental assessment to State planning agencies for review.

Fish and Wildlife Improvement Act (1978): Improves the administration of fish and wildlife programs and amends several earlier laws including the Refuge Recreation Act, the National Wildlife Refuge System Administration Act, and the Fish and Wildlife Act of 1956. It authorizes the Secretary to accept gifts and bequests of real and personal property on behalf

of the United States. It also authorizes the use of volunteers on Service projects and appropriations to carry out a volunteer program.

Archaeological Resources Protection Act (1979) as amended: Protects materials of archaeological interest from unauthorized removal or destruction and requires Federal managers to develop plans and schedules to locate archaeological resources.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (PL 96-510; 42 USC 9601, et seq.): Provides mechanisms for hazardous waste cleanup.

Fish and Wildlife Conservation Act of 1980 (16 USC 661-667e) as amended: Requires the Fish and Wildlife Service to monitor non-game bird species, identify species of management concern, and implement conservation measures to preclude the need for listing under the Endangered Species Act.

Emergency Wetlands Resources Act (1986): Promotes the conservation of migratory waterfowl and offsets or prevents the serious loss of wetlands by the acquisition of wetlands and other essential habitats.

Oil Pollution Act of 1990 (PL 101-380; 33 USC 2701, et seq.): Provides oil pollution policies and protections.

Federal Noxious Weed Act (1990): Requires the use of integrated management systems to control or contain undesirable plant species, and an interdisciplinary approach with the cooperation of other Federal and State agencies.

Native American Graves Protection and Repatriation Act (1990): Requires Federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession.

Americans with Disabilities Act (1992): Prohibits discrimination in public accommodations and services.

Executive Order 12996 Management and General Public Use of the National Wildlife Refuge System (1996): Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the Refuge System.

Executive Order 13007, Indian Sacred Sites (1996): Directs Federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

National Wildlife Refuge System Improvement Act (1997) PL 105-57: This act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966. Defines the National Wildlife Refuge System and authorizes the Secretary to permit any use of a refuge, provided such use is compatible with the major purposes for which the refuge was established. The Refuge Improvement Act clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation); establishes a formal process for determining compatibility; establishes the responsibilities of the Secretary of Interior for managing and protecting the System; and requires a comprehensive conservation plan for each refuge by the year 2012.

National Wildlife Refuge System Volunteer and Community Partnership Enhancement Act (1998): Amends the Fish and Wildlife Act of 1956 to promote volunteer programs and community partnerships for the benefit of national wildlife refuges and for other purposes.

Executive Order 13112, Invasive Species (1999): Directs Federal agencies to prevent the introduction of invasive species, control populations of such species, monitor invasive species populations, provide for restoration of native species and habitat conditions in ecosystems that have been invaded, conduct research, promote public education on invasive species and the means to address them, and consult with the Invasive Species Council.

Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, 6 November 2000: Provides a mechanism for establishing regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications.

Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, 2001: Instructs Federal agencies to conserve migratory birds by several means, including the incorporation of strategies and recommendation found in Partners in Flight Bird Conservation plans, the North American Waterfowl Plan, the North American Waterbird Plan, and the United States Shorebird Conservation Plan, into agency management plan and guidance documents.

Director's Order Number 132 (January 18, 2001): National Wildlife Refuge System Mission, Goals, and Purposes. This reiterates the mission of the Refuge System and how it relates to the mission of the Service. The order also provides guidance on the use of goals and purposes in the administration and management of the system.

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Appendix H. List of Contributors

While the primary wild and scenic river review team consisted of six people (see Table 1-1 of this review), many people contributed to the project. The following table identifies key contributors and their roles.

Table H-1. List of contributors to the wild and scenic river review

Name	Title	Agency	Contribution
Michelle Bailey	Outdoor Recreation Planner	BLM	WSR* suitability, stakeholder outreach
Heather Bartlett	Law Enforcement Officer/Pilot	Service	Law enforcement, public use, permit administration WSR Team Leader
Alan Brackney	Wildlife Biologist/GIS Specialist	Service	Wildlife biologist, GIS WSR Team Member; maps
Greta Burkhart	Aquatic Ecologist	Service	Fish resources
Bret Christensen	Navigable Waters Specialist	Service	Water rights, jurisdictions, navigability
Debra Corbett	Regional Archaeologist	Service	Cultural and historical resources
Donita Cotter	National Wild and Scenic Rivers Coordinator	Service	WSR policy and guidance WSR Team Assistant Leader
Judy Culver	Outdoor Recreation Planner	BLM	WSR suitability
Scott McGee	Cartographer	Service	Land status and GIS; maps
Meghan Murphy	Visitor Services Specialist	Service	Comments summary
Jennifer Reed	Park Ranger/Visitor Services Specialist	Service	Public use, interpretation, permit administration, education WSR Team Member
Sharon Seim	Natural Resource Planner	Service	Planning process, NEPA coordination WSR Team Member
Richard Voss	Arctic National Wildlife Refuge Manager	Service	Refuge Manager

*WSR = Wild and Scenic River



Appendix J

Public Scoping Comments

J. Public Scoping Comments

The scoping period for the revised Arctic National Wildlife Refuge (Arctic Refuge, Refuge) Comprehensive Conservation Plan (Plan, Revised Plan) extended from April 7 to June 7, 2010. The intent was to solicit ideas identifying special values, opportunities, and problems related to Arctic Refuge. Comments were received by email, web form, post card, fax, and letter, and through public hearing transcripts. The Refuge received 94,061 responses, of which 1,480 were original responses, and 92,581 were form letters from 10 different letter campaigns. Many people voiced similar concerns. The scoping process did not constitute a vote but was meant to provide a broad distribution of ideas and concerns regarding Arctic Refuge.

The comments were analyzed by the Bear West Company, which was contracted by the U. S. Forest Service's National Environmental Policy Act (NEPA) Services Group. Analysts produced a comprehensive database containing all comments plus "codes" that allowed comments to be organized with other similar comments and topics. Similar topics were then organized into a logical structure for the final report. The report, database queries, and original responses were used by Refuge staff and planners to identify issues. For a more detailed explanation of the comment analysis process, see the attached Summary of Public Comments.

The attached report can be cited as:

NEPA Services Group (NSG). 2010. Summary of Public Comment. U. S. Department of the Interior, Fish and Wildlife Service, Arctic National Wildlife Refuge ANWR Revised Comprehensive Conservation Plan, Notice of Intent to Prepare an Environmental Impact Statement. Salt Lake City, Utah, USA.



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Summary of Public Comment



US Department of the Interior Fish and Wildlife Service Arctic National Wildlife Refuge

ANWR Revised Comprehensive Conservation Plan

Notice of Intent to Prepare an Environmental Impact Statement

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Summary of Public Comment

Introduction

This document is a summary of public comment received following a Notice of Intent (NOI) to prepare a Draft Environmental Impact Statement (DEIS) for the revision of the Comprehensive Conservation Plan (CCP) for the Arctic National Wildlife Refuge (Refuge). The formal comment period on the CCP revision began on April 7, 2010, and ended June 7, 2010. The United States Fish and Wildlife Service (Service) received 94,061 responses, consisting of 1,480 substantive original responses and 92,581 form letters.

This document provides a project background on the CCP NOI, follows with a short description of the content analysis process, and concludes with an overview of the main areas of public concern. This summary does not provide an exhaustive account of public comments or concerns. The comments on the CCP NOI are varied and contain substantial specificity and detail. In fact, the database contains well over 4,000 individual comments. As a result, this summary provides only a general discussion of pervasive themes running through the comments, and serves as a roadmap to the various thematic areas of comment received on the project.

Reviewers should be aware that respondents are self-selected, and their comments do not necessarily represent the views of the public at large. In considering these views, it is important for the public and decision makers to understand that this process makes no attempt to treat input as if it were a vote. Instead, the content analysis process ensures that every comment is considered at some point in the decision process.

Project Background

In April 2010, the Service published a NOI to prepare a DEIS documenting the effects of a revised CCP. The new CCP would establish goals and objectives, review Refuge rivers for potential recommendation for inclusion in the National Wild and Scenic Rivers System, and review Refuge lands for potential recommendation for inclusion in the National Wilderness Preservation System.

Preparation and updating of the CCP for the Refuge is required under the Alaska National Interest Lands Conservation Act of 1980 (ANILCA). The purpose of the CCP is to “provide refuge managers with a management strategy for achieving refuge purposes and contributing toward the mission of the National Wildlife Refuge System, consistent with sound principles of fish, wildlife, and habitat management and conservation; legal mandates; and Service policies”. Additionally, the CCP will “define long-term goals and objectives toward which refuge management activities are directed, and identify which uses may be compatible with the purposes of a refuge”.

Content Analysis Process

Content analysis is a method of evaluating public comments in order to derive information and summarize themes and common concerns. While this summary does not seek to capture every specific concern, it strives to identify thematic issues for decision-makers and the public. This process and the resulting analysis do not replace comments

in their original form. The planning team and the public are encouraged to review the actual letters firsthand.

Each response is given a unique identifying number, allowing analysts to link specific comments to original letters. Respondents' names and addresses are entered into a project-specific database program, enabling creation of a complete mailing list of all respondents that provided substantive input. For more information on how form letter responses are managed, please see Appendix B. The database is also used to track demographic information such as responses from special interest groups or federal, state, tribal, county, and local governments. All input is considered and reviewed by analysts. Each response is read and sorted into comments addressing various concerns and themes. This sorting is accomplished by applying "codes" to each comment. Each comment receives two different codes: the first identifies whatever action the respondent is requesting (e.g., "the Service should designate more wilderness"); the second identifies the affected resource (e.g., "the Service should designate more wilderness *to protect wildlife*"). Comments are then entered into the database.

In preparing the final summary analysis, public issues are reviewed using database reports and searches. Analysts track coded input and strive to identify all thematic issues and concerns, not just those represented by the majority of respondents. Content analysis is intended to facilitate good decision-making by helping the planning team to clarify, adjust, or incorporate technical information into preparation of planning documents and rules. All responses (i.e., public hearing transcripts, letters, emails, faxes, and other types of input) are included in this analysis.

The analysis can be organized to follow either action or resource coding. This particular analysis follows action coding, meaning that each section of the analysis will summarize the different "actions" respondents stated the agency should take. Each summarized action may bear relationships to many potentially affected resources.

Because of the specific and technical nature of questions asked in various public forums and the resulting specificity of public comments, all parties using this summary are strongly encouraged to review the original comments as well. This analysis does not replace the comments individually, but gives insight into the comments collectively.

Overview of Comments

Public comment on the CCP NOI is far-reaching, highly detailed, and represents a wide range of values and perspectives with respect to the Refuge's planning direction. Because of the very large number of substantive comments received, and this wide range of values and perspectives, only broad generalizations or key themes are targeted in this summary. The following subsections describe the public comments received in relation to the major action themes of the CCP NOI. In each section, the analysis provides a narrative description of the theme, and follows with sample statements from the actual body of comments. These are notated with numbers corresponding to the letter number and the comment number within the letter. For example, if the sample statement is preceded by the number notation 20.3, this corresponds to letter 20, and comment 3 within that letter.

1.0 General Comments

The most common type of comments received on the project express general support or opposition, often including rationales for the positions. Commenters express a particularly strong desire to protect the wildlife, whether supporting or opposing development within the Refuge. Other very common rationales for protection of the Refuge include climate effects, general ecological protection, cultural effects, and wilderness character. Many of these comments invoke recent events in the Gulf of Mexico as an example.

Comments of general support usually don't provide a specific approach to the CCP, but instead contain a common theme of environmental or ecological preservation. These commenters often urge the Service to ensure protection for "future generations", and voice strong opposition to any development in the area. Many of these commenters oppose all development and support significant wilderness designation. Some feel that a small footprint for development is not possible, and are concerned that roads and pipelines would spread throughout the Refuge.

20.3: "If we fail to protect the Arctic Refuge now, we will lose a place that represents a connection to the natural world that has been lost across much of our nation. Together, we must do everything we can to ensure that the Arctic Refuge remains undiminished for future generations."

596.4: "Manage the Refuge to provide wildlife the space and time to adapt to climate change in the absence of human intervention."

492.3: "The plan should address open space and the preservation of free-roaming wildlife populations as a high value, long-term sustainable option."

389.3: "The Gwich'in people have lived in the Arctic region for thousands of years, and regard the Coastal Plain as "The Sacred Place Where Life Begins" because it has been the most frequently used birthing and nursery grounds for the migratory Porcupine Caribou Herd. The social, economic and spiritual fabric of the Gwich'in culture depends on the survival of these caribou. The CCP should

strive to preserve the wildlife, wilderness and subsistence values necessary to maintain the Gwich'in way of life for many generations to come."

113.5: "Given the recent and continuing disaster in the (to us) nearby Gulf of Mexico, we feel strongly that oil and gas leasing, exploration, development, and extraction pose far too great a risk to wildlife and wilderness values, and should not be permitted in the Coastal Plain or any other portions of the Refuge. As you know, tundra is particularly vulnerable to human activities. We would not want to chance any such disaster occurring in Alaska – our national crown jewel."

Many commenters feel the Refuge should be used for development of oil and gas. Reasons include economic benefits to the economy, safer onshore drilling practices, national security, and public access. These comments often focus on not allowing more wilderness designation. Some oppose claims that oil and gas development has adversely affected wildlife populations in the Arctic, sometimes commenting that populations increase because the animals use developed areas to their advantage. Some commenters speak to the technological aspects of drilling, discussing how modern drilling techniques have reduced the amount of human interference with wildlife and habitat.

689.3: "Our state already has 58 million acres of federal wilderness - nearly the size of the upper east coast of our country. The refuge already has 92 percent of its acreage assigned to wilderness; that is enough."

23.1: "I strongly support continuing to allow oil and gas exploration in the 1002 area of the coastal plain. As the single best on-shore prospect for oil in the United States, with estimates of billions of barrels of recoverable oil available, it is an important part of our nation's overall energy strategy. It would be foolish, in the extreme, to disallow exploration and development of this critical resource."

273.3: "Since have been no measurable effects on North Slope populations of caribou, polar or grizzly bears, arctic foxes or mush oxen in the 50 years of oil exploration, development and production, I am convinced the science supports opening Area 1002 to oil and gas development. There is no reason for yet another study."

534.2: "Given the technological advances, and with the environmental safeguards that are currently applicable to all oil and gas activities in the Arctic, development can take place on the Coastal Plain in an environmentally sound manner without lasting effects."

260.3: "Part of the responsible stewardship does include oil and gas production, which provides jobs and revenues that are necessary to support public services such as health care and education. These revenues, furthermore, enable indigenous populations to maintain culture and traditions that would not be possible if they were forced to migrate elsewhere for revenue and jobs."

2.0 Analysis

This section covers comments that were received in relation to the scope or content of the Draft Environmental Impact Statement and the Comprehensive Conservation Plan to be prepared. While a relatively small percentage of comments focused on the details of these analyses, the comments are more specific than in many other areas of content. Generally speaking, the major themes for Analysis are the need to update studies and to employ effective monitoring and inventories.

A minor theme is the adequacy of studies. Commenters note that many studies have been done to analyze resources on the Refuge, but want to have assurance that any studies used are adequate and up to date. Some also mention a concern that the studies provided should not be censored. Others request that more specific studies be completed prior to making management decisions.

82.4: “Senator Lisa Murkowski asked me to stress once again, that if in fact the study team even considers studying the area for a wilderness recommendation, it should authorize new winter-time seismic data acquisition across the coastal plain because it is impossible to weigh the merits of a wilderness designation recommendation, without knowing, using modern 3-D and 4-D seismic technology, the likely resources of the area.”

162.2: “I would urge you the people working on the ANWR and 1002 issues to be very careful to get the full scientific story on the issues like caribou. And in my comments, which I submitted written comments, there's elaboration on this and there's also some reprints of papers that will be useful to you. One final observation was in -- it was around 2000 when Secretary of the Interior Norton asked -- was asked by Senator Frank Murkowski to answer some questions on ANWR and one of them was regarding caribou. And she used information provided both by her staff or her -- the people in Fish and Wildlife Service, in addition to information that I provided her and she was roundly criticized in the national media by anonymous employees of Fish and Wildlife for using the published information that I had provided her. Saying, well, he used to work for the oil industry, which I did, I was a contractor. So I urge you to allow science to operate as science and be very careful of attempts at censorship one way or the other to influence your guys' -- the information you get and present to the public and the policy makers.”

The most common Analysis theme is the need to update, change, or add data to the existing body of knowledge. While some commenters state there is plenty of data surrounding the Refuge and its potential for energy, others are concerned with the data and see the need to update older data with new, more accurate data. This includes data relating to climate change, oil and gas estimates, and wildlife numbers. Some respondents ask for specific new studies, such as a “Traditional Access” study. Responders also want to make sure that any info used from these studies has a long term planning focus.

269.3: “The overwhelming amount of knowledge that you all have and that the Service has about the Arctic now serves as a very incredible baseline for scientific study. With the change in the climate that's ongoing now, it provides a great opportunity not just to protect the wilderness of the Arctic for posterity, but also to serve as a scientific laboratory. And so I urge you to think about it that way in looking at the review of the conservation plan.”

301.2: “Avoid doing anything within the Refuge related to quick, short-term thinking.”

732.3: “A study should be done to up-grade the baseline study done in 1987 taking into account differences caused by climate change.”

430.7: “Section 811 Traditional Methods of Access – ANILCA Section 811(b) directs the Secretary to allow use of snowmobiles, motorboats, and other means of surface transportation traditionally employed by local residents for subsistence purposes, subject to reasonable regulation. If resource concerns associated with traditional modes of access are anticipated, we [State of Alaska Office of Project Management and Permitting] urge the Refuge to first document pre-ANILCA access before promulgating regulations to implement management restrictions. In addition, we request the Refuge make this a cooperative study with the State to take advantage of our historical data.

The other major analysis theme is monitoring. Respondents urge the refuge to maintain data on several resources and topics. Climate change, water and air, wildlife, invasive plants, and recreation are the key topics of discussion.

79.2: “Keep monitoring water and air quality, as the arctic is affected by what happens around the globe.”

367.34: “The revised plan should also require continual monitoring of motorized access across Refuge lands to determine their impacts. If significant impacts are detected, regulations must be developed, including proper public notice and review, to “protect natural and other values of the conservation system units.” In this context, “other values” should include physical and living resources, such as soils, plants, and wildlife, and intangible values, such as solitude, wilderness character, and aesthetics. Since the use of all-terrain vehicles in the Arctic Refuge was non-existent when ANILCA passed and was not specifically allowed in the law, ATV's cannot be authorized for general public access within the Refuge.”

650.5: “We [The Wildlife Society] believe that the CCP should emphasize the importance of research and monitoring on the Refuge to assess the effects of climate change on arctic wildlife. There is a substantial amount of baseline information on wildlife populations and habitats of the Arctic Refuge thanks to studies on the 1002 Area, elsewhere in the Refuge, and in adjacent areas. That baseline information is most useful if there is continued monitoring of wildlife

populations and their habitats, assessment of species distributions, and measurement of climate variables on the Refuge. The CCP should encourage collaboration with academic institutions and continued cooperation with other government agencies in monitoring and research programs that address wildlife populations, ecosystem function, and the effects of climate change.”

684.2: “Monitor recreational use, hunting, and “traditional” Native use. There may need to be limits placed on these activities to limit overuse and destruction of wilderness values.”

Several respondents discuss the content of the CCP document itself. Some support or oppose the Draft goals set by the CCP. One respondent asks for clarification of the specific activities the Draft CCP will allow in relation to oil and gas exploration activities and transportation methods. Other comments were made relative to the clarity of the CCP’s draft goals, and suggest specific review or revisions.

694.26: “We seek clarification from the Service in the Draft revised CCP EIS regarding new oil and gas exploration activities, such as geo-exploration and seismic studies, core sampling, and other geophysical studies or development activities in both the minimal and wilderness management categories, and we strongly urge the Service to disallow these activities in the refuge in both minimal and wilderness management categories. We request the Service develop alternatives in the DEIS that do not allow for such activities. We feel strongly that new exploration activities, such as those mentioned above, which involve mechanized surface transportation and/or are helicopter-supported, are inappropriate in refuges overall where the federal government owns the subsurface estate, much less in minimal or wilderness management categories.”

498.1: “What is important: The most important part of the draft goals are that the refuge be preserved in as much of a natural state as possible, that access for Native peoples be maintained, and that all fish and wildlife be preserved. Draft goals # 2 and 3 adequately reflect this. ANWR represents a living legacy of wildness for our country that cannot be replaced if it becomes damaged.”

654.3: “For the most part, the draft goals are an excellent guide for addressing stewardship challenges and ultimately fulfilling Refuge purposes. Goal 8, which proposes a range of management actions to include ‘active management of species and habitats’ contradicts other goals such as Goal 3 which states: ecological processes are allowed to shape the environment, essentially free of intent to alter or manipulate the natural order.” To fulfill the ultimate intent for the Refuge as stated Olaus Murie: ‘a small part of the Planet is left alone,’ we recommend that Goal 8 be changed to read: Effects of climate change on Refuge resources are evaluated through research and monitoring, and are considered when making management decisions.”

Other respondents support updating the conservation plan and feel that the Draft Goals within the CCP are adequate to preserve ANWR, its wild characteristics, and Native cultures.

755.4: "...I wanted to say I am extremely supportive of the CCP process that the Fish & Wildlife Service is undertaking, and I strongly support the effort to update the conservation plan for the Arctic National Wildlife Refuge."

462.1: "What is important: I think that maintaining the exemplary wilderness and wildlife qualities of the Refuge should be the top priority in developing the revised CCP. I believe that the stewardship draft goals published in the April 2010 Planning Update are well thought-out and provide a good framework for developing the revised CCP."

A few comments discuss the appropriate scope and scale of analysis. Most of these comments talk about whether the review of oil and gas development is out of the CCP scope, and to what extent wilderness designations may further alter oil and gas leasing activity and opportunity in the future.

373.2: "The Borough agrees with the FWS that the agency does not have the authority to decide whether any lands within ANWR should be opened to oil and gas leasing. We therefore appreciate that the FWS will not consider or respond to comments on that issue during this planning effort. That being said, the agency must recognize that any designation of lands within the 1002 area of ANWR as wilderness that occurs as a result of this CCP revision will effectively foreclose those lands from being opened to oil and gas leasing. Beyond the oil and gas question, for our community of Kaktovik to find itself surrounded by designated wilderness would severely limit options for its future economic development."

Poignant comments from one federal agency discuss several aspects of NEPA compliance in the CCP and DEIS, including discussion of the "purpose and need", "range of alternatives", and "cumulative effects".

627.2: "Purpose and Need: The CCP/EIS [Comprehensive Conservation Plan/Environmental Impact Statement] should clearly identify the underlying purpose and need to which FWS [US Fish and Wildlife Service] is responding to in proposing the alternatives, including the broader public interest and need. While the development and revision of CCPs for national wildlife refuges in Alaska are governed by the Alaska National Interest Lands Conservation Act (ANILCA) and the National Wildlife Refuge System Administration Act, we [Environmental Protection Agency] believe it is also important that the plan consider the intent of Refuge's organic legislation (Public Land Order 2214).

Given the unique circumstances of the Refuge's goals of conservation, fulfillment of international treaties, subsistence uses, and water preservation, along with the FWS's recommendation in 1987 for the "orderly oil and gas leasing of the 1002

area”, it is particularly important that all current goals and purposes established for the Refuge be clearly articulated in the draft CCP/EIS. The purpose of the proposed action would typically be the specific objectives of the CCP/EIS, while the need for the plan may be to eliminate a broader underlying problem or take advantage of an opportunity. Thus, the purpose and need should be a clear, objective, but comprehensive statement of the rationale for the proposed action, as it provides the framework for identifying project alternatives.”

627.3: “Range of Alternatives: The CCP/EIS [Comprehensive Conservation Plan/Environmental Impact Statement] should include a range of reasonable alternatives that meet the stated purpose and need for the CCP/EIS and that are responsive to the issues identified during the scoping process. The Council on Environmental Quality (CEQ) recommends that all reasonable alternatives be considered, even if some of them could be outside the jurisdiction of the agency. Also, the environmental impacts of the proposal and alternatives should be presented in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public. The potential impacts of each alternative should be quantified to the greatest extent possible. It would also be useful to list each alternative action’s impacts and corresponding mitigation measures. EPA [Environmental Protection Agency] encourages selection of feasible alternatives that will minimize environmental degradation. We also believe that given the recognized risks of offshore exploration activities, additional consideration and planning may need to be reflected in certain alternatives to adequately address these potential risks. Such planning may be critical given the isolated nature of the Refuge.”

627.4: “Environmental Effects: The CCP/EIS [Comprehensive Conservation Plan/Environmental Impact Statement] should include environmental effects associated with the various alternatives as well as the proposed mitigation measures. This would involve delineation and description of the affected environment, indication of resources that would be impacted, the nature of the impacts, and a listing of mitigation measures for the impacts. The following topics are of particular interest to EPA [Environmental Protection Agency].”

627.13: “Cumulative Effects: CEQ definitions of cumulative impact is “the impact on the environment which results from the incremental impact of the actions when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.” The cumulative impacts analysis should therefore provide the impacts of other past, present, and reasonably foreseeable projects of actions and then considering those cumulative impacts in their entirety. The CCP/EIS should include and analyze present and reasonably foreseeable projects and actions proximate to the Refuge and vicinity (such as ExxonMobil's Point Thomson project and Beaufort offshore activities). Where adverse cumulative impacts may exist, the CCP/EIS should disclose the parties that would be responsible for avoiding, minimizing, and mitigating those adverse impacts. The CCP/EIS should clearly identify the resources that may be impacted by cumulative effects,

the time over which impacts are going to occur, and the geographic area that will be impacted by the proposed project. For each resource analyzed, the CCP/EIS should:

- Identify the current condition of the resource as a measure of past impacts. For example, the percentage of species habitat lost to date.
- Identify the trend in the condition of the resource as a measure of present impacts. For example, the health of the resource is improving, declining, or in stasis.
- Identify the future condition of the resource based on an analysis of the cumulative impacts of reasonably foreseeable projects or actions added to existing conditions and current trends. For example; what will the future condition of the watershed be?
- Assess the cumulative impacts contribution of the proposed alternatives to the long-term health of the resource, and provide a specific measure for the projected impact from the proposed alternatives.
- Identify opportunities to avoid and minimize impacts, including working with other entities.”

3.0 Process

Commenters on the NOI provided substantial input on process considerations related to the CCP. These comments provide many perspectives and suggestions for the agency in relation to the process of preparing the revised CCP and DEIS. Major themes include decision-making philosophy, outreach, public involvement process, public meetings, and the influence of politics and special interests in the process.

The agency's decision-making philosophy is a significant concern to many respondents. Many commenters provide strongly worded comments on how the refuge should base its decisions and analysis. Many feel that decisions should be based on quality science, or on protecting biological diversity. Others feel that the preservation of wilderness character should guide decisions. Alternatively, some respondents feel that decisions should be made in a multiple-use framework that allows development activities including oil and gas exploration and extraction.

1289.7: "I look forward to your agency's appropriate decision based truly on science and on quality of the environment criteria."

211.2: "What should Refuge staff do, or avoid doing, to best meet Refuge purposes? Value wildlife conservation and diversity over all other competing interests."

190.3: "We need a conservation management plan that acknowledges the cumulative impacts that allowable uses have on the very wilderness qualities that the refuge seeks to preserve. I urge the agency to maintain or to implement strong management policies and practices within the refuge that balance allowed uses of subsistence, recreational scientific and those other allowed purposes with preserving the refuge's intrinsic wilderness qualities. I think that if this conservation plan currently being developed for the refuge does these two things, inspiring permanent wilderness designation for the refuge lands and setting out balance strategies to promote uses of the refuge that do not impact its wild nature, then the plan will preserve that refuge and future generations of refuge stakeholders will be well served."

636.6: "We would be happier if oil and wilderness occurred far away from each other. That is not always the case, and we are not doing ourselves any favors by denying the potential for multiple uses on the edge of this vast refuge. Oil development has been done safely onshore in Arctic Alaska, and it can be done without denying the wilderness values and resources we all care about. As you weigh the options for the 1002 area, I hope you will keep in mind that it has always been a land of many uses. It can and should remain so."

794.1: "I am just giving testimony to the Fish & Wildlife Service and to the National Park Service on behalf of maintaining the wilderness nature of the Arctic National Wildlife Refuge. I'd like to reaffirm it's a 50-year commitment to having a place on the planet and especially on North America which is preserved for the

scientific observation of biological diversity, biological adaptation, and also open for wilderness recreation activities.”

Respondents are passionate about the educational opportunities that are available in the Refuge; some would like to see the Refuge used as a tool for teaching children. Others want to see the education of people who use the refuge for recreation. Some commenters express interest in showing that a wilderness designation does not close off all subsistence use. Overall there is a strong desire for expansion of refuge education.

62.2: “...The staff does a great job already of displaying to the public and decision makers all the wealth of wildlife that exists in ANWR. I would recommend scaling up efforts in this direction further to show what is at stake. Perhaps an online forum to highlight what is at stake will get the public involved.”

504.2: “I think that staff should educate visitors on minimum impact and how to tread lightly on this unique land. I think the land should be managed in a way that prioritizes natural ecosystems and wildlife but also honors unique human relationship that have co-evolved with the land. I know that sometimes this can be a hard balance but seems important to maintain the self-determination of Native peoples in the area who are living in traditional ways...”

731.1: “Hi, I'm glad to hear so many ideas and comments. I have a couple of ideas for community. I wonder if it's possible to make a video type documentary on the ANWF. From the beginning. [Youth] such as my also does not know the history and also the future of the Refuge. I think it'll be a hit and to start getting the up and coming adults to be involved and educated in our homelands and what the government is doing and how it works. Not only for us, but for all who want that information. Maybe even have a select group of interested students to maybe go on rafting / or summer experience within our refuge. Maybe plan a week or 2 for camping know the cultural/recreational activities.”

Several respondents provide input on the public involvement process. Some commenters want to find out how to get more involved, and request how to get involved with specific parts of the process, and also suggest ways to increase public input. Some commenters caution the Service to be careful to work through an appropriate government-to-government consultation process with Native governments.

875.10: “I think we've really got to, you know, step into this and understand that if we don't get involved today, any changes that we see in the regulations, whether it's on the federal level or the state, it will really come to haunt us because it's harder to change it after it's in place. It's a lot easier to step forward when you really have the time to offer, your input. Get involved. There are advocacy groups out there that will always help, but they, too, are very limited in numbers. We have to be there with them.”

368.10: “It appears that changes to the management of the Refuge could potentially affect tribal members directly or indirectly through the resources on which they rely, particularly in the communities of Kaktovik, Arctic Village, Venetie, Fort Yukon, and Chalkytsik. As such, the CCP/EIS should describe the process and outcome of government-to-government consultation between FWS and each tribal government involved, the issues that were raised, and how those issues were addressed. Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (November 6, 2000), was issued in order to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, and to strengthen the U.S. government-to-government relationships with federally recognized tribes.”

216.4: “Before any 1002 decisions are made the USFWS must consult with residents and Borough officials there. The roster of public meetings has seemed to intentionally avoid this glaring need.”

Several commenters mention meetings and collaboration. Most concerns point to Natives wanting a better chance to be involved in meetings. Some respondents also state that they would like more meetings in Alaska and non-Alaska locations, in order to get more people involved. Others express a desire for translators at meetings so that everyone can understand what is said.

746.7: “As you say the Refuge is of National Interest and also of global concern. Therefore I think further public meetings should be held at more places in the lower 48 states. Here in Washington State for example, we have long ties and business and recreational interests in Alaska and people would like the opportunity to speak at public meetings. The Canadians also with their two adjacent Parks have a great deal of investment in what happens in the Refuge and should have an opportunity.”

161.2: “It is important for me to point out that the public hearing process afforded to us by the US Fish and Wildlife Service provides insufficient opportunities for the local communities that will be most affected by the plan revision. Although approximately 63 percent of the refuge lies within the boundaries of the North Slope Borough and 100 percent of the Coastal Plain that could be recommended for wilderness is located in the region, only one out of six public meetings are to be held in our region. Additional public hearings in the region are necessary to provide a fair and meaningful opportunity for the most affected communities to participate in the plan revision process.”

686.7: “... The refuge area is pretty hard to control the 1002 area by ourselves, I'd like to see Fish and Wildlife and our people, more of our people work to them in Fort Yukon, Arctic Village, maybe Venetie, so they could have people there so they could work with them, and in that way communicate more with one another and we'll know what's going on in the refuge. It's important because a lot of time

we don't communicate too much with Fish and Wildlife. The language is another problem, I know there's a lot of Native people, Athapaskan people, don't understand what's going on in that big meeting, we don't even have an interpreter. A good thing I've seen going on in Canada, all the elders sitting at a table, they use earphones and translate the language to them, that way they always talk about, they can understand what we have been talking about. If the elders understand what is the subject and what issue we talk about, then a lot can stand up and say something to us, we can't do it without them, they know a lot about in the past, in history. That's another thing that is missing every time a big meeting goes on, it needs to take time, it would be good for us to work with Fish and Wildlife. We've been working with Fish and Wildlife, I know that when we write a story, then some of our people they can do it and translate in our own language, that should go along with the two language translation, then our people will understand more."

A few commenters mention the NEPA process, generally providing support for using the process. Some provide specific criticisms of how the process has been employed. One agency of the State of Alaska provides some of these criticisms.

364.3: "When an agency limits the scope of alternatives that it will review, courts apply the 'rule of reason' to determine whether an EIS analyzed sufficient alternatives to allow the agency to take a 'hard look' at available options. While consideration of alternatives is 'the heart of the environmental impact statement' '[a]n agency is under no obligation to consider every possible alternative to a proposed action, nor must it consider alternatives that are unlikely to be implemented or those inconsistent with its basic policy objectives.' Nevertheless, an alternative must be considered if it falls within the agency's statutory Mandate.

Here, the Service has said that it will not consider oil and gas development before it issues a revised CCP and, apparently, the EIS. It explained that drilling in ANWR is off-limits and only Congress has the authority to lift the ban. No other explanation for limiting the comments was given. The Service has therefore concluded that it is unnecessary to require the agency to consider the environmental impacts of a prohibited activity."

364.3: "There are at least three significant problems with the Service's position. First, NEPA provides that federal agencies must "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resource. There is obviously a conflict over alternative uses for the 1002 Area. Hence, the Service must consider oil and gas development as an alternative."

Some commenters provide comments focusing on archaeology the process and need for preservation of cultural resources. A few commenters express sentiments to the effect that archaeological resources should be left alone when found. Some would like to see archaeological and cultural information developed in partnerships with Natives. One federal agency discussed the process for integrating the cultural and NEPA processes in

the correct order. A state agency commented about the need for strategies to study and recover specific types of archaeological material that is being seasonally exposed by high-latitude warming.

627.18: “We [EPA] recommend that no Record of Decision (ROD) be completed until the processes of consultation, analysis, review and documentation required by Section 106 of NHPA have been fully completed. If adverse effects to historic properties are identified, any Memorandum of Agreement (MOA) developed to resolve these concerns under Section 106 of NHPA should be referenced in the ROD. Unless there is some compelling reason to do otherwise, the Section 106 MOA should be fully executed before a ROD is issued, and the ROD should provide for implementation of the MOA’s terms.”

430.6: “In recent decades, archaeological discoveries have occurred on glaciers and perennial snow patches across the Arctic. These discoveries often include rare organic tools lost in the snow and ice over millennia by hunters pursuing caribou. Frozen organic artifacts from these sites provide detailed information on past ways of life. High latitude warming is exposing these unusual finds. There is a high probability that the refuge contains such artifacts that are being seasonally exposed to the elements. In support of the draft goal to conserve archaeological resources, we recommend the CCP include strategies to study and recover these significant resources.”

657.6: “Don’t allow digging for artifacts and other archeological invasions of the area. Leave old sites alone. “

367.45: “Cultural, Historical, and Archeological Resources: FWS should address cultural, historical and archeological information in the CCP, and develop it in partnership with tribes and local communities. This should include projects that involve oral histories and expertise from elders, and culture and science camps for youth. Traditional ecological and local knowledge should be incorporated into the CCP. There is considerable new information in books, articles, websites, and so on, about cultural, historical, anthropological and archeological resources.”

280.4: “Archeological and cultural resources should be left in their natural context unless threatened by loss. Excavations undertaken for scholarly papers, graduate degrees etc. should be prohibited. Features that are currently nameless should remain so. The agency should not propose or support the naming of any features.”

The final process-related theme is the influence of interest groups or politics. Many respondents provide comments reflecting concerns about the power of interest groups and politics in the decision making of the CCP. Respondents feel that there are political pressures shaping the Service’s decisions, particularly in relation to the oil industry. Many comments were centered on the idea that there has been a history of political and corporate pressure which has led to unscrupulous drilling practices.

1448.7: “I urge you to consider the national and global significance of the Refuge and lay out a clear plan for safeguarding its wildlife and wilderness values, a plan that is safe from political manipulation.”

823.3: “It is now abundantly clear the government has proven itself incapable of adequately regulating the industry. No doubt due largely to big oil's generous lubrication of campaign of Congress...”

875.14: “Oil companies are big companies; they do have a lot of influence. And I hate to say this, but I know regional corporations are doing the same thing. They're going to Congress to change the regulations. They're going to Congress to change laws, ask for amendments to laws. We thought when these laws came into effect and people said that was the end of that, that's the law, well, we're finding out now that it's changing almost every year.”

4.0 Activities and Uses

Four primary areas of activities and uses were identified: Commercial Activities, Government Activities, Private Activities, and Native/Tribal Activities. The comments surrounding each of these topics are presented in separate subsections below.

Commercial Activities on Public Lands

Most commenters provide some level of support or opposition to commercial activities within the Refuge. Comments regarding commercial activities cover several different areas of subject matter. As with other sections of this summary document, many comments specifically supporting and opposing oil/gas/mining within the Refuge were received. Some commenters asked specifically that some areas of the Refuge be designated to be “commercial-free”. Some of these commenters cautioned the Service to not let commercial uses trump private ones. Several commenters identified their desire to see more or better protection from organized, commercial recreational activities should be controlled. Other comments focused on insuring the backcountry experience and key ecological sensitive areas are protected.

1382.11: “Identify unique or fragile ecological areas of the Refuge, and designate them as commercial-free areas.”

375.18: “Since human-powered wildland recreation is a purpose of the Arctic Refuge, the use of airplanes to access Refuge lands for human-powered wildland recreation activities should continue to be allowed. Recreation that is focused on commercial purposes, advertising, racing, or competition, e.g., use of snow machines for “high marking” contests and other such uses, should not be permitted.”

657.7: “As for commercial aspects, be careful. Don’t allow commercial interests to have too much influence. Private use must always have priority over commercial uses and those who buy a trip. There should be some commercial free zones where no economic interests are allowed, including all guides.”

Another major theme in relation to Commercial Activities relates to permitted uses. Most comments on permitted uses touch on recreation within the refuge and the impacts and regulation of activities such as guided hunting, hiking, rafting, and touring. Several comments point out the importance of ensuring that all permitted uses are in line with the overall goals and purposes of the refuge and that policies and procedures should be developed to support those goals. Some people indicate that certain permitted uses may not be compatible the purposes and mandates of the refuge (i.e. competitive events, cruise ships). Many people express concern that the various permitted activities were impacting the character of the refuge, the wildlife, Native American subsistence, and opportunities for solitude.

259.6: “We encourage the Service to apply use and access limits on recreational activities to prevent overcrowding and ecosystem disruption. Recreational opportunities on the Refuge have historically been associated with a sense of solitude and adventure and an appreciation of the Refuge's wilderness values.

Allowing use to expand unrestricted will compromise recreational experiences and jeopardize the health of this fragile ecosystem.”

Many commenters feel that better tracking and monitoring of guided groups’ methods need to be implemented within the refuge, whether by a web-based process, phone, daily logs, or by mail. They feel that improved regulation would reduce impacts from air use (i.e. flight seeing, game spotting, landing), commercial hunting groups, and other permitted recreational uses. Some people recommend improved regulation on the guides themselves and the selection process, and indicate that such regulation would help to reduce impacts and conflicts. Some people oppose the concept of “designated outfitters” and feel that preference given to these groups excludes other non-guided users. Many guides express their support of increased permitting regulation and feel that such actions would enhance the experiences of clients, while minimizing impacts within the refuge.

645.20: “Consideration must be given to potential impacts to Refuge resources, subsistence users and other visitors. Accurate reporting by outfitters and the hunters that they transport must be a requirement in permit conditions. Failure to comply should be grounds to revoke the permits. The revised plan should include an assessment of what level and type of hunting activity is compatible with natural diversity, biological integrity, and environmental health purposes. Natural diversity purposes may not be met by current maximum yield goals of State hunting regulations. Goals for maintaining natural age and sex composition in wildlife populations should be developed and hunt regulations be implemented to meet these goals. The plan should also consider establishment of commercial free zones as authorized by the Service's Wilderness Stewardship Policy (610 FW 2 E) as a method of reducing pressure on Refuge resources and to resolve conflicts between various user groups.”

845.4: “You got to have really severe problems before you should be jumping in there having permit systems, having quota systems, and start -- because, you know, part of having a wild adventure out there is because you are on your own, and you didn't have the government requiring you to fill out a permit and get permissions and stuff. So I just love it the way it is now where you can fly out there, and if you screw up, you die out there, so keep it wild.”

633.4: “As a big game guide currently operating within the Arctic Refuge, I can attest to the importance and value of the qualities offered by the Refuge to my clientele. The relative chaos of commercial hunting happening on public lands due unrestricted guiding opportunity is evidence that the Refuge must continue to strictly limit the number of commercial users in order to maintain aesthetics of the experience.”

A common theme brought up regarding guided groups is the feeling that more education and involvement from refuge staff is needed with these groups regarding impact mitigation (i.e. cleanup). Several comments outline specific roles, duties, and limitations of refuge management regarding the permitting process.

318.7: “Guided hunting groups have also shown a shameful disregard for the environment with their campfire rings in tundra and litter left behind, in my experience. Creating a requirement that all visitors have some contact with Refuge staff can be seen as an educational opportunity which will enhance protection of the wilderness qualities of the Refuge.”

Many people express a general concern with the growth of permitted recreational uses (i.e. commercial rafting, hiking, etc.) and the potential impacts of these uses. Some point out examples of other refuges or parks where they felt overcrowding had contributed to the degradation of the land and its resources. Several pointed out specific areas that should be designated as commercial-free zones or walk-in no-fly hunting zones due the unique characteristics (i.e. Firth-Mancha Research Natural area).

367.19: “The plan should address over-use on river corridors by implementing limits and other measures to restore wilderness qualities. It should also be proactive in preventing crowding and disruption of wildlife everywhere in the Refuge. In areas where rationing of use is necessary, the plan should not favor commercial guiding operations over opportunities for non-guided visitors. The revised plan should consider designating the Firth – Mancha Research Natural Area as a commercial-free zone in accord with the FWS Wilderness Stewardship Policy (610 FW 2 E). Consideration should also be given to the establishment of zones where aircraft landings are restricted so that visitors will be able to experience solitude without intrusive aircraft activity. The relationship of the Service and commercial guides, air taxi operators, and visitors should maximize sharing of information regarding observation of illegal activities, environmental impacts, changes in wilderness character, habitat changes, and unusual wildlife observations. These data should be integrated into an adaptive management system that is responsive to changes that may occur in the Refuge.”

Many recommendations are given as to optimal group sizes to better manage and minimize impacts. Other recommendations are given to limit numbers of groups (especially during peak times and in popular areas like river corridors), as well as limiting base camp durations to ensure impacts are minimized.

418.5: “I think that Refuge staff should evaluate the need for limits on group sizes. With small groups, the focus is on the wilderness experience; with larger groups, the focus is often on the group itself rather than on the surroundings. I suggest that group size be limited to 8 (including one or two guides) on commercial trips; and limited to 6 on private trips. If necessary there should also be a limit on the number of commercial trips at peak times, which may be necessary to protect natural resources and wilderness values, and the wilderness quality of the visitor experience. “

Several comments indicate that quantifying user impacts and sharing of information among permitted user groups regarding observed impacts and changes within the refuge

would be an important tool in informing the CCP. Some commenters recommend monitoring concentrations of use and acceleration of users. Others call for a clearer delineation of when and where it is appropriate for commercial guiding to take place within the refuge.

457.3: “Make a sincere attempt to use as baseline values conditions that match as much as possible those in existence when the Refuge was created. Make a conscious effort to avoid using a constantly changing baseline that gradually accepts less and less wild conditions as the norm. Acceptance of that sort of changing baseline, partly due to management personnel turnover and partly due to an increased proportion of visitors with limited wild country experience, has resulted in substantial changes in Denali National Park's original component and the ‘wilderness corridor’ along the Park's road.”

645.16: “To address currently impaired wilderness character in areas of the Refuge where there is excessive public use, the revised plan must identify this situation as an priority issue and describe how it will be addressed. Components of a recreation use plan should include: objectives to be achieved, standards and indicators for measuring use and changes, monitoring protocols and schedules that can determine if standards are being met, thresholds at which management actions would be invoked, and description of the specific management actions that would be taken to achieve objectives. A recreation use plan should consider all available and pertinent information such as seasonality of use, number, location and condition of campsites and their relationship to sensitive wildlife and habitat along the river corridor. If use limits are invoked, the plan must take into account the possibility of displacement of use to other vulnerable areas, and include measures to prevent excessive use elsewhere in the Refuge.”

Several comments were received regarding the impact of permitted users on Native Alaskans. Some comment on the difficulty placed on Native American subsistence with tracking, monitoring, and permitting procedures. Others comment that increased permitting and regulations detract from the user experience within the Refuge. Some feel that guided hunting groups disregard Native American Lands. There are general comments indicating that the Service could do a better job of regulating and overseeing these guides. Some comments state that Natives don't understand the rules and regulations behind the permitting process and recommend that having a Native involved in this process could provide important insight and guidance regarding guided group practices and impacts. They also feel that Native Alaskan concerns and reports regarding impacts of permitted uses should be addressed better. Others recommend that preference be given to Native subsistence hunters over guided hunting groups.

763.9: “The oversight. Fish and Wildlife, when they give permission for hunters guide to cover a certain area, they have a poor oversight. When it's bad weather, they don't even go there, you know, or they don't go there at all. That's another thing that needs to be changed, is oversight. You make sure you watch the guys, what they -- how they operate and how many people they got in there. :”

457.3: “Permit hunting and fishing in manners consistent with the Refuge's mandate. This would seem to make even subsistence hunting with the use of snow machines and wheeled or tracked ATVs to manners, seasons, and conditions that do not result in ecological or visual damage to the vegetation, soil, or soil frost regime. I do not believe that, within the Refuge, any existing federal legislation provides carte blanche to adopt any and all new technology in the name of ‘subsistence.’”

A final theme in Commercial Activities is infrastructure and traffic. In particular, respondents discuss concerns about the potential for use of ice roads in relation to oil and gas development, and the traffic generated by helicopters and planes. Some request the banning of commercial use for tours etc. Some feel that commercial free zones would help control this kind of traffic.

515.5: “Ice roads leave scars on the ground, I have seen ice roads from the air in the summer in the western Arctic. Ice roads are not compatible with wildlife, wilderness or plant life.”

631.15: “Strict prohibition of the use of helicopters to transport tourists from cruise ships into the Refuge should be implemented before problems develop.”

450.10: “Intrusive research techniques and technologies, and helicopter use should be prohibited, except where they are truly the minimum tool necessary to administer the area as wilderness.”

645.17: “Establishment of a commercial free zone (as provided for in the Service Wilderness Stewardship Policy 601 FW 2 E) and aircraft closure for the Firth - Mancha Research Natural Area should be implemented in the plan. Together these measures would provide further protection for this special area. It would allow for opportunities for visitor to hike into the area from aircraft landing zones outside the area, and avoid encounters with low flying airplanes and parked airplanes. The plan should also study the need for such zones in other areas of the Refuge.”

Government Activities on Public Lands

Many respondents discuss the various government activities that take place in the Refuge. Comments provide insight into scientific study and monitoring, enforcement/education, funding and staffing, maintenance of infrastructure, and pursuit of alternative energy strategies.

In relation to scientific uses, including monitoring and studying, several comments were received. Many think the Refuge should not be compromised as a “natural laboratory”, and its natural scientific integrity guarded. Others elaborate on the type of research that they feel should be allowed in the Refuge.

598.2: “The opportunities for scientific study of the Refuge are also more important than recreation. Recreational use must not compromise the natural scientific laboratory. Yet scientific use must also be restricted so as not to damage the natural characteristics. (Note: I am a scientist.)”

631.16: “Intrusive research techniques and technologies, and helicopter use should be prohibited, except where they are truly the minimum tool necessary to administer the area as wilderness.”

Predator control and species management emerged as a major theme with regard to government activity. Some of these commenters want the Refuge to take a hands-off approach to wildlife management to better maintain natural cycles and a healthy ecosystem. Many commenters express strong opposition to predator control by any means, regardless of the desired outcome. Some of these commenters specifically comment on the practice of eliminating predators to increase game populations. A few commenters point out that use of predator control by the state to save and protect threatened or endangered species may be required, but urge caution.

279.2: “The plan should recognize that all indigenous animals and plants have intrinsic value in this intact community of life and must be allowed to exist in their natural diversity, with their natural cycles and interactions continuing. Thus, predator control and other means of reducing the numbers of predators and carnivores to increase the number of game animals must be prohibited.”

1167.7: “No predator control- the state of Alaska has been inflicting cruel and unusual punishment on wolves and bears for years- stop this now.”

671.3: “Untrammelled wilderness means that natural processes must be allowed to shape the ecosystem as they have for millennia. This includes predation. Predator control has no legitimate place in the Arctic National Wildlife Refuge. Please prohibit all attempts by the state of Alaska to kill wolves or other predators.”

604.5: “The CCP should include that, unless necessary to protect threatened or endangered species, predator control programs will not be implemented in the Refuge. This will help ensure that intact and healthy food webs with natural cycles and healthy ecosystems exist as part of the Refuge.”

Respondents generally agree that enforcement is lacking in terms of manpower and funding. Many commenters support this viewpoint. Airspace, ATV, poaching, and recreation, are all common areas of concern, where respondents indicate that more staffing and enforcement could be targeted. Many feel that funding and staffing need to be addressed and increased for the refuge. Many provide either support or opposition of the presence of more uniformed officers. Generally speaking, tribes support more funding and staffing within the Refuge and want to engage in cooperative education to teach and take care of the resources properly, and to promote responsible use of the land.

891.5: “So I'm just strongly stressing that the Congress stand up and put more money forward for the U.S. Fish and Wildlife and hire more people to help the Native people understand what is going on with our land....”

4943.3: “Describe issues: The refuge has an excellent opportunity to lead by example of letting what works remain working. The recent changes that we have seen, such as uniformed patrols, have not led to positive comments from our clients, but a decrease in perceived wilderness experience.”

Numerous comments support or oppose the use of structures within the Refuge. Facilities such as outhouses, ranger stations, information stations, cabins, signs, and more are discussed. Many responses indicate a strong feeling to remove all manmade objects and maintain ANWR as natural as possible.

279.9: “Administrative structures and installations should be prohibited and the cluster of unsightly buildings on the Shore of Peters Lake should be removed.”

671.6: “So called “improvements” such as cabins bridges, signs and even trails should be avoided. ANWR is simply too uniquely wild to allow these common trappings of less wild places.”

Alternative energy is an important topic to many respondents. Respondents promote solar, water, and wind power as good alternatives to petroleum. Among those who expressed an opinion, there is near consensus that these alternate forms of energy would bring new jobs and spark economic growth. Many commenters feel that alternative energy could also be a cleaner, safer way to produce energy, compared with on/off shore drilling.

1047.3: “Please keep our oceans safe - not only is Alaska being threatened but all of our oceans are now at risk with the drilling or proposed drilling. Speed up the work on getting solar and wind up-to-speed as affordable resources.... Get rid of oil in our oceans, forget nuclear which could have the same disasters, go with solar and wind – replenishable and safe.”

896.4: “We have to do our part by -- instead of using too much oil, we should start using less oil and thinking about using less oil and use other kind of energy like wind energy, small hydro, and solar energy and those things. That way they'll listen more.”

1381.8: “No more oil; no more coal. Clean energy technology and jobs now!”

Private Activities on Public Lands

A very large number of comments were received in relation to private activities on the Refuge. Some discuss the need for a visitor use survey. Many respondents provide support or opposition to recreational activities, large groups and growing crowds,

commercial versus private allotments, ideas for registration systems and leave no trace education, river launch days, and ATV and snowmobile restrictions.

Some express concern with the Refuge management postponing the Visitor Use revision until after the completion of the CCP. They feel that a Visitor Use revision should be used in conjunction with the CCP process and the information from the survey should be integrated into the process. These respondents feel that integrating current visitor feedback in the CCP is necessary to be efficient in providing opportunities for a range of recreational activities.

623.8: “Visitor Use Survey – We [State of Alaska Citizens’ Advisory Commission] recently learned that implementation of the revised visitor use survey will be delayed until after the plan revision is completed. The Service should reconsider this decision and release the visitor survey for this season so that this information can be included in the CCP revision.”

430.5: “Visitor Use Survey – The State [State of Alaska Office of Project Management and Permitting] has been supportive of the Refuge’s intent to update the 1977 Visitor Use Survey to gather information on public uses in order to inform the CCP planning process. It is our understanding implementation of the revised survey has been postponed until after the planning process is complete. Given one of the purposes of the Refuge is to provide opportunities for a range of recreational activities, we urge the Refuge to reconsider and implement the survey this summer so CCP decisions that affect public use can be made using current visitor feedback.”

Some note the impacts that large recreation crowds are having on wildlife migration patterns (and consequently subsistence). One respondent notes specifically that the growing number of visitors that watch the caribou migration is causing specific problems:

764.1: “...everybody in this town used to go up and camp up on that mountain up there because they knew that that's where the caribou was going to be. And nowadays we've got like tourists and then we've got sports hunters and everybody that travel up the main Chandalar there. And there's these little planes bringing up these rafters, hikers, every day, 24/7. After June 1st, you're going to see it again. Yeah, back in the day, you know, that's where they used to travel down and the elders would spot them on the mountains over there coming and everybody would get happy. And all the women and all the children, everybody would camp out on the mountains up there and get ready to, you know, stack our food for the winter, you know. It's pretty cold around here. And nowadays there's so much airplane activity going on that the caribou don't come down that way no more. They go around and they come out at the Wind River down here and then we get them after they're in their rut, you know, and we don't eat them when they're in their rut, you know. Then they come over from the Crow Flats and they come over this way, and this is good feeding grounds for them in the winter.”

Comments describing ideas for different registration or documentation systems for all those who visit the Refuge were common. While many felt that growing pressure from visitation must be addressed clearly, there was disagreement on whether facilities should be established to ease the effects of visitation and educate users. Suggestions for establishing daily visitor limits, registrations systems, check in desks, and education policies were common. Several respondents express the need for educating all users. Many agree that education on proper campsite locations, fire prevention, not interfering with subsistence practices, and leave no trace need to be addressed for all Refuge visitors. A repeated issue mentioned by commenters is the observation that waste and human waste increasing exponentially. Some feel that not having rangers or backcountry check-in desks is appropriate for a “wild place”, and request that the Service shouldn’t try to make the Refuge “safe” and should take a hands-off approach.

77.2: “What should Refuge do: It may become necessary to have some kind of registration system for individuals and groups who recreate in the Refuge. Along with registration there could be some education about no trace camping and about cautions to consider protecting the environment, and the wildlife.”

367.5: “The Refuge should continue its focus on providing recreational opportunities with authentic adventure, solitude, challenges, risk, and self-reliance required of all visitors. The FWS should exercise restraint in managing the Refuge, and maintain a subtle presence in the Refuge.”

718.3: “Please keep all recreational activities wild – no cabins, facilities, no airplane hunting, airboats, jetboats or helicopters. Don’t allow overuse of the river for recreational activities by controlling the number of rafting tours, etc... It is essential that this area is kept as wild, pristine and undeveloped as possible.”

Private versus commercial recreation emerged as a strong theme. Many wrote in to say private recreation should be favored over commercial recreation, and that there is a current imbalance favoring commercial guides and special permits. Others comment on how the private users are the least conscientious about their impact on the lands and should be restricted as much as commercial.

94.4: “Describe any issues - Commercial vs. private recreation – private people should have preference.”

3.3: “...By far the user groups which I’ve found contribute the worst damage to these areas is the private-unguided user followed by the guided hunters. The present management treats various user groups in an inconsistent manner which enables considerable devaluation of the wilderness. While requiring strict limits on the use patterns and numbers of guided recreational use (a good thing), management makes no similar efforts with the private users. These private users have often demonstrated an ignorance of low impact use techniques and have created repeated and accumulative problems. They have come in large high

impact groups and created accumulative effects of which they often are not aware.”

792.10: “In specific areas where the rationing of use becomes necessary, I think it's very important that care is taken not to favor commercial hunting operations or people with greater financial resources over the common American.”

Comments about increasing use on the refuge's numerous rivers brought suggestions of implementing river restrictions. Ideas include visitor limits, registration systems, calendar launch days, and limitations on campsite locations to mitigate impacts on migrating caribou and subsistence patterns. Commenters also give suggestions about which waterways need restrictions and which waterways should remain without restrictions.

365.7: “The agency should implement use limits on rivers where overuse is occurring and should be proactive in preventing crowding and disruption of wildlife everywhere. The CCP should implement group size limits of seven for backpacking groups and 10 for river floating groups.”

Many comments were written in support or opposition of certain types of recreation. Several commenters speak specifically to motorized uses within the Refuge including airboats, airplanes, and snowmobiles. Many express concern regarding the impacts of motorized vehicle use within the refuge, whether by Natives or other users. Many call for a complete ban on all motorized equipment, although some identify the need for rural access and subsistence needs. Many are concerned about air quality (pollution and noise), vegetation, and wildlife. Commenters question specific restrictions regarding subsistence versus recreational uses, and want clarification in the CCP and enforcement.

224.2: “The refuge should adopt a strict policy on motorized use, limiting access by motors and encouraging traditional uses of the land and water...”

387.12: “The promises made in ANILCA to subsistence users should be honored. This includes the use of motorized vehicles for subsistence when such use is not allowed for other purposes.”

671.8: “Motorboats, snow-machines and all other mechanized land and water vehicles should be banned from the refuge....”

864.2: “Another thing ...I'd like to bring...up again, is noise pollution with the airboats. I talked once to Woodie in Juneau about the airboats and how we can keep them from heading up this way and destroying and disrupting our places where we hunt.”

390.5: “I believe that motorized access of any kind should be strictly limited and that Refuge managers should place a high priority on enforcement. ...Clearly, human beings (and it doesn't take very many) make a mess wherever they go.

Protection of wilderness areas is best, and most easily, accomplished when access by human beings is kept at an absolute minimum.”

One of the most significant themes from comments in the “private activities” codes is Subsistence. Comments touching on subsistence are numerous with the majority discussing potential impacts on Alaska Natives, particularly Gwich’in and Inupiaq tribes, and their reliance on the resources of wilderness lands for their social, cultural and economic welfare.

Several people comment that the CCP should promote/review impacts of subsistence activities. Many feel that it is important to protect subsistence use through protecting the ecosystem and resources of the refuge. They feel it is important to understand and study the potential impacts of refuge management practices proposed in the CCP, and that greater focus on subsistence concerns should be included in the scope of the CCP (including the review of various wildlife treaties that protect habitat that subsistence lifestyles depend upon). Many Natives see the review of the CCP as an opportunity to ensure continuation of the culture of subsistence as well as the health and habitat of wildlife throughout the Refuge.

366.16: “...Section 810 of ANILCA, 16 U.S.C. 3120, requires the heads of Federal agencies to evaluate the effects of any proposed land withdrawal, reservation, lease, occupancy, use, or other disposition of Federal lands upon subsistence uses. This evaluation must include findings on three specific issues: (1) the effect 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. Section 810 also prohibits agencies from proceeding with any proposed disposition that would significantly restrict subsistence uses, without first following certain procedures and making certain findings. The USFWS must complete such an evaluation as part of any wilderness review of lands in the Coastal Plain; if this evaluation concludes with a finding that the proposed action would result in significant restriction to subsistence uses and needs, and the USFWS wishes to proceed, the agency must initiate further procedural requirements of Section 810. As the USFWS has recognized, significant restriction to subsistence uses may occur when an action may substantially limit access by subsistence users to resources. Yet, this would be precisely the result of wilderness designation for the Coastal Plain.”

187.5: “It is my opinion that when that recognition was made in ANILCA it permitted traditional uses but it did not address the level of traditional uses. In the Arctic Refuge you could have had three snowmachiners using the Arctic Refuge for subsistence purposes, but that doesn’t necessarily translate into a thousand users. And I think that there is...a serious legal question there, it just hasn’t been brought forward yet. But I hope that the Service addresses that issue too on what is the threshold when it comes to these different types of subsistence users and because it’s become far more mechanized.”

Several recommendations are made regarding how to improve communication and information sharing between Natives and refuge management regarding subsistence practices as well as future decisions on activities within the refuge. For example:

694.15: “The federal government has a legal obligation to protect subsistence, as embodied in Title VIII of ANILCA that originates from the federal government’s trust responsibility to protect the hunting and fishing rights of Alaska’s indigenous peoples. The Service needs to address subsistence uses and how the agency will protect those uses in the Arctic Refuge CCP revision DEIS. In addressing subsistence needs and activities, the Service should identify the scope of subsistence education and outreach components it intends to pursue necessary to meet the agency’s legal requirements to protect subsistence activities. Included in this should be electronic tools, such as websites and other community needs, and continued support for traditional knowledge and science camps in the Arctic Refuge.”

Many comments refer to the ANILCA requirements to protect subsistence activities – and many express a strong desire that those protective policies be upheld. Some add that subsistence should only be protected as long as it is done in a sustainable manner and does not compromise wilderness and wildlife. Others dispute the interpretation of these protection ideas, especially regarding motorized travel and construction of cabins. Many view new technologies used in subsistence activities as potentially harmful to wildlife and vegetation, especially in light of growing Native populations. Many Natives express that new technologies were necessary to continue subsistence to compete with other users. Others point to the rights bestowed upon the Natives through the Alaska Native Claims Settlement Act to use the resources of the land to provide economic independence, for which they felt wilderness designation would not allow. There was also discussion on the cumulative impacts of continuous development pressure faced in the refuge and its effects on Natives – as outlined in a National Resource Council (NRC) study. Some express the need for better clarification and interpretation of the various acts and policies that affect Native Alaskan subsistence and that the impacts or consequences of these policies be studied in the CCP.

379.16: “The CCP should include provisions for continued subsistence use of the arctic refuge. Subsistence harvest rights for Alaska Natives and rural Alaskans are protected under ANILCA, which mandates that the Refuge be managed to “provide...for continued subsistence uses by local residents,” consistent with the conservation of fish and wildlife populations and habitats, as well as fulfillment of international fish and wildlife treaty obligations. Defenders recognizes and fully supports subsistence use and accepted traditional harvest practices for federally qualified subsistence users. The plan must clearly outline how harvest rights of federally qualified subsistence users will be preserved into the future, while assuring the protection and long-term viability and diversity of wildlife and their associated habitats within the Refuge.”

260.2: “For over 10,000 years, Native peoples have utilized resources present in the Arctic Refuge for sustenance and to generate revenues vital for public services. The Alaska Native Claims Settlement Act of 1971 endowed the rights for surface and subsurface development to indigenous populations with the intent to instill economic independence. Under this authority Native populations have developed ecologically sound and culturally distinctive practices that have ensured the sustainability of their culture and local wildlife.”

12.3: “ANWR also should continue to be maintained as an undeveloped site. A 2003 National Research Council (NRC) report noted that ‘...Continued expansion is certain to exacerbate some existing effects and to generate new ones...’ Expansion of development will bring an increased human population into the region, and with it will come increased petrochemical toxins, vehicular and maritime traffic, noise, air and water pollution, soil disturbance, and species introductions. What the effects of all of these factors might be are unknown because a great deal of uncertainty exists about the potential repercussions of development; however, they will be significant. Because of the uncertainty, it will be difficult to develop an environmental mitigation plan that can effectively address potential changes. Further, the habitat fragmentation that will come from increasing roads and infrastructure is known to play a significant role in blocking gene flow and disrupting migration patterns of many species, including some of the species such as the Porcupine caribou herd and peregrine falcons designated for protection in the ANICLA. To successfully conserve these and other species as they are now, as well as prepare for eventual range shifts due to climate change in the future, large, intact ecosystems must be maintained.”

399.17: “The NRC study recognized the cumulative impacts faced by the Gwich’in people from the ongoing threat of oil and gas development in the refuge: ‘The Gwich’in believe that oil and gas-related activities there [in the coastal plain 1002 area of the Arctic National Wildlife Refuge] would affect the reproductive potential and migration patterns of the Porcupine Caribou herd and as a result threaten their way of life. As with the Inupiaq concerns about offshore development, the beliefs are intense and widespread and themselves constitute a continuing effect that is exacerbated by the past and current political debate over development in the Arctic National Wildlife Refuge... The threats accumulate because there have been repeated attempts to develop the area and there is continuing pressure to do so.’ (p.156). Therefore wilderness designation for the coastal plain would be a major advantage to the Gwich’in people and the subsistence resources we depend on. It would provide implementation of refuge management that fully supports the refuge purposes especially subsistence.”

Some support/oppose restrictions and regulations that may result from wilderness designation, and feel that such regulation would affect subsistence activities by Natives. For example:

359.4: “We are also concerned that wilderness reviews and designations will not account for the reliance Native populations have on the land, no take into consideration the tremendous economic potential the Refuge holds. For more than 10,000 years, Natives have relied on the natural resources present in the Refuge to provide sustenance and to preserve a centuries-old way of life. Indigenous populations, particularly the Inupiat of the North Slope Borough, have developed ecologically-sensitive and culturally-distinctive practices that have helped ensure that sustainability of local wildlife. Restricting or regulating their use of the land for fishing and hunting jeopardizes their livelihood and imperils their culture.”

Where permits are required, some recommend a streamlined process for Natives. Several Natives express concerns about reduction in the areas designated for subsistence hunting and suggest that certain areas be set aside for the sole purpose of subsistence, without regulation. On the other hand, many feel that wilderness designation would enhance protection and management of subsistence resources. Others feel it is important to study the economic benefits of development within the refuge and weigh that with possible compensation to Natives to help maintain and protect the character of the land

85.2: “The Refuge staff should encourage legitimate subsistence uses, including cabin building, within the Refuge, subject to reasonable measures. While there is a permitting process in place, it should be streamlined, especially to allow new generations to get in. The Refuge staff should simply follow the law and allow for the continued opportunity for subsistence living in the Refuge.”

887.14: “They don't like people to prevent them from doing anything on their land. Fish, meat, sheep. They don't want any regulations preventing them from hunting any of that. The old people would like to be able to do that as long as they can. Kaka is the one that -- Carl Brower is the one that always hunts for the elders. When he goes up, he always shares the sheep in the winter when he can go up. The regulations are coming big time. He thinks that regulations are coming. That anything is being -- we can withstand your regulations. We can take it. We can withstand your regulations he says. We can live with them.”

There were numerous discussions of the history and religion of Alaska Natives with regard to subsistence activities. The relationship between the natives and the wildlife (particularly Porcupine Caribou) is an important part of this history, and some Natives see themselves as stewards and protectors of the wildlife with which they cohabitate the land. Several Natives comment on the impacts of development activities, increased usage (i.e. sport hunting) within the refuge, and even the impacts of invasive species on subsistence resources. They comment on noticeable changes in wildlife behavior and health and the effects of such changes on their subsistence. Examples of effects discussed are safety risks (having to travel further to find food), contamination of food and water sources, and mental health. On the other hand, several Natives mentioned no noticeable changes in subsistence resources.

Many feel it is important to monitor population levels of the wildlife that Natives depend on for subsistence as well as to implement management strategies that maintain healthy wildlife populations. Some feel that such strategies and management should be implemented or informed by Natives, while others feel that Refuge staff informed by environmental experts would be better suited to carry out these management strategies.

890.2: "...They said they shoot too much moose, the hunters. That was one of the complaints in Fort Yukon, too much sport hunting, not bringing back meat, just trophy. That was one of their reasons. Arctic Village, one of the reasons is too much traffic through Arctic Village bad. How many people use this land? Because, see, (indiscernible) it belong to American. It belongs to the public and they say it's public. Anybody could speak on that, not only us. We're -- you know, it belongs to the whole American."

188.1: "Back in the early 70s when the whalers were stopped for whaling because of the bowhead whales supposedly being completely depleted and we were stopped by wildlife conservationists, stopping—telling our government to stop our subsistence activities. That was part of the deterioration of our culture and that is witnessed by very high suicide rates. My God, Mayor Mystrom knows what I'm talking about when I'm talking about suicide rates. Our subsistence activities and Inupiaq science has been vindicated by Dr. Albert up in the North Slope who kindly stayed with us for almost four decades, three and a half decades to be exact, proves that Inupiaq science is actually a PhD science, credibility of our Inupiaq elders, and you're looking at a person speaking that has close to 150 years worth of Inupiaq science that was vindicated by Dr. Albert's studies of our elders and of our environment. The offshore development that is going on just completely would ruin the onshore nesting/calving areas of—nobody's going to want to go to ANWR and there will be no wildlife with offshore development. Let me tell you that. That's inevitable if you let offshore development happen."

Private aviation (use of personal aircraft) is another major theme in the comments. Respondents that express concern with private aviation had strong feelings about the increased use of planes in the refuge. Many commented that spotting game from aircraft and low flying action photography should be prohibited. Many commenters voiced their concern for the places that these planes land, and how harmful it can be to the vegetation. Others think it would be good to designate durable landing zones in order to protect the tundra. Some suggest that the use of twin engine aircraft, helicopter flights from tour boats, and jet airplanes cause excessive noise that disturbs the Refuge users and wildlife.

1373.11: "The use of aircraft should be restricted, with designated landing zones maintained to limit the noise and disruption of airplanes to the sensitive ecosystems and wildlife on the tundra. I urge you to strictly forbid the use of aircraft for hunting or for viewing wildlife."

491.5: “Airplanes should be permitted to land for access, but should not be allowed for game spotting, and should be discouraged for flight-seeing. Airboats, jet boats and helicopters should not be allowed for public access.” Majority of comments agreed that air and landing strip access was necessary and many agreed that with proper limitation on landing areas and wildlife considerations there would be responsible access.”

711.2: “I urge that the revised plan address the airstrip issue by embarking on a regulatory process, which adopts adequate restrictions to allow impacted areas to heal, and prevents new impacts from occurring. This will not result in denying access to the Refuge. Landing of airplanes on durable surfaces such as gravel bars along rivers, barren rock ridges, snow surfaces with ski planes, or on water with float planes will be allowed to continue, and will provide reasonable access without causing serious impacts.”

Private property ownership issues also emerged. Several respondents recommend the CCP explore a process of purchasing/selling inholdings to preserve wilderness. Some feel this should be a high priority, as many express concern regarding potential impacts from private landowners (i.e. “reasonable access” issues). Others feel that Native allotments should be prevented from being sold altogether, or that mechanisms should be installed to allow either Native Tribes or Refuge management to have priority over other potential buyers. Some oppose such regulation or interference in private inholdings.

367.37: “The revised plan should encourage cooperative efforts for natural resource conservation between the Service and adjacent tribal and private land owners and inholders. Such efforts should include information regarding Service land acquisition policies and practices. Where it is essential to assure maintaining the integrity of Refuge values, the Service should set a high priority on the purchase of private inholdings from willing sellers. In cases where owners want to retain ownership and traditional uses, but also wish the land to remain protected from development that would be harmful to the Refuge, conservation easements should be considered.”

385.13: “There is a very real fear that Native allotments located within the Arctic Refuge will be sold and transformed into private inholdings that are then developed into commercial hunting lodges, ecotourism lodges, etc. This will be tragic; it is imperative that the Fish and Wildlife Service begin a process of cataloging these inholdings and offering to buy out willing sellers at a fair market price. The prospect of a Gaedeke Lake-type lodge or Princess Lodge on any of the Native allotments within the Arctic Refuge is chilling, and needs to be avoided at all cost. Particularly if there is an opportunity to purchase land outright or to purchase development rights, these steps should go forward so that surrounding lands may be considered for wilderness designation.”

821.3: “...I feel that the village of Kaktovik should decide what they want to do on their own land. That is their own land. They should decide. Not the Federal

Wildlife Service should decide. Not nobody. I mean, like, for Arctic Village, Doyon, they decide for their own lands what they want to do. Everybody is created different, and they live in different ways. So that is why that is important that we need to -- what Congress has set aside for the villages to express themselves their rights of what the law tells them that they can do, to express that, because that is their land, that is their own backyard. They should decide what they want to do for themselves..."

784.2: "...have local people -- local tribal governments create a trust to buy [the allotment] for tribal use or something, tribal ownership, and we need help like that. Or an endowment or something to keep it going so we'll have these places -- we'll have a tie to these places and still be there and it'll be a way to voice our voice. And they always seem to say that we have to use that allotment; you don't go there."

A few comments express concerns over the history of land exchanges, and consistency of land exchanges with the goals and purposes of the Refuge.

367.47: "The history of land exchanges involving conservation system units in Alaska is checkered with impropriety. The plan should prohibit any land exchanges or conveyances that would remove public lands or interests in lands (surface or subsurface) from the Arctic National Wildlife Refuge. Land exchanges that are for non-Refuge purposes, that are not in the public interest for meeting Arctic Refuge purposes, or that are for the primary benefit of corporate landowners should not be considered. Past land exchanges involving the Refuge, and others that were eventually dropped, were not in the public interest, ran counter to the Refuge's wildlife, wilderness, and other purposes, and were a backdoor way of increasing the pressure for oil and gas development on Refuge lands. These land exchanges introduced significant conflicts over Refuge management and should not be allowed in the future as they frustrate rather than enhance Refuge management. The secretive nature of land exchange negotiations and drafting of agreements fails to provide adequate daylight necessary to fully address public concerns and issues. Without systematic criteria, standards, and regulatory provisions in place governing land exchanges on refuges in Alaska, they should not be considered."

A final theme in the Private activities comments is hunting and trapping. Respondents both support and oppose hunting and trapping within the refuge. Common themes include subsistence, sport, and fair chase hunting. Subsistence hunters often express issues with sport hunters. Many voice concerns about sport hunters not using the meat, and just taking the antlers. Other commenters voice concerns about increased restrictions to hunters.

84.1: "[The CCP should] ensure trapping, hunting, and fishing rights are always there for rural and non-rural people."

735.1: “I am very concerned about hunters who come into our country to hunt, and only take the antlers and leave the meat behind to rot... Sometimes they even hunt on our land... These needs to be a way to stop this. This plan is to protect special values includes subsistence and Native culture...”

874.4: “They're imposing too many laws for these Native people. Hunting. I've got to pay to hunt right now. I have to pay to go hunting. I have to buy duck stamp, bullets, duck license. Way back with my father, it wasn't like that...”

Tribal Activities

Most comments regarding Tribal activities focus on potential impacts of Refuge regulations and policies to Native Alaskans. Several comments outline the history and culture of the indigenous tribes (particularly Gwich'in and Inupiaq) and request that such traditions be respected and addressed in the CCP. There are various comments on tribal duties and obligations to protect lands that are sacred. These comments allude to tribal gatherings where such concerns have been discussed.

448.3: “For untold thousands of years, the lands and waters now in the Arctic Refuge nurtured and sustained indigenous people. This special cultural relationship depends on the natural ecosystems within the Refuge and the Plan must safeguard opportunities for subsistence use according to the Alaska National Interest Lands Conservation Act and conservation principles. The Gwich'in people have lived in the region for thousands of years, and regard the coastal plain as ‘The Sacred Place Where Life Begins’ because it has been the most frequently used birthing and nursery grounds for the migratory Porcupine Caribou Herd on which the social, economic, and spiritual fabric of their lives depends.”

Many are concerned about protecting their rights under ANCSA, some pointing out that Native Alaskan hunting methods are sustainable and support the rights outlined in the Act, and others stressing that wilderness designation would have negative impacts on tribal activities.

664.3 : “Reports have shown that there is no viable reasons to revoke the legal rights the Inupuits were granted under ANCSA to hunt, fish or responsibly develop the 40 million acres provided to them. And that those activities have had, and will not have any negative impact on protected species in the area such as the polar bear population.”

378.3: “Consider that restricting access to ANWR's oil and gas resources would injure Alaska Native village and regional corporations created under the Alaska Native Claims Settlement Act (ANCSA) of 1971, which would create negative effects on America's economy and handful impacts for all of Alaska's citizens. Indigenous people, particularly the Inupiat of the North Slope Borough, rely not only on wildlife for sustenance, but also on local oil and gas production for revenues. The Alaska Native Claims Settlement Act endowed the Native

populations with the rights to surface and subsurface development with the objective that these populations could remain economically independent.”

Comments regarding heritage are varied, as commenters have broad view of which topics relate to heritage concerns. Many express support of initiatives and policies that promote preservation of the long-standing Native Alaskan heritage, culture, and tradition. Several comment on the general history and way of life on tribal lands. Some Natives are concerned with the adverse effects of development pressures and integration of modern ways of life on their heritage and traditions. They also express a general concern for the perpetuation of traditions and knowledge.

788.5: “And that's the thing that we want to state, that the outside force is always telling us who -- what we can do and what we can't do. And that's wrong. Because as our history states, is this is who we are, our land from the ocean to the Brooks Range. Ask any Inupiat within that area, the North Slope area, and this is, as I stated, are known that we fought for this land, too, with the Indians. I know with the caribous, they keep coming up with the Indians. Well, they lost the war. We won the war, and this is our land, so just to note that.”

399.16: “In addition to stress contributing to adverse health effects, oil development has increased the smog and haze near some villages, which residents believe is causing an increase in asthma. The stress of integrating a new way of life with generations of traditional teachings has increased alcoholism, drug abuse, and child abuse. Higher consumption of non-subsistence food...has increased the incidence of diabetes.”

875.8: “We have to talk with our kids to ask them to step forward, too, when the - - their time will come for them to speak on our behalf. And as we talk about elders, losing our elders, we're losing a lot of knowledge, we're losing a lot of strength, but it's not that we're going to lose anything when we start teaching our kids, talking to our kids, educating them, letting them know what's ahead of them because they, too, will stand to lose a lot if they don't step forward and step up to the plate to really get involved in these meetings especially when it has, like I said, a direct impact on them as residents.”

A number of comments regarding cultural and sacred aspects of Native life were received. Most refer to sacred lands and the unique aspects and significance of these lands. Several people express support or opposition for wilderness designation as a protection of these lands.

396.7: “The Gwich'in people have lived in the Arctic region for thousands of years, and regard the Coastal Plain as “The Sacred Place Where Life Begins” because it has been the most frequently used birthing and nursery grounds for the migratory Porcupine Caribou Herd. The social, economic and spiritual fabric of the Gwich'in culture depend on the survival of these caribou. The CCP should

strive to preserve the wildlife, wilderness and subsistence values necessary to maintain the Gwich'in way of life for many generations to come.”

664.1: “When it comes to balancing responsible usage of our environment and resources with complete dedication to preservation and protection of our ecosystem, cultures like the Inupiat people of the North Slope Borough are beyond reproach. Now as your department begins work on a new Comprehensive Conservation Plan, I was shocked and very dismayed to hear that our government is considering re-designating large parts of the Inupiat legally protected lands as protected wilderness.”

Many commenters stress the importance of understanding and protecting cultural and sacred resources through regulated processes (e.g., NEPA) as well as gathering specific information from the tribes themselves. Some of these commenters wanted the CCP to outline specific methodologies for information gathering and protection. Many commenters express the opinion that the Service should be careful to listen and incorporate Native concerns into all plans and policies that affect the Refuge and Native lands in the region.

627.16: “The NEPA regulations, at 40 CFR 1508.27(b) (3) and (8), require that effects on historic properties and cultural resources be considered in judging the significance of environmental impacts. A variety of specific federal laws, as well as the laws of many states, Indian tribes, and other jurisdictions and a number of international conventions and recommendations, apply to the management of impacts on different kinds of historic properties and cultural resources, such as: historic buildings, structures, sites, districts, and landscapes; religious practices, beliefs, and places; traditional uses of land and resources; ancestral human remains and burial sites; and traditional ways of life.”

367.42: “FWS should address cultural, historical and archeological information in the CCP, and develop it in partnership with tribes and local communities. This should include projects that involve oral histories and expertise from elders, and culture and science camps for youth. Traditional ecological and local knowledge should be incorporated into the CCP. There is considerable new information in books, articles, websites, and so on, about cultural, historical, anthropological and archeological resources.”

815.1: “We need to stop, look, and listen to the people here, especially the Native people of Alaska. They depend on the caribou herd that migrates on both sides from Canada and Alaska. The resources that we have will not compare to the money that we will receive. We cannot drink oil, but the food that we pick from the land is very important to us, the salmon that comes up on the Yukon River. Now we lie managed by that. We're, I'll say, regulated. Everything that we do is regulated. We need to kind of step back and let the Native people say, hey, this is our resources here, let's utilize this here for the Native people. I worked out of the union hall for over 30 years. I understand that people need work, but the Native

people here in the Interior, the Army, up in Arctic Village, up over in Old Crow, Canada, Fort Yukon, Chalkyitsik, Venetie, the caribou herd that migrates on both sides of the country here is very important to the Gwich'in people. I can't really express the feeling I have for the impact that it will have on the Native people. If you were to travel to Arctic Village, it's a very small village up in the Brooks Range. They live a very simple lifestyle, but the animal that they harvest from that little caribou herd is very important to their culture. You'll have to remember that...And we need -- like I said, we need to stop, look, and listen to the Native people of Alaska.”

5.0 Land and Resource Management

The value and importance of various activities on Refuge lands emerged as a key theme. Comments related to activities on Refuge lands included commercial, government, and private activities. The primary focal areas of comment include discussions about Refuge purpose and mandates, Wilderness designation, and Refuge management and goals.

Refuge Purposes and Mandates

Commenters provide many suggestions regarding the Refuge's purposes. Most of the comments received in relation to general Refuge purposes and mandates ask that the Service avoid changing or manipulating the natural environment in the Refuge. Several want to make sure that the opportunity for authentic adventure stays at the top of the list. Some praise the refuge staff for their commitment and efforts. Many other commenters want to keep further wilderness designation out of the refuge. Many of the comments are a bullet point list of common items they would like to see implemented which are extensively covered in other sections of this report including support or opposition of oil and gas, subsistence, wildlife protection, recreation, climate change, and economics.

477.2: "What should Refuge do: Continue to conduct field studies, wildlife surveys and continue to promote recreation via already-established hiking trails and possible backcountry camping regulations. Enforce the requirement of backcountry camping permits and group size."

234.1: "What is important: ANWR is the most complete representation of an intact ecosystem in the US today. Maintaining that should be the goal of the management plan."

630.4: "The plan should also address the management of recreation, research, and educational opportunities that enable visitors to the Refuge to experience authentic adventure, exploration, and solitude while also providing for the long-term health of wildlife populations and habitats."

472.3: "Any activity – research, hunting, or subsistence – be kept to the least possible impact on the land itself, while understanding that these activities will continue."

638.5: "With regard to ANWR (and other areas like northeast NPRA), I think we can manage new oil fields with success similar to that at Prudhoe Bay. With new directional drilling technology, we can situate the drilling and processing equipment to avoid certain areas, and limit particularly loud or distracting activity to times other than the calving season. Ice roads are built to operate in the winter and few caribou are on the coastal plain of ANWR in the winter."

258.7: "Americans do not have to choose between developments of valuable energy resources or the protection of Arctic species and the habitat, on which these species live, feed, breathe, rear their young, and migrate. The Service's management objective to sustain the fish and wildlife species and their habitat in

the Refuge can be achieved without designation of the Coastal Plain as wilderness. This is consistent with the ability of the Service has demonstrated throughout the country to carry out the stewardship of the fish and wildlife species on other refuge units it administers independent of wilderness designations.”

Refuge Goals

Commenters identify several possible future goals for the refuge, including monitoring climate change, recreation management, and designation of land. Some made specific requests about enlarging the size of the Refuge, or making it into a National Monument. However, most echo the common themes of protection and preservation for future generations and for scientific, wildlife, recreational, and ecological purposes. Many commenters agree that the time has come to revisit the CCP, and most that commented on the topic generally support the CCP revision process. Many of these commenters are supportive of the goals set forth by the Refuge staff, and encourage the staff to include wild and scenic rivers and wilderness review for analysis. Relatively few commenters give specific detail about the draft goals which they approve or disapprove of.

755.1: “I wanted to say I am extremely supportive of the CCP process that the Fish & Wildlife Service is undertaking, and I strongly support the effort to update the conservation plan for the Arctic National Wildlife Refuge.”

462: “What is important: I think that maintaining the exemplary wilderness and wildlife qualities of the Refuge should be the top priority in developing the revised CCP. I believe that the stewardship draft goals published in the April 2010 Planning Update are well thought-out and provide a good framework for developing the revised CCP.”

481.4: “What solutions: Don't create an entirely new set of regulations, but operate within existing permitting processes on both state and federal levels. Duplicity may create government jobs, but it does not create a real economy.”

498.1: “What is important: The most important part of the draft goals are that the refuge be preserved in as much of a natural state as possible, that access for Native peoples be maintained, and that all fish and wildlife be preserved. Draft goals # 2 and 3 adequately reflect this. ANWR represents a living legacy of wildness for our country that cannot be replaced if it becomes damaged.”

373.2: “The Borough agrees with the FWS that the agency does not have the authority to decide whether any lands within ANWR should be opened to oil and gas leasing. We therefore appreciate that the FWS will not consider or respond to comments on that issue during this planning effort. That being said, the agency must recognize that any designation of lands within the 1002 area of ANWR as wilderness that occurs as a result of this CCP revision will effectively foreclose those lands from being opened to oil and gas leasing. Beyond the oil and gas

question, for our community of Kaktovik to find itself surrounded by designated wilderness would severely limit options for its future economic development.”

491.6: “The plan should focus on the special value of the Arctic National Wildlife Refuge’s undisturbed ecosystems for studying and understanding effects of climate change in the Arctic. Scientific activities must remain unobtrusive, avoid disturbing wildlife and not allow habitat manipulation. The plan must protect the integrity of the Refuge from extra impacts due to anticipated increased shipping and cruise ship use on Alaska’s north coast as Arctic seas warm.”

473.1: “Preservation of the unique wilderness, the varied plants and wildlife, a wilderness recreational opportunity, and subsistence livelihood for indigenous populations is most important to me. The draft goals for Refuge planning should ensure the maintenance of the Arctic Refuge as a wild place. The reviews should ensure protection and perpetuation of the Refuge’s wilderness qualities and recommend wilderness designation for those areas that are suitable but not currently designated.”

Many commenters discussed various viewpoints on climate change as it relates to Refuge management and inclusion as a formal goal in the CCP. While a few people indicated opposition toward using climate change as a goal, most commenters providing input on the topic supported the idea, and asked that specific items be observed in undertaking that analysis.

46.3: “Describe issues: Drilling for oil and gas is the number one issue. Increased recreational use, both permitted and illegal, is another major issue. Climate change will be a major factor in the future contributing to changes in habitat, and thus be an opportunity to study and hopefully, formulate policies that can address the changes.”

507.5: “Other thoughts: I would love to see more money spent on arctic research related to the effects of climate change and oil development. Let’s stick to the original plan to protect this unique corner of the world and try to learn more about it!”

100.2: “What should refuge staff do? Keep studying and monitoring the ecosystem for climate change indication.”

357.6: “The CCP should detail the threats of climate change to the ecosystem and the refuge wildlife. This analysis should include a recommendation to eliminate and/or minimize human-made stressors that would accelerate threats to the refuge ecosystem.”

647.8: “The CCP Should Include Climate Change Information in Environmental Education Programs - Environmental education and interpretation are priority public uses of the Refuge System and, when compatible, support the Refuge

System's mission by building public understanding and support for wildlife conservation. According to the FWS Service Manual, recreational uses should provide “an opportunity to make visitors aware of resource issues, management plans, and how the refuge contributes to the Refuge System and Service mission.” In its education and interpretation programs and materials, the Arctic Refuge should incorporate information about how climate change is altering the local ecosystem, as well as the national and global implications of those Refuge-scale impacts. The Service is well positioned to educate and inform the visiting public about the climate-driven changes impacting the Refuge and its wildlife, and measures the public can take to help protect them. The Service should develop brochures, interpretive panels, websites, and educational programs that address the vulnerabilities of Refuge resources to climate change.”

Refuge Management Policy

Respondents discuss many different aspects of refuge management policy. This was a focal area of comment, garnering nearly 200 discrete comments. Some specific requests were received, asking (for example) that the Service clarify issues such as unclear policy, refuge demarcation, and the mechanisms incorporated for periodic revision of the CCP. However, the key themes of concern in refuge management policy are climate change, and monitoring, recreation, wildlife, and land designation focused on ecosystem protection.

650.6: “We [The Wildlife Society] note the current CCP for the Arctic Refuge was adopted in 1988 and has not been revised since. Therefore, we think it’s important that a mechanism for periodic revision be incorporated in the Plan and that reviews occur at least every 15 years as mandated by the National Wildlife Refuge System Improvement Act of 1997. The Wildlife Society fully supports a review and revision of the Arctic Refuge CCP, wishes you the best during the process, and looks forward to reviewing the draft plan.”

304.10: “Effects of climate change on Refuge resources are evaluated through research and monitoring, and are considered when making management decisions, which may range from allowing ecosystem to adapt and evolve without intervention, to active management of species and habitats.”

243.2: “The Refuge should also be managed in a way that safeguards the natural biodiversity and processes of the ecosystem as a whole. This will ensure the unique wildlife, wilderness, and subsistence values of the Refuge are protected now and for future generations.”

390.4: “In reading the booklet provided for the public titled Arctic National Wildlife Refuge: Planning for its Future, it would be difficult to argue with the “Draft goals for stewardship” (pg. 5). Indeed, these goals coincide perfectly with my own view of an appropriate management strategy. That said, as the years go by, Refuge managers will, no doubt, find themselves challenged by the desire of user groups to “consume” more of the Refuge’s natural resources through

increased river and air travel, more subsistence use and, of course, pressure to open the 1002.”

303.6: “The Refuge should continue its focus on providing recreational opportunities with authentic adventure, solitude, challenges, risk, and self-reliance required of all visitors. The FWS should exercise restraint in managing the Refuge, and maintain a subtle presence in the Refuge.”

318.9: “Amid all the political rhetoric, please always remember it's a REFUGE for wildlife and a wild ecosystem. The place should be managed toward this original purpose, not be considered for petroleum development. Thank you for your hard work and for taking comments.”

Wilderness Designation

Wilderness was one of the most significant themes of comment. Wilderness commenters both support and oppose new wilderness designation (very often in the 1002 Area). The body of Wilderness comment contained many rationales to support respondents' positions. Among these rationales, commenters cite subsistence/Native concerns, Socioeconomics, wildlife habitat, ecosystem effects, and climate change.

Comments relating to subsistence and Native concerns included both supporting and opposing viewpoints in relation to Wilderness designation. Some discuss the need to provide for the tribes and Native residents, stating that years of Service regulations have affected their way of life. Many respondents call for protection of subsistence as a way of life, and to guarantee that there is wildlife to subsist on for generations to come. Others want less restriction so that they can have access to the lands and oil underneath.

753.1: “I am here today to speak out against designating the Arctic Coastal Plain of ANWR as wilderness. Today I would like to speak as an Inupiaq, not just an Alaskan. I feel that designating the 10-02 area as wilderness would be of great detriment to all of the Inupiaq people of the North Slope. The American government has had their hands around the Alaska Native's air supply for many years, and designating the 10-02 area as wilderness will only tighten their grip, further constricting the growth of our cultures, specifically the Inupiaq.”

30.1: “I am Gwich'in from Gwichyaa Zhee (Fort Yukon, Alaska). I have lived here all of my life and have three children that I have raised primarily with a subsistence lifestyle. I estimate about 80 to 90% of our food that we consume is subsistence foods that my ancestors have lived off of for years and years. I am asking that the Porcupine Caribou Herd's calving and nursing grounds/coastal plain be designated as Wilderness. It is imperative that we safeguard the ANWR and the integrity of the ecosystem of the Refuge through proper stewardship.”

768.7: “The climates have changed, too. And I'm afraid. I hope the Porcupine Caribou Herd never changes. As a people, my people of Arctic Village, we want to consider this 10-02 as a wilderness and I hope you all agree for it.”

Many commenters identify the socioeconomic values of Alaska and discuss the ways that Wilderness designations may affect the economy. Some of these commenters oppose wilderness, using reasoning that includes potential effects to access, rural resident needs, and wildlife. Many of these commenters feel that there are already enough wildernesses in Alaska and express that they feel they are being restricted by government action that will affect their ability to provide for themselves and their families.

355.8: “The members of the Alaska State Chamber of Commerce strongly oppose designation of additional Wilderness on ANWR’s coastal plain. We urge the Service to manage the 1002 area in a manner, which preserves the option of responsible oil and gas development in the future and opposing new Wilderness designations in ANWR. It is vital that the Service and the Obama Administration know how strongly Alaskans believe that ANWR’s coastal plain is critical to Alaska’s future economy and the nation’s energy security.”

76.1: “What is important: The most important aspect of the Refuge is that no changes to its plan be made. The 1002 area was excluded from Wilderness in the past, to provide Alaska with the opportunity to support itself, rather than depend on the Federal Government for handouts, welfare and bail-outs.”

Those that support wilderness designation often use rationales such as subsistence, wildlife, and future generations. Some support wilderness designation, feeling that creating and maintaining the refuge may mitigate climate change effecting wildlife populations and reproduction.

29.2: “Wilderness protection of the entire coastal plain (1002 area) and for all non-designated lands is important for the natives who call it home, citizens like me who seek the delights and lessons of wilderness, but most of all to the integrity and biodiversity of our planet earth.”

399.1: “We strongly recommend the Coastal Plan be proposed Wilderness designation to protect the caribou and the Gwich’in way of life for future generations. We also support wilderness review for the Coastal Plan and for all Arctic Refuge lands not yet designated as wilderness.”

662.1: “I can only look around and see worry on everyone’s faces. Devastating climate change is altering our fragile Arctic now...Protecting our Arctic with wilderness protections is the only way to ensure we are doing all we can to curb our human impact on our state.”

Wild & Scenic River Designation

The majority of comments regarding Wild and Scenic Rivers express either support or opposition for the study of specific rivers to designate as part of the Wild and Scenic River System. Several comments refer to personal experiences on specific rivers and

point out particular characteristics as reasons why such rivers should or should not be considered as a Wild and Scenic River.

Comments opposing designation say that rivers within the refuge receive adequate protection under refuge mandates and policies. Many commenters indicate that the focus for Wild and Scenic River designation should be on rivers within the non-wilderness (non-protected) portions of the refuge. Others indicate designations could impact Native American subsistence. A few comments were made regarding legal authority to regulate or manage uplands within the river corridors. For example:

430.4: “We understand the Refuge intends to evaluate numerous rivers within Refuge boundaries to determine eligibility for designation into the Wild and Scenic River System. The State remains strongly opposed to new recommendations for wild and scenic rivers. The Refuge already includes three designated wild and scenic rivers. Similar to our concerns regarding wilderness, we consider additional designations excessive and unnecessary as Refuge management already provides adequate resource protection to the river corridors.”

623.6: “The Commission is also opposed to studies and/or recommendations for additional wild and scenic rivers within the Arctic Refuge. As we have stated above on the wilderness study issue, existing statutory and regulatory authorities are more than adequate to protect all rivers and water within the refuge. In fact, one of the purposes of the refuge is to ensure “water quality and necessary water quantity within the refuge.” We see no need to conduct wild and scenic river studies that will divert staff resources from other management issues.”

Comments supporting Wild and Scenic River designation point out unique characteristics of specific rivers (e.g., Ramparts of Porcupine River) as well as the wildlife supported by the river systems, and recommend that the CCP outline protection measures for WSR characteristics and values, especially those threatened with increased use or development. Several other characteristics ranging from cultural and historical significance to bioacoustics of specific rivers were specified as criteria for designation. Many commenters recommend an inventory of all rivers within the refuge to identify unique characteristics and values as well as published methods and selection criteria for determining Wild and Scenic River designation.

304.19: “The CCP must ensure protection and perpetuation of the Refuge’s wilderness character. The CCP must protect the outstanding remarkable values of designated wild rivers. Wilderness reviews and recommendations for all non-designated lands should be incorporated in the CCP. The CCP should recommend wilderness designation for those areas that are not currently designated by Congress. The USFWS should implement use limits on rivers where overuse may be occurring. The USFWS should conduct a suitability review of the 24 identified rivers, especially for the Hulahula and Kongakut Rivers for wild river designation could aid in protecting river values. In general,

the USFWS should recommend to Congress wild river designation for those rivers where user capacities and developments are concerns.”

319.7: “I have hiked and floated in the Hulahula and Kongakut River watersheds, and each of those clearly qualifies for both Wilderness and Wild and Scenic River status and should be so designated. Those are the two major rivers on the north slope of the Refuge flowing from deep in the Brooks Range to the Beaufort Sea, and they are both major corridors for caribou migration. Both watersheds support an abundance of wildlife, and Arctic Char runs - especially on the Kongakut - are remarkable. In addition to the extensive wildlife found along each of these rivers, each river flows through a spectacular valley framed with overwhelming beauty. Each of the watersheds is very different, and both should be protected under these Acts.”

375.11: “As part of the scope of the CCP revision, FWS should thus complete an inventory of the rivers of the Refuge, identify their special values and character, and determine their eligibility for Wild and Scenic River designation. This effort should include those rivers not currently in designated Wilderness. We also urge the Service to include recommendations for Wild and Scenic River designations for candidate rivers as part of the CCP revision process.”

Several comments indicate that recreational use on rivers needs to be managed better and river users should be dispersed or limited to avoid affecting the values of Refuge rivers. Some people recommend a permit system to help. They feel that the CCP should provide guidance regarding user capacity and mitigating user impacts as well as studies quantifying and monitoring user related impacts on the rivers. Others comment on the importance of management approaches to maintain the integrity and purposes of designated rivers, and that these should be outlined in the CCP.

304.19: “The CCP should adhere to the following Wild and Scenic River planning guidance to address “user capacity:” Establish direction that is proactive, not reactive, in controlling impacts from visitor use, aircraft use, and facilities. Analyze the number of users and what the use means for outstanding remarkable values and other resources. Address the maximum number of people that can be accommodated by conducting a numerical analysis of visitor use and adopting standards or criteria for managing use within the limits through monitoring and other management actions.”

Many comments provide ideas about how to gather information about potential WSRs on the refuge. For example, some comments indicate that tribal watershed management could provide important information regarding scenic river management. Others point out the importance of continued monitoring of waters within the refuge for water quality and quantity.

Visitor Use

Some specific comments on Visitor Use were received, typically focusing on the perceived need to limit the size of groups on rivers and in the backcountry. Recreation and land management were the key topics in this area of comments; however, most comments relating to recreation are discussed in the Government Activities and Private Activities sections in Chapter 4. Several people comment on the various conflicts that exist on the Refuge, including commercial vs. private party, or recreation vs. subsistence uses. For example:

69.2: “I see a significant conflict between commercial and private party use of the rivers. Commercial tours should be strictly limited. Private, non-commercial use should trump both (commercial) trapping and tour groups. It is public land - commons, not something benefitting private interests... [Need] regulations to limit over-use and over-crowding.”

85.3: “I foresee greater conflicts between recreational and subsistence users. On the other hand, I believe it is possible for the Refuge staff to implement ANILCA properly and allow residents to access to a true subsistence of life, for those who desire it; ...prioritize subsistence hunting but also allow continued hunting to the maximum extent; encourage the building of new subsistence cabins and families; encourage trapping/traditional skills;...inform younger people in the villages of these opportunities and view subsistence as a viable and legitimate lifestyle in the long-term.”

318.6: “One issue is the fact that commercial users are permitted/regulated but independent users are not. Typically the independent users have the least amount of knowledge about how to safely and cleanly travel in this country, and how to avoid creating problem bears for those who follow, if not for themselves. Yet they do not have to have any contact with the Refuge staff. Setting up some form of required interaction with the Refuge would create a much needed education opportunity, such as occurs in Gates of the Arctic. The educational groups have been allowed to be huge (compared to commercial group size limits) and are often from Outside and unaware of what they are getting themselves into. Their large numbers and lack of knowledge has had high impacts on the habitat and on our groups.”

300.7: “The Refuge should continue to focus on providing opportunities for authentic adventure, challenge, discovery and exploration, as well as solitude. Subject to protection of wilderness qualities, respect for visitor independence, self-reliance, and freedom must be an important management goal. The plan should recognize that where these conditions prevail in real wilderness, there can be risks. The agency should not attempt to make the area “safe” or assume responsibility for the visitor. Agency presence should be as subtle, unobtrusive, and low profile as possible. Recreational “improvements” – facilities, cabins, trails, bridges, signs, etc., must be prohibited. The agency should implement use limits on rivers where overuse is occurring and should be proactive in preventing

crowding and disruption of wildlife everywhere. Implement group size limits of 7 for backpacking groups and 10 for river floating groups. In specific areas where the rationing of use is necessary it must not favor commercial guiding operations or people with greater financial resources.”

Water Quality

Concerns about water quality reach every corner of the refuge. Misuse, lack of precipitation, and contamination are key topics. The water is very important for all of the inhabitants and wildlife, not only for survival, but for the well-being of the refuge.

440.8: “Freshwater is critical to abundant life in the Arctic. We are in a long period of drying; ponds are disappearing, lake and river levels are dropping. While we are not able to control precipitation, we can control the use, or misuse of water resources. Human use should take preference over industrial use, and industrial use must be regulated so that it does not affect healthy and natural wildlife populations. Water quality should not be degraded by either human or industrial use.”

627.5: “Water quality degradation is one of EPA’s [Environmental Protection Agencies] primary concerns. Section 303(d) of the Clean Water Act (CWA) requires the state of Washington (and Tribes with approved water quality standards) to identify water bodies that do not meet water quality standards and to develop water quality restoration plans to meet that state and tribal water quality criteria and associated beneficial uses. While the Refuge may not contain listed waterbodies, the CCP/EIS [Comprehensive Conservation Plan/Environmental Impact Statement] document should describe existing restoration and enhancement efforts for those waters, how the CCP will coordinate with on-going protection efforts, and any mitigation measures that will be implemented to avoid further degradation of water quality.

Public drinking water supplies and/or their source areas often exist in many watersheds. Source water is water from streams, rivers, lakes, springs, and aquifers that is used as a supply of drinking water. If source water areas exist within or around the Refuge, the 1996 amendments to the Safe Drinking Water Act (SDWA) require federal agencies to protect sources of drinking water for communities. As a result, EPA recommends the FWS [US Fish and Wildlife Service] contact the Alaska Department of Environmental Conservation to obtain information about source water areas in and around the Refuge. If projects under the proposed CCP would affect drinking water, then the CCP/EIS should include contaminants of concern and measures that would be taken to protect drinking water and source areas. Groundwater extraction, land disturbance, material storage, waste disposal, inadvertent chemical or hazardous liquid spills, and compaction produced by vehicles and other equipment can all affect surface and groundwater quality.”

Fire Management Policy

A few commenters discuss fire management on the refuge, identifying several viewpoints. Some respondents think that fires should burn naturally; others think they should be suppressed.

84.3: “The one issue that needs attention is wildfires. My feelings are that all wildfires should be put out (fought) by B.L.M fire fighters and cabins should be protected, private land, etc. There is also the safety issue of flying in heavy smoke as a result of the idiotic policy of not fighting wilder fires in the Refuge. This I believe is a dangerous situation for residents of the Refuge, visitors and pilots...Put out the fires.”

475.3: “Avoid intervening unwisely, as in the wholesale suppression of forest fires carried out in many parts of the country. As much as possible, be wise stewards who allow natural processes to occur as they will. Staff should be there to observe, learn, and share with the public.”

Naming of Features

A few respondents oppose proposals to name features within the refuge and encourage practices that leave minimal footprints as well as maintain the natural character of the land.

417.5: “The Refuge interpretive program should focus on providing leave-no-trace information and on encouraging behaviors that minimize impacts on resources, visitors, and subsistence users. Information that educates the public about the natural history of the Refuge and its biological and physical qualities deepens the appreciation of visitors without detracting from their ability to experience the Refuge as an unmodified landscape, and should be encouraged. To maintain the Refuge’s aura of exploration, mystery, and “the unknown,” the agency should not produce materials that feature the “attractions.” Nor should it develop materials recommending campsites, routes, river crossings, etc. that domesticate the experience and lessen the spirit of adventure, self-reliance, and independence.”

Refuge Treaties and Agreements

Several respondents express a desire to follow treaties that have been in place for many years. Some natives feel that these treaties have been used as ways to manipulate their lifestyles and want to be guaranteed the ability to continue their ancestral way of life. Another concern is the desire to ensure compliance with the international treaty that protects polar bears and their denning areas.

483.4: “International treaty obligations call for protection of polar bear denning areas. The United States is party to the Agreement on the Conservation of Polar Bears which states that contracting parties shall take appropriate action to protect the ecosystems of which polar bears are a part, with special attention to denning and feeding sites and migration paths, and shall manage polar bears in accordance

with sound conservation practices. Development in the Arctic Refuge would violate this international agreement.”

870.3: “Our way of life is to make sure that when they created the refuge on top of us without ever consulting with us and saying that the jurisdiction that we have is something that we have never taken to court. We own traditionally from up here, from the border since a border has been created to divide the family, so it's a continental divide going all the way down and then it heads up the Tanana and all the way up to, including Kaktovik. That's the Gwich'in territory and that's what we're talking about here.”

860.3: “Many of you heard me talk about this, but I want to remind you again. There's a treaty or a contract that was signed by the villages and it says for the Fish and Wildlife, they also signed it, too, that they will protect our ancestral subsistence way of life in the Yukon Flats. And I think that's one of the things that I would rather have the Fish and Wildlife to remember that and to always protect and not bow down to the oil development. It may sound good at this time, but in the future, that's all we have left is the land, the resources.”

6.0 Legal Consistency

The final area of action coding and analysis is Legal Consistency. In this action area, comments about a variety of legal issues are captured. There are several comments on the legal consistency of various acts, treaties, and policies that affect the Refuge. These comments vary from citing specific property laws to discussing the authority of various government agencies with regard to the Refuge. Respondents often explain why they think that planning efforts are inconsistent with specific laws, regulations, or policies; or they discuss what they feel should be done to ensure the CCP is revised to be consistent with them. The common legal themes are addressed below.

Federal Laws/Regs/Rules/Polices

The vast majority of comments regarding Federal constitution, laws, acts, rules, and regulations call for clarification on the authority and roles of the Service and Congress, and the purposes of the CCP in addressing development concerns within the Refuge – particularly wilderness designation and management within the 1002 area. Other comments call for better management of existing designated lands, including consideration of all reasonable management alternatives that the Service has authority to adopt, prior to designating additional lands. There are several comments on the history, impacts and purposes of the 1002 area, ANILCA, and the Refuge in general, with some calling for adherence/revision to policies outlined in these acts. For example:

11.3: “A concern that I have, and a reason why I have included comments about the benefits of opening the Section 1002 area, is based on a statement by the U.S. Fish and Wildlife Service (USFWS) in the formal scoping notice which notes that some concerns and interests related to the Refuge will not be addressed in the Revised CCP. “For example, the U.S. Congress has reserved for itself in Section 1002(1) of the ANILCA, 16 U.S.C. 3142(1), the decision as to whether or not the Refuge Coastal Plan (also called the 1002 Area) should be made available for oil and gas development. Therefore, the USFWS does not have the authority to decide this issue, and we will not consider or respond to comments that support or oppose such development during this CCP process.” The language in the notice could be read to suggest that the USFWS believes Congress has reserved only the question of oil and gas development for itself and that there is administrative discretion regarding wilderness designations. I believe that, in point of fact and as a matter of law, the decisions about both types of land uses have been reserved by Congress for Congress. I would appreciate your clarifying the position of the USFWS on this point in a separate letter to me.”

388.1: “60 Plus Association is writing to urge you to develop a balanced and fair Comprehensive Conservation Plan that addresses only those matters directly pertinent to the authority of the U.S. Fish and Wildlife Service. We are particularly concerned that potential wilderness reviews will be misused to further a federal conservation plan without the consent or will of the U.S. Congress. Any attempt to restrict access through wilderness designations conflicts with the objectives of the Arctic Refuge, exceeds the parameters of FWS authority over the Refuge, and can cause economic harm.”

415.2: “Wilderness review, including the 1002 area. Section 1317 of ANILCA, the General Wilderness Review Provision, requires the Secretary of the Interior to “...review, as to their suitability or non-suitability for preservation as wilderness,” lands not designated as wilderness by ANILCA and report his findings to the President. The President in turn is to report his own recommendations to Congress. In addition, as federal land management agencies revise and update land management plans, non-wilderness portions of the lands they administer are reviewed as to their suitability or non-suitability for addition to the Wilderness System. Thus citizens and members of Congress expect the Service to include the non-wilderness 1002 area in its comprehensive, legally required wilderness review.”

Many commenters feel that the FWS should not address comments regarding oil and gas development or even provide studies on lands for consideration of wilderness designation, asserting that decisions regarding such development and designation can only be made by Congress and the studies would be a misuse taxpayer of resources. Others feel that question of wilderness designation has been studied in depth in previous studies and plans. Some comments recommend analysis and explanation of Service processes to protect the integrity, purpose, and vision of the Refuge from both inside and outside influences (i.e. potential impacts from oil and gas activities in Canada, or on state lands). For example:

367.38: “FWS should continue “prohibiting production of oil and gas leasing or other development leading to production of oil and gas, and construction of oil and gas support facilities in the Refuge, unless authorized by Congress.” Arctic Refuge CCP at p. xv (1988); see also *id.* at Table 10, p. 182 (“leasing, development and production of onshore oil and gas for commercial purposes. Includes all associated above and below ground facilities,” not permitted unless authorized by Congress); *id.* at p. 216 (prohibiting onshore support facilities for offshore development); *id.* at Table 10, p. 183 (prohibition on removal of sand and gravel for commercial purposes). These prohibitions include seismic exploration and other geological exploration in the coastal plain. The revised CCP should acknowledge and support the continuation of the existing prohibitions on oil and gas, leasing, development, and production of KIC and ASRC lands. Because all of these points are based in law, see e.g., ANILCA Section 1003, these prohibitions cannot be changed.”

Several comments refer to the scope of the CCP and recommended that certain information should be included in or omitted from the original outlined scope, such as including analysis on the Service’s implementation of protective measures and future implementation goals for applicable international fish and wildlife treaties and agreements. Others feel that the CCP should review current acts and policies (e.g., ANILCA) that impact wildlife, water quality, and subsistence rights, among other resources within the Refuge. For example:

629.6: “The Service, refuge manager, and refuge staff must recognize that protecting and maintaining natural diversity, ecological processes, and biological integrity of the Arctic Refuge is an over-arching principle and purpose for the Refuge. This concept was central in the historic vision of the founders of the Refuge and has been reinforced through ANILCA purposes and the Refuge Improvement Act, which directs that biological integrity, diversity and environmental health be protected relative to the Refuges specific ecological characteristics. This means that the Arctic Refuge’s unique naturalness, wildness and undisturbed condition be preserved and maintained.”

There were several comments regarding the impact of various acts and policies on Native Alaskans. Many recommend that the Service provide education opportunities for natives so that they could be better informed on the potential impacts of specific policies and regulations on tribal rights, lands, and subsistence. Some even recommend renegotiation or revision of various tribal treaties.

Other comments recommend that the CCP address protection of compliant industries and permitted uses from frivolous law suits from outside groups.

Appendix A: Demographics

Demographics

When comments are captured in the content analysis process, certain demographic information is also coded, collected, and entered in the project database. Demographic coding allows managers to form an overall picture of who is submitting comments, where they live, their general affiliation with various organizations or government agencies, and the manner in which they respond. The database can be used to isolate specific combinations of information about public comment. For example, a report can include public comment only from people in Alaska or a report can identify specific types of land users such as recreational groups, agricultural organizations, or businesses.

Although demographic information is captured and tracked, it is important to note that the consideration of public comment is not a vote-counting process. Every comment and suggestion has value, whether expressed by one or a thousand respondents. All input is considered, and the analysis team attempts to capture all relevant public concerns in the analysis process. For the ANWR Revised Comprehensive Conservation Plan, 1480 responses were received and processed, representing and 1647 signatures.

In the tables displayed below, please note that demographic figures are given for number of responses, respondents, and signatures. For the purposes of this analysis, the following definitions apply: “response” refers to a discrete piece of correspondence; “respondent” refers to each party for whom original correspondence was logged. (e.g., a single response may represent several organizations without one primary author); and “signature” simply refers to each individual who adds his or her name to a response, endorsing the view of the primary respondent.

Geographic Representation

Geographic representation is tracked for each respondent during the course of content analysis. Letters and emails were received from 49 of the United States. States of residence for each individual signature were tracked for multiple respondent responses.

Table A1 - Geographic Representation of Response by Country and State/Territory

Country	State	Number of Respondents	Number of Signatures
United States	Alaska	420	455
	Arkansas	3	3
	Arizona	23	23
	California	111	112
	Colorado	36	95
	Connecticut	11	12
	District of Columbia	15	39
	Delaware	1	1
	Florida	48	49

Country	State	Number of Respondents	Number of Signatures
	Georgia	7	7
	Hawaii	6	6
	Idaho	5	5
	Iowa	6	6
	Illinois	29	29
	Indiana	8	8
	Kansas	1	1
	Kentucky	1	1
	Louisiana	2	2
	Massachusetts	21	22
	Maryland	23	24
	Maine	9	9
	Michigan	7	7
	Minnesota	20	20
	Missouri	20	20
	Mississippi	3	3
	Montana	10	11
	North Carolina	25	27
	Nebraska	4	4
	New Hampshire	5	5
	New Jersey	13	13
	New Mexico	33	33
	Nevada	2	2
	New York	54	54
	Ohio	24	24
	Oklahoma	5	5
	Oregon	26	27
	Pennsylvania	25	25
	Rhode Island	4	4
	South Carolina	7	7
	South Dakota	2	2

Country	State	Number of Respondents	Number of Signatures
	Tennessee	10	10
	Texas	31	32
	Utah	10	10
	Virginia	21	21
	Vermont	4	4
	Washington	32	33
	Wisconsin	13	13
	West Virginia	1	1
	Wyoming	16	16
	International	16	16
	Anonymous/Unknown	253	289
Total		1482	1647

Organizational Affiliation

Responses were received from various organizations and unaffiliated individuals. Organization types were tracked for each letter and email received. Organization Types of each individual signature were tracked for multiple respondent responses.

Table A2 - Number of Respondents/Signatures by Organizational Affiliation

Organization Field	Organization Type	Number of Respondents	Number of Signatures
B	Business	74	78
C	County Government Agency/Elected Official	4	5
F	Federal Agency/Elected Official	9	34
I	Individual	1306	1347
PI	Public Interest Group/Political Party	51	145
Q	American Indian Government Agency/Elected Official	15	15
QQ	Tribal Non-Government Organization/Tribal Member	1	1
S	State Government Agency/Elected Official	21	21
T	Town/City Government Agency/Elected Official	1	1
Total		1482	1647

Response Type

Response types were tracked for each response received on the project. Responses were received in the form of Letters, Forms, Forms Plus, Action Alerts, Public Meeting Comment Forms, Public Meeting Transcripts, and Public Meeting/Workshop Group notes.

Table A3 – Number of Responses/Signatures by Response Type

Response Type #	Response Type	Number of Responses	Number of Signatures
1	Letter	447	586
2	Form or Letter Generator	10	10
3	Form Plus / Letter Generator Plus	538	546
5	Action Alert	1	1
7	Public Meeting Comment Form	229	239
8	Public Meeting Transcript (hearing/oral testimony)	247	257
9	Public Meeting/workshop group notes	8	8
Total		1480	1647

Delivery Type

Delivery types were tracked for each response received on the project. Responses were received in the form of Email, Fax, Hand Delivered or Oral Testimony, US Mail or Commercial Carrier, Telephone, and Web-based submission.

Table A4 – Number of Responses/Signatures by Delivery Type

Delivery Type Code	Delivery Type	Number of Responses	Number of Signatures
E	Email	1154	1289
F	Fax	9	9
H	Hand-Delivered or Oral Testimony	49	49
M	US Mail or Commercial Carrier	125	154
T	Telephone	3	3
W	Web-based submission	140	143
Total		1480	1647

Appendix B: Organized Response Report

Organized response campaigns represent 98.4 percent of the total responses received during the public comment period for the proposal (92,581 forms out of 94,061 responses).

Form Responses

Forms are defined as five or more responses, received separately, but containing identical text. Once a form is identified, a “form master” is entered into the database with all of the content information. All responses with matching text are then linked to this master form within the database with a designated “form number.” If a response adds something substantive to the basic text presented in a given form, it is entered as an individual letter and called a “form plus”. Duplicate responses from four or fewer respondents are also entered as individual letters.

Forms are designated with a number for the purpose of tracking subsequent submissions. Form numbers are assigned as each “form master” is identified. The following table presents the number of responses, and signatures associated with each form as well as brief content summaries. Ten forms were identified.

Table B1 – Form Letter Summary

Form Number	Number of Responses	Description of Form
1	20012	Would like stronger protections for areas like the Coastal Plain and other parts of the Refuge that are currently without wilderness designation, because its fragile ecosystem could be destroyed by oil and gas exploration and drilling. Would like all of the Refuge given wilderness designation to protect landscape for polar bears, caribou, migratory birds, and the Gwich'in people.
2	549	ANWR was established to preserve wilderness values, but remains vulnerable to exploitative industry, including the vital Coastal Plain region (1002 area). It is home to diverse habitats, including numerous species of birds that begin their journey to all 50 states. The Gwich'in people regard the Coastal Plan as “The Sacred Place Where Life Begins.” Urges that a wilderness review for all lands not already designated in the Refuge including the entire coastal plain, and recommend to Congress their rightful inclusion in the National Wilderness Preservation System. The Refuge should be managed in a way that safeguards the natural biodiversity and processes of the ecosystem as a whole to ensure the unique wildlife, wilderness, and subsistence values of the Refuge are protected now and for future generations.
3	538	Keep the 1002 area open to responsible oil and gas development in the future. Strongly opposes the new wilderness designation of the 1002 area. Responsible development would create thousands of jobs for Alaskans, and provide substantial increase for the Trans-Alaska Pipeline, a source of domestic energy production. Permanently locking up this resource is not in our best national interest.
4	341	Recommend permanent protection through wilderness designation for the coastal plain and all other lands not yet designated wilderness to ensure it is protected forever from oil and gas drilling. There is no safe way to drill, no way to guarantee safety of wildlife, and no guarantee it will be protected for future generations. Only way to protect is to permanently protect it with wilderness designation.

Form Number	Number of Responses	Description of Form
5	8	Continued development and exploration of the resources within the boundaries of ANWR poses an imminent threat to the health and welfare of multiple communities and has the potential to cause permanent and irreparable damages around the entire globe. ANWR is critical to the existence of the Porcupine Caribou herd, a subsistence resource essential to the Indigenous Arctic inhabitants. The Refuge is the last intact Arctic and Subarctic ecosystem left in North America. Migratory birds nest and utilize the coastal plain. There are approximately 40,000 caribou calves birthed and nursed within the Refuge each year.
6	43	Honor the Refuge in its 50th year and support wilderness designation. It is home to 3 bears, grizzly, black and polar, caribou and a migratory destination to more than 198 bird species from six continents and every state in the nation. It is a vital part of the larger ecosystem and connected to existing wilderness through its scenic habitats, watersheds, rivers, and bird and caribou migrations. Include a wilderness review for the entire Coastal Plan and for all refuge lands not yet designated as wilderness. Any oil and gas leasing, exploration and development would permanently harm the wildlife and wilderness values, especially birds like long-tailed ducks and loons and shorebirds.
7	4384	<p>The revised Plan should ensure protection of the ecological diversity and unparalleled wilderness values. The Refuge contains the greatest wildlife diversity of any protected area in the circumpolar north. The Refuge provides habitat for 180 species of birds for nesting, breeding, staging, and molting. The Refuge provides important habitat for 36 land mammals and nine marine mammals including such iconic Arctic species as polar bear, muskox, arctic fox, and beluga whale.</p> <p>The Plan should ensure protection of the Refuge's wilderness qualities. The plan should provide for a complete review of all non-designated refuge lands, including the Coastal Plain and recommend inclusion of these lands within the National Wilderness Preservation System. The plan should also address the management of recreation, research, and educational opportunities that enable visitors to the Refuge to experience authentic adventure, exploration, and solitude while also providing for the long-term health of wildlife populations and habitats.</p>
8	45950	<p>ANWR is the most important onshore denning habitat for America's threatened polar bears. It is home to grizzly bears, caribou, musk oxen, Dall sheep, wolves and rare wolverines, and important to millions of migratory birds. Conduct a full wilderness review of the entire Refuge and make a Wilderness recommendation for the entire Coastal Plain and all lands within the Arctic Refuge not yet designated as Wilderness and ensure it is protected as an intact ecosystem. Prohibit predator control on the Refuge. Protect the full range of natural diversity found in the Refuge. Manage to provide wildlife the space and time to adapt to climate change in the absence of human intervention.</p> <p>Restrict the use of aircraft and establish designated landing zones to mitigate the disruption airplanes cause to fragile tundra ecosystems, wildlife, and the wilderness experiences of those visiting the Refuge. The use of aircraft to spot game for hunter harvest or viewing wildlife should also be prohibited.</p> <p>Identify and designate as commercial-free areas unique or fragile ecological areas of the Refuge. Recreation in these areas should be strictly monitored and regulated in order to protect these locations. The importance of the Refuge will continue to increase as other regions of the United States succumb to development pressure. Consider the national and global significance of the Refuge.</p>
9	20655	Considers the potential economic consequences designating additional wilderness lands could have on indigenous populations. For over 10,000 years Native peoples have relied on the natural resources present in the Arctic National Wildlife Refuge (ANWR) to provide sustenance and maintain cultural traditions. Indigenous people, particularly the Inupiat of the North Slope Borough, have developed ecologically-minded and culturally-distinctive practices that have ensured the sustainability of

Form Number	Number of Responses	Description of Form
		local wildlife and of their heritage. In order for these peoples to preserve their culture, they must be given full access to these areas to hunt and fish without burdensome regulations and limitations. They also rely on local oil and gas production for revenues. Restricting land that has been used responsibly by Native populations for centuries endangers their way of life and sets a dangerous precedent.
10	101	We must finally give the Coastal Plain of the Refuge, the permanent protection it deserves so that it can forever remain the best example of our natural wilderness heritage. Urged to do a wilderness review for all lands not already designated wilderness in the Arctic Refuge, including the entire coastal plain, and recommend to Congress their rightful inclusion in the National wilderness Preservation System. The Refuge should also be managed in a way that safeguards the natural biodiversity and processes of the ecosystem as a whole. This will ensure the unique wildlife, wilderness, and subsistence values of the Refuge are protected now and for future generations.
Total:	92,581	

Table B2 – Responses by State

State	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
Alaska	81	45	534	5	6	34	11	173	76	93
Alabama	89	1		2			16	202	331	
Arizona	503	12		6		2	87	1091	350	
Arkansas	75	1		1			21	201	147	
California	3754	93		25	1		944	8273	2054	1
Colorado	873	23	1	8		1	95	1584	302	1
Connecticut	290	5		2			2	659	240	
Delaware	46	2		3			9	141	123	
District of Columbia	34	1		2			5	107	24	
Florida	1073	36		42			341	2960	1445	
Georgia	248	8		4			50	659	851	
Hawaii	101	1		3			16	245	68	
Idaho	101	4	2	2		2	16	194	99	
Illinois	851	21		7			177	1910	832	
Indiana	255	7		7			56	612	509	
Iowa	128	3		6			24	273	147	
Kansas	121	3		3			27	247	223	
Kentucky	121	1					23	299	293	
Louisiana	80	4	1	2			17	177	240	
Massachusetts	588	11		15			5	1356	369	
Maine	112	6		8			47	328	88	
Maryland	315	7		13			62	896	514	1
Michigan	496	18		4	1	1	108	1117	763	
Minnesota	382	9		7		3	113	641	270	
Missouri	279	7		5			61	606	385	
Mississippi	39	3		1			10	115	157	
Montana	83	3		1			21	187	63	
Nebraska	61	2		2			18	127	91	
Nevada	136			2			18	376	226	
New Hampshire	130	4		3			1	327	101	
New Jersey	622	17		9			138	1452	582	

State	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Form 8	Form 9	Form 10
New Mexico	310	10		8			42	602	77	
New York	1490	39		13			399	3476	1109	2
North Carolina	444	18		13			125	1106	1151	
North Dakota	19						6	48	27	
Ohio	532	11		6			148	1221	689	
Oklahoma	70	1		1			13	195	178	
Oregon	668	22		21			153	1141	212	
Pennsylvania	800	21		9			203	1999	809	
Rhode Island	63	2		1			16	167	57	
South Carolina	129	2		2			48	327	549	
South Dakota	31	1		1			4	49	30	
Tennessee	208	6		1			44	522	441	
Texas	796	21		8			179	1857	1399	
Utah	134	1		1			18	300	207	
Vermont	102	4		3				196	39	
Virginia	429	9		11			88	997	697	
Washington	973	11		24			180	1604	432	1
West Virginia	79			1			13	129	197	
Wisconsin	376	12		12			83	747	333	1
Wyoming	36			5			11	79	37	
Unknown/Intl (incl GU, PR, VI, PW)	256						72	1653	22	1
Total	20012	549	538	341	8	43	4384	45950	20655	101

Appendix K

Mailing List

K. Mailing List

Alaska State Government

Alaska Board of Fisheries
 Alaska Board of Game
 Alaska Bureau of Wildlife Enforcement
 Alaska Department of Commerce, Community, and Economic Development
 Alaska Department of Fish and Game
 Alaska Department of Law
 Alaska Department of Natural Resources
 Alaska Department of Transportation and Public Facilities
 Alaska State Troopers
 Bering Straits Coastal Management Program
 CENPA-CO-R-S
 Office of the Governor
 State Historic Preservation Office

Business, Industry

44 W Air
 A.W. Enterprises
 AAA Alaska Outfitters Inc.
 ABEC's Alaska Adventures
 Adams Guiding Service

Alaska Adventures Unlimited
 Alaska Aerofuel
 Alaska Air Taxi, LLC
 Alaska AirBoats LLC
 Alaska Alpine Adventures
 Alaska Brooks Range Arctic Hunts
 Alaska Discovery
 Alaska Flyers
 Alaska Ground Fish Data Bank
 Alaska Heartland Adventures
 Alaska Mountain Transport LLC
 Alaska River Adventures
 Alaska River Expeditions
 Alaska Trophy Connections
 Alaska Trophy Safari's
 Alaska Wilderness Expeditions
 Alaska Wilderness Journeys
 Alaska Wilderness Outfitting Co.
 Alaska Wilderness Recreation and Tourism Assoc.
 Alaska Wildtrek
 Alaska-Denali Guiding Inc.
 Alaskan Arctic Expeditions

Alaskan Perimeter Expeditions
 Alaskan Sojourns Wilderness Guides
 All About Adventure
 Alpine Outfitters
 Alyeska Pipeline Service Company
 Arctic Air Transport, LLC
 Arctic Alaska Guide Service
 Arctic Getaway
 Arctic Power Inc.
 Arctic River Journeys
 Arctic Treks
 Arctic Wild
 Arctic Wilderness Lodge & Flying Service
 Arrowhead Outfitters, LLC
 Bear Lake Lodge
 Beaver Sports
 Big Game, Big Country
 Big Ray's
 Big Wild Adventures
 Birch, Horton, Bittner & Cherot
 Bob Sevy Adventure Partners
 Branham Adventures
 Bristol Bay Outfitters
 Broken Point Fisheries
 Brooks Range Aviation

Appendix K: Mailing List

Bushcraft Guide Service	Glacier Mountain Outfitters	Pro Engineering
Capitol Information Group	H.C. Price Co.	Shadow Aviation
Caribou Air Service	Halliburton Geophysical Services	Shannon's Air Service
Cavner and Julian, Inc.	Hautanen Enterprises	Sholiton Enterprises
Chandalar River Outfitters	Highlands Holding Company	Sonosky, Chambers, Sachse & Miller
Chignik Airways Inc.	Husky Aviation	Spenard Builders Supply
Chilkat Guides, LLC	Jody Young Adventure Travel	Sport Fishing Safaris of Alaska
Circle Air	Kaktovik Arctic Adventures	Sportsman's Warehouse
Coldfoot Camp	Kavik River Camp	Springer And Associates
Coyote Air Service	Kinnetic Laboratories Inc.	Taiga Ventures
Curt Deans, registered guide	LILCO	Telonics Inc.
Cy's Sporting Goods	Lockhart Construction	The Boat Shop
D & L Outfitters	Many Rivers Alaska Maritime Enterprises	The Hot Spot Café
Deadhorse Camp	Marathon Alaska Petroleum, LLC	The Prospector
Deltana Outfitters	Marathon Oil Company	Tikchik Narrows Lodge
Denali Hunts	Mike's Air Taxi	Too-Loo-Uk River Guides
Entrix Inc.	MMCO, LLC	Trans Arctic Circle Treks, Ltd
Equinox Wilderness Expeditions	National Outdoor Leadership School	Ultima Thule Outfitters
Everts Air Fuel	Nature Image	Ultimate Rivers
Everts Air Service	Northern Alaska Tour Company	Union Oil Company of California
Exxon Company USA	Out In Alaska	Unocal Alaska Region
Exxon Mobil	Outdoors America Communications	Uyak Bay Fisheries, Inc.
Fair Chase Hunts	Ouzel Expeditions	Warbelow's Air Ventures
Flack Air Service, LLC	Pack Paddle Ski Corp.	Washington Fish & Oyster Company
Frontier Flying Service	Peter Pan Seafoods Inc.	Wilderness Alaska
Frontier Outfitters	Petro Star	Wilderness Birding Adventures
G & K Electric Inc.		Wilderness Inquiry
GCI		Willard's Moose Lodge
Glacier Angler Charters		Willards Farm
Glacier Guides Inc.		

Wiseman Gold Rush Bed
And Breakfast
Wrangell Outfitters
Wright Air Service
Yukon Air Service
Yukon River Camp

***Councils, Committees,
Commissions, Boards***

Alaska Migratory Bird
Co-Management Council
Alaska Nanuuq
Commission
Bering Sea Council of
Elders
Bristol Bay Subsistence
Advisory Council
Central Interior Advisory
Committee
Citizens Advisory
Commission on Federal
Areas
Eastern Interior
Subsistence Regional
Advisory Council
Fairbanks Fish and Game
Advisory Committee
False Pass Advisory
Committee
Homer Advisory
Committee
Inuit Circumpolar Council
King Cove Advisory
Committee
Land Resources
Committee, Columbia
Lower Yukon Advisory
Committee

Middle Yukon River
Interior Advisory
Committee
Naknek/Kvichak Advisory
Committee
North Pacific Fishery
Management Council
North Slope Regional
Advisory Council
Northwest Arctic
Regional Advisory
Council
Resource Development
Council for Alaska
Sand Point Advisory
Committee
Southwest Regional Fish
& Game Council
Western Interior
Subsistence Regional
Advisory Council
Yakutat Salmon Board
Yukon Flats Resource
Conservation and
Development Council
Yukon River Inter-Tribal
Watershed Council

***Elected Officials (below
State level)***

Aleutians East Borough
Bristol Bay Borough
City & Borough of Sitka
City of Akhiok
City of Akutan
City of Anaktuvuk Pass
City of Clarks Point
City of Cold Bay

City of Craig
City of Fairbanks
City of Fort Yukon
City of Kaktovik
City of North Pole
City of Nuiqsut
City of Nulato
City of Port Heiden
City of Sand Point
City of Scammon Bay
City of Unalaska
Fairbanks North Star
Borough
Lake & Peninsula
Borough
Municipality of
Anchorage
North Slope Borough

Federal Government

Alaska Fisheries Science
Center - National Marine
Mammal Laboratory
Arctic Interagency Visitor
Center
Environmental Protection
Agency
Federal Aviation
Administration
Federal Subsistence
Board
Gates of the Arctic
National Park & Preserve
NASA Wallops Flight
Facility
National Conservation
Training Center

National Wildlife Refuge System
 NOAA/NMFS Habitat Protection
 North Slope Science Initiative
 Office of Environmental Policy & Compliance
 Office of the Secretary - DOI
 Regional Solicitor
 Southeast Alaska Discovery Center
 U.S. Department of Defense
 U.S. Air Force
 U.S. Army
 U.S. Bureau of Indian Affairs
 U.S. Bureau of Land Management
 U.S. Coast Guard
 U.S. Department of the Interior
 U.S. Forest Service
 U.S. Geological Survey - Alaska Coop Unit
 U.S. Minerals Management Service
 U.S. National Park Service

Elected Officials - Federal

Senator Mark Begich
 Senator Lisa Murkowski
 Congressman Don Young

Elected Officials - State

Senator Albert Kookesh
 Representative David Guttenberg
 Senator Joe Paskvan

Foreign Governments

Aklavik - Hamlet of Aklavik
 Canadian Wildlife Service
 Consular Office of Japan
 Department of Environment and Natural Resources Yellowknife
 Ft. Mcpherson - Hamlet of Ft. Mcpherson
 Government of the Northwest Territories
 Government of Yukon
 Inuvik - Town Of Inuvik
 Parks Canada Western Arctic Field Unit
 Porcupine Caribou Management Board
 Vuntut Gwitchin First Nation
 Vuntut National Park - Parks Canada

Libraries

Akiachak School/Community Library
 Alaska State Library
 ARLIS
 Chukchi Consortium Library
 Colorado State University

ENR-ITI Library
 Fairbanks Public Library
 Kwethluk School Community Library
 NCTC - Library
 UAF Rasmuson Library
 University of California, Water Resources Center
 ZJ Loussac Library

Media

Alaska Angler Publications
 Alaska Magazine
 Alaska Public Radio Network
 Anchorage Daily News
 APRN
 Associated Press
 Cordova Times
 Fairbanks Daily News Miner
 Harts E&P
 Juneau Empire
 KBBI AM 890 Homer
 KIMO 13 News
 KJNP Radio
 KSKA Public Radio
 KUAC Radio
 Northern Native Broadcasting, Yukon
 Petroleum News
 Seattle Times
 Wolf Magazine

Native (business, association, tribal government)

Alakanuk Village Council
 Alaska Eskimo Whaling Commission
 Alaska Federation of Natives
 Alaska Inter-Tribal Council
 Arctic Slope Native Association, Ltd.
 Arctic Village Council
 Beaver Traditional Council
 Bristol Bay Native Association
 Native Village of Fort Yukon
 Canyon Village Traditional Council
 Chalkyitsik Traditional Council
 Circle Traditional Council
 Council of Athabascan Tribal Governments
 Dendudd Gwich'in Tribal Council
 False Pass Village Council
 Gwich'in Steering Committee
 Gwichyaa Zhee Gwich'in Tribal Council
 Iliamna Village Council
 McGrath Native Village Council
 Naqsragmuit Tribal Council

Native Village of Kaktovik
 Native Village of Stevens Tribal Government
 Native Village Of Venetie Tribal Government
 Tanana Chiefs Conference, Inc.
 UNGA Tribal Council
 Venetie Village Council

Native Corporations (regional or village)

AHTNA Incorporated
 Akiachak Limited
 Aleut Corporation
 Arctic Slope Regional Corporation
 Beaver Kwitich'in
 Belkofski Corporation
 Chitina Native Corporation
 Cook Inlet Region, Inc.
 Danzhit Hanlaih Corporation
 Dinyee Corporation
 Doyon Limited
 Isanotski Corporation
 Kaktovik Iñupiat Corporation
 King Cove Corporation
 KMBQ Corporation
 K'oyitl'ots'ina Ltd.
 Kuitsarak Inc.
 Kuskokwim Corporation
 Kwethluk Incorporated

Lands/TDX
 Nelson Lagoon Corporation
 Nunamiut Corporation
 Ounalashka Corporation
 Sanak Corporation
 Shumagin Corporation
 St. Mary's Native Corporation
 Tozitna Limited

Organization or Association

Aircraft Owners and Pilots Association
 AK Oil & Gas Association
 AK Women's Environmental Network
 Alaska Air Carriers Association
 Alaska Backcountry Hunters & Anglers
 Alaska Center for the Environment
 Alaska Chapter of the Foundation of North America
 Alaska Conservation Alliance
 Alaska Conservation Foundation
 Alaska Friends of the Earth
 Alaska Institute for Sustainable Recreation & Tourism
 Alaska Oceans Program

Appendix K: Mailing List

Alaska Oil and Gas Association	Coalition to Protect Animals	Klondike Visitors Association
Alaska Outdoor Council	Congressional Sportsmen's Foundation	MA Audubon Society
Alaska Quiet Rights Coalition	Defenders of Wildlife	Manomet Center for Conservation Sciences
Alaska Road Association	Ducks Unlimited	Morris Thompson Cultural and Visitor Center
Alaska Wilderness League	Earthjustice	National Rifle Association
Alaska Wildlife Alliance	Ecological Society of America	National Wildlife Refuge Association
Alaska Women's Environmental Network	Educational Wolf Programs	Northern Alaska Environmental Center
Alaskan Bowhunters Association	Fairbanks Area Hiking Club	PCFFA
Alliance for Survival	Fairbanks Convention and Visitors Bureau	Polar Bears International
American Wildlands	Fairbanks Cycle Club	Public Employees for Environmental Responsibility
American Rivers	Fairbanks Garden Club	Ruffed Grouse Society
Anchorage Alaska Public Lands Information Center	Fairbanks Paddlers	Rural Cap
Animal Protection Institute	Federation of Fly Fishers	Safari Club International
Animal Switchboard	First Nations Development Institute	Science Now Project
Annette Island Natural Resource Center	Friends in Unity with Nature	Sierra Club
Arctic Audubon Society	Friends of Alaska National Wildlife Refuges	Society for Conservation Biology
Arctic Borderlands Ecological Knowledge Cooperative	Friends of Animals, Inc.	Society of American Foresters
Audubon Alaska	Friends of Creamer's Field	Tahoma Audubon Society
Bitterrooters for Planning	Great Old Broads for Wilderness	Tanana Valley Sportsmen's Association
Boone & Crockett Club	Greenpeace	The Alaska Bowhunters Association
Born Free USA United with Animal Protection Institute	Institute for Environmental Learning	The Alaska Professional Hunters Association, Inc.
Bristol Humane Society	Interior Alaska Airboater's Association	The Alaska Support Industry Alliance
Camp Manito-Wish YMCA	Izaak Walton League of America	

The Conservation Fund - Alaska	Other	New York Board of Education
The George Wright Society	Anchorage Chamber of Commerce	Palmer Research & Extension Center
The Humane Society of the U.S.	California Department of Fish & Game	Patuxent Wildlife Research Center
The Izaak Walton League of America	Fairbanks Economic Development Corporation	Redoubt Elementary School
The Murie Center	Greater Fairbanks Chamber Of Commerce	Sand Point School
The Nature Conservancy	International Association of Fish & Wildlife Agencies	South High School
The River Management Society	North Pole Community Chamber Of Commerce	Temple University
The Wilderness Society	Penn State Park Service	Toolik Field Station
The Wildlife Society - Alaska Chapter		University of Alaska Anchorage
Tok Alaska Public Lands Information Center	Schools	University of Alaska Fairbanks
Tongass Conservation Society	Anna Tobeluk Memorial School	University of Alaska Southeast
Trout Unlimited	Anthony Andrews School	University of Connecticut
Trustees for Alaska	Arctic Village School	USU College of Natural Resources
United Fishermen of Alaska	Cordova High School	Williams College Mystic Sea Port
Voice for Wildlife	Earth & Environmental Science, Suny	Yukon Flats School District
Wilderness Watch	Environmental Policy and Culture Program	
Wildlife Conservation Society	Haines Borough Schools	Individuals
Wildlife Forever	Houghtaling Elementary	Kristine Abshire
Wildlife Information Center	Iisagvik College	David & Jeannie Adams
Wildlife Management Institute	Institute of Arctic Biology	Mickey Agiak
World Wildlife Fund	Lake and Peninsula School District	Eve Ahler
Yellowstone Valley Audubon	Lamont-Doherty Geological Observatory	Doug Alcorn
Yukon River Drainage Fisheries Association	Memorial University of Newfoundland	Robert Allen
	Meshik School	Ross Alliston
		Carter Ames
		Joy Ames
		Richard Ames

Appendix K: Mailing List

Jake Anders	Larry Bell	Nicole Brunke
Adam Anderson	Jay Bellinger	Elizabeth Bryer
Brian Anderson	Jewel Bennett	Arlette Budwig
Deanie Anderson	Paul Benvenuti	Joshua Bundick
Tom Andrews	Michael Bernard	Greta Burkart
Steve Andrus	Elizabeth Besseney	Beth Burrows
Jan Angel	Jimmy Biddle	William Butler
Natasha Antonovich	Sam Bishop	Elizabeth Cadzow
Brian Apolinario	Alice Blakley	Bill Caldwell
John J. Ardison	Debbie Bloom	Karen Cameron
Carol L. Armijo	H.J. Bock	Douglas Campbell
Barbara Armstrong	Kevin Boden	Jim Campbell
Fred Armstrong	Ralph Bomonti	Richard Campbell
Toni Armstrong	Dan Boone	Patricia Carey
Rod Arno	Steven Borell	Deb Carlson
David Athons	Fred Bouse	Robert Carlson
Heirs of Daniel	Jeffrey Bouton	Bruce Carpenter
Atkootchhook	Mike Boylan	Vance Carruth
Mary Atkootchhook	Barbara Boyle	Larry Casey
William Audsley	Stephanie Brady	George Chamblee
Orville B.	Stewart Brandborg, PhD	Lori Chapman
Robert Bacon	Marsha Branigan	Glenn Chen
Michael Baffrey	John Brewer	Christian J. Christian
C.E. Bagley	Richard Brewer	Donna Claus
David Baggs	Dr. Lawson Brigham	Helen Clough
Cameron Baird	Brook Brisson	Kenny Cochran
Mia Baker	Gerald Brookman	Clarence Coe
Donald Bale	Harry Brower	Michael Colavito
Paul Barnhart	Anne Brown	Doug Colclasure
Michelle Barry	Douglas Brown	Edward V. Colerich
Steven Barry	Tina Brown	Janet Collins
Alan Batten	Valerie Brown	Linda Collins
James L. Baum	Rob Brumbaugh	Tom Collopy
Dixie Beall		

Michael Compton	Susan Fleck	Richard J. Gordon
Steve Connelly	Charlotte Fleener	David Govatski
Flor Constantino	Andrea Fogg	Dr. Nicholas Grabavoy
Dorothy Cooley	Don Ford	Dave Gratias
Debra Corbett	Dave Foreman	Ben Greene
William Cox, MD	Ronald Fowler	Christopher J. Gregg
Tim Craig	Joanna Fox	Dennis Grezezinski
David Craskin	Kevin Fox	Harrison Griffin
Robert Cress	Simon Francis, Jr	Mary Grisco
Drew Crook	Simon Francis, Sr	Ruth Gronquist
Jennifer Curtis	Caroline Louise Frank	Andrew Gude
Stephanie Daniel	Eddie Frank	Dick Gunlogson
Megan Deffner	Robert Frank	Audrey Hadfield
Dion DePra	Bernard Friel	Richard Hagan
Kim Destremps	Steven Frost	Steven Hagan
Donna Dewhurst	Teresa Peter Frost	Lindsey Hajduk
Margaret & Bob Dewolfe	Doug Fruge	Caroline L. Haley
C.L. & Nola Dickens	Lillian Garnett	Kent Hall
Frank A. Dinello	Patricia Garrett	Sue Hall
Bob Dittrick	Gregory Geddes	Tim Hammond
Barbara Dupris	Fannie Gemmill	Bruce Hampton
Donna Dwiggins, PhD	Guy D. George	William J. Hanenberg
Sterling & Roberta Eide	Bob Gerl	Richard Hannan
Valerie Engell	Robert Gerlach	Edie & Jim Hanscom
Edward L. Engle	Mary Gilbert	Rebecca D. Hansen
Kim Fackler	Trimble Gilbert	Tyson Hansen
Linda Falcone	Cassandra J Glancy	Dave Harbour
Mike Fenton	Sami Glascott	Brian Hardiman
Murray Fenton	Jim Glaspell	Marianne Harding
Theresa Fiorino	Sara Glass	Harvey Dennis Harms
Susan Kelly Firmin	Glenn Goodrich	Joe Harrington
Dan Fitzgerald	Ken & Kelly Goodwin	Jean Hartman
William James Fitzgerald	Ethel Gordon	Tom Hartman

Appendix K: Mailing List

Margaret Hartzell	Betty Itta	Lexi Keogh
James Hathorne	Patricia Ann & James Jacobson	Dr. Wini Kessler
Erik Hauge	Paul Jago	Don Kiely
Colby Hawkinson	Albert Joe James	Robert King
Pauline Hayden	Gideon James	Robert Kinville
Richard Hayden	Philene James	Josh Klauder
Bill Hedman	Sarah James	Dave Klein
Harmon P. Helmericks	Carl Jappe	Jon Klingel
Roy Henry	Bob Jarosz	Joan Kluwe
Tamara Henry	Nick Jehlen	Charles Konigsberg
Dylan Herd	Danielle Jerry	Marie Koonce
Karen Herget	Lisa Jodwallis	Robert Krear
Mary P. Herminghaus	Heirs of James John	Michael Kreger
Jenna Hertz	G.W. Brass Johnson	Freddie Krukoff
Jack Hession	Karen Johnson	Carolyn Kremers
Katherine Hilk	Mike Johnson	Arnie Kubiak
Lucy Hinde	Paul Johnson	Joseph D. Kurnik
James Hines	Mark Johnston	Jim Kurth
Larry Hinzman	Heir of Madeline Peter	James Lambert
Jim Hjelmgren	Jonas	Suzanne Lamson
Ellen Hoffman	Rachel Jordan	Richard Lanctot
Tim Hogan	Heirs of Gilbert Joseph	Lorraine Lane
Sallie Hogg	Lynda Kahn	James Lansing
Janet Hohn	Jeremy Kazda	Dennis LaRoche
BJ Hollenbeck	Frank Keim	Greg Larson
Rob Holt	Charlotte Kelly	Jim Lawler
Rose Hopp	Donald Kelly	Tim Lawlor
Chuck Houghten	James L. Kelly	William Lazarock
Duane Howe	Lisa Kelly	Mike Lee
Roy Hugie	Wanda J. Kelly	Robert Lewellen
Eleanor Hung	Jan Kemmerer	Larry Lewis
Richard Idler	Allen Kemplen	Darrell Allen Lindgren
Lura B. Irish	Chris Kent	Mark Lindsey

Richard Link	Casey Merritt	Kevin O'Brien
Kathy Liska	Mr & Mrs Middlemiss	Andrew Ogden
Anton Lo	Grant Miller	Terry Ohman
Lani Lockwood	James Miller	Louise Olivo-Kier
Todd Logan	Lee Miller	Marc Olson
Tim Lydon	Pamela Miller	Mark Olson
Mary Lynch	Rachel Miller	Marty Olsen
Samuel Michael Madrid	Wilbur Mills	John Olson
Edward Maillet	Peter Mjos	Normon Olson
Phyllis J. Mains	Donald Molde	Michael O'Meara
Phil Majerus	Kevin D. Morgan	Tom O'Reilly
Sharon Manning	Anne Morkill	Dorothy Panningona
Nathan Mantua	David Moryc	Mark Parr
John Martin	Jack Mosby	Pamela Parsons
Heirs of Richard Martin	Robert Murphy	Jim Patterson
Joseph E. Mason	Mary Narey	Gail Pearlman
Vince Mathews	Marie Nash	Adline Peer-Raboff, Sr
Joe Matesi	Jim Neely	Joseph Perkins
Joe Mattie	Anne Nelson	Steven H. Perrins
Fran Mauer	Pamela Nelson	Angela F. Peter
Jack Mays	Richard Nelson	Donald Peter
Barbara McCane	Ruth & J Nelson	Ernest Peter
Michael McCann	Florence Newman	Franklin A. Peter
Bruce McClenahan	Walter Newman, Sr	James Peter
Tom McCollum	Wassilia Nickolai	Heirs of Jeremiah Peter
Nicole A. McCutchen	Darryl Nikolai	Kias Peter, Sr
Tracy S. McDonnell	Dan Niosi	Margaret Peter
Margaret McGinnis	Stephan Nofield	Myrna Peter
Richard McKinny	Russell Nogg	Heirs of Noah Peter
Sharon McLeod-Everette	Mary Norden	Mildred Peter-Allen
Ken Meade	Carol Norr	Kate Peterkin
Rosa Meehan	Lois Norrgard	Robert A. Petersen, MD
Dorothy Melambianakis	Russ Oates	Ted Petersen

Appendix K: Mailing List

William W. Peterson	Katie Rich	Heirs of Sam Moses Sam
James Petluska	Katharine Richardson	Siel Sander
Clarence Petty	Francis Rifugiato	Diane Sanzone
Glen Phillips	William Ritchie	Wesley Sarmento
Sharon Phillips	Dan Ritzman	Regina Savchuk
Nissa Pilcher	Peggy Robel	George B. Schaller
Gary Pinard	Craig & Cathy Roberts	Rick Schikora
Mildred Podolski	Maggie Roberts	Andy Schlick
Carol K. Podraza	Margaret Roberts	Andrew Schlickman
Shannon Polson	Ralph Roberts	Barbara Schmitt
Walter Potthast	Steve & Judy Robinson	Susan Schulmeister
Fred Pratt	Greg Roczicka	Max Schwab
Pete Probasco	Jamie Rodriguez	Douglas Schwartz
Kevin Proescholdt	Ralph Rogers	Chris Scranton
Christopher Provost	George Rogers	Clee Sealing
Stanley Pruszenski	Charlotte Rollins	Reed Secord
Virginia Purdy	Karl Romig	Mark R. Seidl
Carl Quattlebaum	Harvey Rookus	Kent Sherman
Bill Quirk III	Lynn Root	Bill Sherwonit
Karol Raymer	Darren Rorabaugh	Murray Shoemaker
Martha Tako Raynolds	Bill Rose	Gail Siemen
Pete Raynor	Roger Rose, Jr	Patrick Sigl
Jennifer Reed	David Roseneau	Jonathan Simon
Michael Rees	Bertha M. Ross	Donald Sisson
Brett Reid	Don Ross	Allan Skinner
Penny Rennick	Heirs of Fred Ross	Jeffrey Sloss
Edward Rexford	Kurt Rotter	Sue Small
Heir of Herman S. Rexford	Martha Russell	Allen E. Smith
Heir of Mildred S. Rexford	Heirs of Nena Russell	Eric Smith
Martha Reynolds	B Sachau	Jennifer Smith
Harry Reynolds	Hannah Salmon	LaVerne Smith
Joel Reynolds	Edward W. Sam	Stanley Smith
	Robert L. Sam	Don Soileau

Hannah Solomon	Tina Tin	Dale Wagner
Margaret Peter Solomon	William Tobin	Bob Waldrop
Maria Solomon	Chuck Tomkiewicz	Ken Wallace
Ron Somerville	James Towers	Willard H Wamsganz
Annie Soplu	Bob Tracey	Greg A. Warren
Heirs of Fred Soplu	John Trawicki	Robert Weber
Jimmie Soplu	Belinda Trejo	Joyce Weldon
Joseph Soplu	Frank Tretikoff	Danny Whatley
Joshua Soplu	Allen Tritt	Gary Wheeler
Carol Soul	Calvin Tritt	Dr. John R. White
John Sparaga	Franklin Tritt	Marie Car & Joshua White
Debbie Steen	Lincoln Tritt	Jonas Wickham
Jim S. Spehler	Naomi Tritt	Susan Wiedman
Page Spencer	Nena Sarah Tritt	Peter Wikoff
Matt Sprau	William Tritt	Dennis Wild
Todd Steele	Raymond Tucker	Randall Wilk
Roland Stickney	Kim Turley	Eunice William
Keri Stout	Jeff Turner	Gary Williams
John Strassenburgh	Nate Turner	Margaret Williams
Kathi Strawn	Paul Turner	Michael Williams
Greg Streveler	Alice J. Tysinger	Paul Williams, Jr.
Debbie Strong	Carol Udd	Richard Williams
Michael Svoboda	Tevis Underwood	Jim Willis
Ted Swem	Henrietta Vaden	Wade Willis
Doris J Taylor	Jim Van Raden	Beverly Willman
Ivan Taylor	Charlotte Van Winkle	Frederic Wilson
Ronald Teel	Charles Vandergaw	Henry Wilson
Steven Thaw	Peter VanTuyn	Eugene Witt
Ave Thayer	Dusty Vaughn	Patton Witt
Bruce Thomas	Venable Vermont, Jr	Ellen R. Wolf
Dorothy Thompson	Cathy Verret	Ginny Wood
Gordon Thompson	Cashell Villa	Ruth Wood
Rich & Paula Thorne	Linda Vrem	Bruce Woods

Appendix K: Mailing List

Karen Wuestenfeld

Glen Yankus

Ronald A. Yarnell

M. Yerkes

Jody Young

John Young

Julia Youngblood

Jo Yount

John Zabielski

Steve Zack

Ken Zafren

E. Zahn

Ed Zahniser

Ralph Zusman

Appendix L

Preparers of the Plan and Planning Team Members

L. Preparers of the Plan and Planning Team Members

L.1 Principal Document Preparers

Richard Voss

- Arctic Refuge – Manager
- B.S. Biology
- 37 years of experience as a biologist, public use specialist, LE officer, refuge manager

Jimmy Fox

- Arctic Refuge – Deputy Manager (through October 2010)
- B.S. Biology
- 19 years of experience in land and public use management

Anne Marie LaRosa

- Arctic Refuge – Deputy Manager
- M.S. Plant Ecology
- 30+ years of experience as a natural resource manager and refuge manager in Alaska, Hawaii, Florida, and the western U.S.

Hollis Twitchell

- Arctic Refuge – Assistant Manager, Law Enforcement Officer, Pilot
- B.S. Natural Resource Management
- 30 years of experience in resource management and resource protection

Dave Payer

- Arctic Refuge – Supervisory Biologist
- B.S. Animal Science; M.S. Wildlife Science; Ph.D. Wildlife Ecology; Doctor of Veterinary Medicine
- 25 years of experience as veterinarian, biologist, research associate, and supervisory ecologist

Roger Kaye

- Arctic Refuge – Wilderness Specialist, Pilot
- B.S. Natural History; Ph.D. Wilderness/Northern Studies
- 32 years of Service experience in designated Wilderness and public use, including 25 years with Arctic Refuge

Heather Bartlett

- Arctic Refuge – Law Enforcement Officer, Pilot
- B.S. Wildlife Biology
- 4 summer seasons experience as biological science technician/interpretive ranger/LE ranger; 6 years of experience as LE officer, including 3 years as pilot

Peter Boyer

- Alaska Department of Natural Resources - ANILCA Coordinator
- B.S. Land Use; M.A. Political Science
- 8 years of experience in natural resource planning and management

Alan Brackney

- Arctic Refuge – Wildlife Biologist, GIS Specialist
- B.S. Fish and Wildlife Biology; M.S. Zoology
- 31 years of experience in wildlife biology, natural resources management, geospatial analysis

Jeffrey Brooks

- Division of Conservation Planning and Policy – Social Scientist
- A.S. Biology, B.S. Biology, M.S. Conservation Ecology and Sustainable Development, Ph.D. Natural Resource Recreation
- 3 years of experience in international development and community health education; 4 years of experience in wildlife biology; 4 years of experience in natural resource planning and policy; 14 years of experience in social science research in outdoor recreation, visitor experience, and human dimensions of natural resources

Joshua Bundick

- NASA Wallops Flight Facility - Lead, Environmental Planning
- B.A. Environmental Sciences
- 10 years of experience in environmental planning and impact assessment

Greta Burkart

- Arctic Refuge - Aquatic Ecologist
- B.S. and B.A. Zoology; B.F.A. Fine Arts, photography; M.S. Biological Sciences; Ph.D. Watershed Sciences
- 15 years of experience as a research assistant, teaching assistant, research associate, and aquatic ecologist

Doug Campbell

- Refuges – Realty Specialist
- BLA Landscape Architecture; MLA Landscape Architecture
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Edward (Ted) Maillet

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Scott McGee

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Jennifer Reed

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- B.A. Anthropology; teaching certificate
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- 13 years of experience in wildlife biology; 10 years of experience in refuge management; 4 years of experience in planning

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- B.A. Political Science; J.D. Law
- 1 year of experience in natural resource planning and management; 2 years in law; 7 years in energy consulting; 2 years in non-profit management

Cashell Villa

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- 11 years of experience as research assistant and wildlife biologist

Deborah Webb

- Division of Conservation Planning and Policy – Assistant Natural Resource Planner
- B.S. Zoology; M.S. Wildlife Biology
- 5 summer seasons and 3 full years of Service experience in wildlife biology; 4 years of experience in natural resource planning

Hannah Wells

- Division of Conservation Planning and Policy – SCA Planning Intern 2011
- B.A. Environmental Science
- 1.5 years of experience as a visitor use and planning intern

L.2 Planning Team

Three planning teams were created for the Revised Plan: core, extended, and advisory. Teams were differentiated based on the level of involvement in developing the Revised Plan.

Core Team: The core team has the primary responsibility for completing the Revised Plan for Arctic Refuge. The core team consists of the Refuge manager and other Refuge staff, along with the planning team leader and representatives from the State of Alaska. State participation has been mutually beneficial; however, the State of Alaska does not endorse the content of this Plan.

Extended Team: The extended team is involved in all key decisions and contributes important components to the Revised Plan, such as data collection, analysis, writing, and reviewing. The extended team consists of Refuge staff and representatives from other agencies and Native groups.

Advisory Team: Members of the advisory team include Refuge and regional office staff and other specialists and experts who provide support to the core and extended teams during the planning process. Members of the advisory team attend team meetings by specific request, but core and extended teams can coordinate with any member of the advisory team on an as-needed basis.

L.2.1 Core Team Members

Richard Voss, Refuge Manager

Anne Marie LaRosa, Deputy Manager

Hollis Twitchell, Assistant Refuge Manager

Dave Payer, Refuge Supervisory Biologist

Roger Kaye, Refuge Wilderness Specialist

Jason Cheney, Alaska Department of Fish and Game, ANILCA Program Assistant

Andrew Levi, Alaska Department of Fish and Game, ANILCA Program Assistant

Ashley Reed, Alaska Department of Fish and Game, ANILCA Program Assistant

Kyle Smith, Alaska Department of Natural Resources, ANILCA Coordinator

Peter Boyer, Alaska Department of Natural Resources, ANILCA Coordinator

Joshua Bundick, NASA Wallops Flight Facility - Lead, Environmental Planning

Sharon Seim, Lead Planner

Deborah Webb, Assistant Planner

Emily Heller, SCA Planning Intern 2009

Megan Deffner, SCA Planning Intern 2010

Hannah Wells, SCA Planning Intern 2011

L.2.2 Extended Team Members

Heather Bartlett, Refuge Law Enforcement Officer/Pilot
 Jeffrey Brooks, Social Scientist
 Greta Burkart, Refuge Aquatic Ecologist
 Cathy Curby, Refuge Wildlife Interpretive Specialist
 Jimmy Fox, Refuge Deputy Refuge Manager (until October 2010)
 Jennifer Reed, Refuge Visitor Services Coordinator
 Sue Schulmeister, Natural Resource Planner
 Cashell Villa, Refuge Operations
 Richard Glenn, Arctic Slope Regional Corporation, Vice President of Lands and Natural Resources
 Fenton Rexford, Tribal Administrator, Native Village of Kaktovik
 Roger Sayre, Bureau of Land Management, Arctic Field Office Planning and Environmental Coordinator

L.2.3 Advisory Team Members

Joanne Ahlfs-Bryant, Refuge Community Liaison
 Alan Brackney, Refuge Wildlife Biologist/GIS Specialist
 Janet Jorgenson, Refuge Botanist
 Steve Kendall, Refuge Wildlife Biologist – Birds
 Patricia Reynolds, Refuge Wildlife Biologist – Mammals
 Dave Sowards, Refuge Pilot
 Judy Schoenewald, Refuge Office Clerk (until December 2010)
 Eric Wald, Refuge Wildlife Biologist
 Jeff Adams, Fisheries and Habitat Restoration Chief, Fairbanks Fish and Wildlife Field Office
 Brian Anderson, Refuge Permits Coordinator
 Mike Boylan, Refuge Supervisor
 Pauline Boyle, Administrative Assistant
 John Brewer, Chief Cartographer
 Doug Campbell, Realty Specialist
 Helen Clough, Chief, Division of Conservation Planning and Policy
 Debbie Corbett, Regional Archeologist
 Donita Cotter, National Wild and Scenic River Coordinator
 Mitch Ellis, Regional Chief, National Wildlife Refuge System

Danielle Jerry, Chief, Division of Realty and Natural Resources
Todd Logan, Regional Chief, National Wildlife Refuge System (until April 2011)
Ted Maillet, Senior Economist
John W. Martin, Regional Refuge Biologist
Vince Matthews, Subsistence Advisor
Scott McGee, Cartographer
Rosa Meehan, Chief, Marine Mammals Management
Jim Neely, Law Enforcement Officer
Nancy Roeper, National Wilderness Coordinator
Debbie Steen, Chief, Division of Visitor Services
John Trawicki, Regional Hydrologist
Esther Hugo, Naqsrugmuit Tribal Council, Anaktuvuk Pass
Sally Gibert, State ANILCA Coordinator (until July 2011)
Sue Magee, State ANILCA Coordinator
Alexa Greene, Northern Area Planner, Alaska Department of Transportation

L.3 Other Contributors/Consultants

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Appendix M

Glossary

M. Glossary

M.1 Terms and Phrases

1002 Area – Refers to a portion of the coastal plain of the Arctic National Wildlife Refuge (Arctic Refuge, Refuge), identified in Section 1002 of the Alaska National Interest Lands Conservation Act (ANILCA) of 1980. Section 1002 of ANILCA further requires that studies be performed within in the designated area to provide information to Congress such as a comprehensive and continuing inventory and assessment of the fish and wildlife resources, and an analysis of the impacts of oil and gas exploration, development, and production.

17(b) easement – Rights reserved to the United States for travel across or use of Alaska Native corporation land. These rights are reserved under 17(b) of the Alaska Native Claims Settlement Act (ANCSA) when the Bureau of Land Management (BLM) conveys land to a Native corporation. These 17(b) easements may be 1) road or trail easements providing access over private Native corporation land to public lands, including waterways, marine coastline, and airports; 2) site easements, including temporary camping areas, trailheads, and vehicle or boat parking and unloading; and 3) other uses, including utility lines or the fulfillment of international treaty obligations.

Action – A management option that could be taken to address an issue. Actions are components of an alternative.

Administrative activities – Any activities conducted for the Refuge by Refuge staff.

Administrative record – The “paper trail” that documents an agency’s decision making process and forms the basis for the agency’s decision. It includes all materials directly or indirectly considered by persons involved in the decision making process, including opinions or information considered but rejected. The administrative record helps future managers understand the evolution of the issue(s) and how decisions were reached and made.

Aeolian origin – The origin of eroded material that is produced, carried by, or deposited by the wind.

Air quality-related value – Pertaining to protection of a resource identified by a Federal land manager that may be adversely impacted by air quality changes in an area. Examples of resources include visibility or a specific scenic, cultural, physical, geologic, biological, ecological, or recreational resource.

Air-taxi services – A commercial service provider authorized by special use permit to provide a specific type of air service. Air taxis provide services for all types of visitors, including general hunters. They provide transportation services based on travel time and/or distance. Hunters are incidental to their air-taxi business, and hunters are charged the same rate as other clients (river rafters, backpackers, etc.). Air-taxis may also be licensed as transporters and vice versa (see *Air transporter services* and *Commercial air operator*).

Air transporter services – A commercial service provider authorized by special use permit to provide a specific type of air service. Air transporters are licensed through the State of Alaska according to 12 AAC 75.145. Air transporters are used almost exclusively by general hunters. Air transporters offer fly-in services to hunters, and they directly target the business of hunters through advertisements. A fixed rate is paid by each client to the air transporter for all air transportation services needed, including that of gear and game meat. The air transporter is usually responsible for determining the hunting location. Air transporters may also be licensed as air-taxi and vice versa (see *Air-taxi services* and *Commercial air operator*).

Alaska Friends groups – Formal groups of volunteers that are part of statewide associations of conservation and education groups, and a national network of independent, non-profit organizations.

Allocation system – Used for apportioning limited use opportunities sector groups (see *Sector group*) once use is limited. Allocation systems are only applied if user demand exceeds the supply of recreation opportunities defined by a capacity (Whittaker and Shelby 2008).

Allotment (Native land ownership) – Private lands within the Refuge that are owned, or have been selected, by Alaska Natives for themselves and their heirs per the Alaska Native Allotment Act of 1906 or the Alaska Native Vietnam Veterans Allotment Act of 1998.

Allotment (recreation management) – Within the context of recreation management, the apportionment of limited access among sector groups (Whittaker and Shelby 2008) [not to be confused with *Allotment-land ownership*].

Allowed – Activity, use, or facility is allowed under existing National Environmental Policy Act (NEPA) analysis, appropriate use findings, Refuge compatibility determinations, and applicable laws and regulations of the Service, other Federal agencies, and the State of Alaska.

Alluvial deposit– Silt, sand, clay, gravel, and other material deposited by flowing water.

Alluvial fan – A fan-shaped deposit of material formed where a fast-flowing stream slows and spreads out onto a flatter plain.

Alternatives – Different sets of objectives and strategies or means of achieving Refuge purposes and goals, helping fulfill the National Wildlife Refuge System (Refuge System) mission and resolving issues.

Anadromous fish – A fish or fish species that spends portions of its life cycle in both fresh and salt waters, entering freshwater from the sea to spawn. Includes the anadromous forms of Pacific trout and salmon of the genus *Oncorhynchus* (rainbow and cutthroat trout; Chinook, coho, sockeye, chum, and pink salmon), Arctic char, Dolly Varden, sheefish, smelts, lamprey, whitefish, and sturgeon.

Anthropogenic (adjective) – An effect that is caused or influenced by humans.

Appropriate use – A proposed or existing use on a refuge that meets at least one of the following four conditions: 1) wildlife-dependent recreational use, as identified in the National Wildlife Refuge System Improvement Act; 2) contributes to fulfilling refuge purpose(s), the Refuge System mission, or refuge management plan goals or objectives (approved after October 9, 1997, the date the Improvement Act was signed into law); 3) the take of fish and wildlife under State regulations; or 4) a use otherwise found appropriate as specified in 603 FW 1.11.

Aufeis – Ice that forms from groundwater flow during freezing temperatures.

Base camp – A base camp serves as a center of operations and overnight accommodations for extended stays in one location on the Refuge. A temporary base camp is generally removed within two nights.

Baseline inventories – Initial surveys of plants, animals, or other elements of the biophysical environment that acquire information not previously collected. Baseline inventories evaluate current conditions and can be used for detecting changes occurring over time.

Batholith – A large irregular-shaped deposit of igneous rock formed from an intrusion of magma, often granite, and exposed by erosion of less erosion-resistant rocks.

Bedrock – In geology, bedrock is the older, native consolidated rock formations lying exposed or beneath unconsolidated deposits.

Big-game guide – A person licensed by the State of Alaska to provide services, equipment, or facilities to a big-game hunter in the field. A big-game guide accompanies or is present with, personally or through an assistant, the hunter in the field. Guides must have a special use permit to operate on a national wildlife refuge.

Bioacoustics – A branch of science concerned with the production of sound by, and its effects on, living organisms.

Biological diversity – Also commonly referred to as biodiversity, refers to the variety of life and its processes, including the variety of living organisms, the genetic differences among them, and communities and ecosystems in which they occur.

Biological integrity – Biotic composition, structure, and functioning at the genetic, organism, and community levels consistent with natural conditions, including the natural biological processes that shape genomes, organisms, and communities (602 FW 1).

Biotic – Relating to living organisms.

Borough – A legally established geographic entity in Alaska, which the U.S. Census Bureau treats as statistically equivalent to a county in other states.

Calcareous – Containing calcium carbonate.

Chert – Rock consisting of microcrystalline quartz.

Colluvial deposit – Material that has accumulated at the base of a slope such as talus, avalanche debris, gravel, and soil moved by soil creep and frost action.

Commercial air operator – A commercial service provider authorized by special use permit to provide either air-taxi or air transporter services (see *Air-taxi* and *Air transporter service*), sometimes referred to as air operator (as opposed to private pilot).

Commercial guide – A commercial guide is an individual or business who is compensated in exchange for the service of guiding clients on the Refuge for recreational, hunting, or fishing activities. Commercial guides are required to have a Refuge-issued special use permit, or be employed by a business that has a special use permit, prior to conducting activities on the Refuge.

Commercial service provider – An individual or business authorized by a special use permit to provide commercial services on the Refuge related to recreational activities or other public uses.

Commercially-supported – Activities or users that are either guided or transported by a commercial permittee of the Refuge onto Refuge lands or waters.

Compatibility determination – A written determination signed and dated by the Refuge manager and regional chief signifying that a proposed or existing use of a national wildlife refuge is a compatible use or is not a compatible use.

Compatible use – A proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the Refuge System mission or the purposes of the national wildlife refuge.

Competitively awarded refuge permit – Special use permits are issued competitively when a limited number of permits are available. Currently, only hunting guide permits are issued competitively. The competitive process requires applicants to submit a detailed application that includes a description of personal qualifications and an operations plan. The Refuge manager reviews all applications and selects the most qualified applicant. The number of permits awarded is limited to the number of exclusive guide use areas available (see *Special use permit*).

Comprehensive Conservation Plan – A document that describes the desired future conditions of a refuge or planning unit and provides long-range guidance and management direction to achieve the purposes of the refuge; helps fulfill the mission of the Refuge System; maintains and, where appropriate, restores the ecological integrity of each refuge and the Refuge System; helps achieve the goals of the National Wilderness Preservation System; and meets other mandates.

Comprehensive River Management Plan (CRMP) – A step-down plan that describes the existing resource conditions of a river included in the National Wild and Scenic Rivers System. The CRMP includes a detailed description of the river's outstandingly remarkable values (ORVs); addresses development of lands and facilities; defines the goals and desired conditions for protecting river values; addresses user capacities; and addresses water quality issues and instreamflow requirements.

Conglomerate – Rock consisting of pebbles or gravel embedded in finer cementing material.

Conservation system unit – Any unit in Alaska of the National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers Systems, National Trails System, National Wilderness Preservation System, or a National Forest Monument, including existing units; units established, designated, or expanded by or under ANILCA; additions to such units; and any such unit established, designated, or expanded thereafter.

Consultation and Coordination with Indian Tribal Governments – On November 6, 2000, President Clinton signed Executive Order 13175, Consultation and Coordination with Indian Tribal Governments. This Executive order builds on previous administrative actions and is intended to: establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications; strengthen government-to-government relationships with tribes; and reduce the imposition of unfunded mandates upon tribes.

Controlled Use Area – Areas of Alaska defined in State fish and wildlife harvest regulations (passed by the State of Alaska Board of Game) that have specifically designated rules about methods of access, methods of taking animals, or other provisions. For example, some areas are closed to the use of motorized vehicles for hunting or transportation of hunters, their hunting gear, and/or parts of game. Other areas are restricted to bow hunting only.

Conveyance document – Federal government documents that transfer land title to individuals, Alaska Native corporations, and the State of Alaska. An Interim Conveyance transfers title to unsurveyed land to Alaska Native corporations. A Tentative Approval transfers title to the State of Alaska prior to survey of the land. A Patent or Land Patent conveys legal title from the United States to surveyed land and/or mineral resources.

Conveyed lands – Legally owned lands. Under criteria established by ANCSA (Public Law [PL] 92-203) in 1971, Native corporations were able to obtain legal title to certain public lands by first selecting them.

Corp – U.S. Army Corp of Engineers

Cretaceous – A geologic period within the Mesozoic Era between 140 million and 65 million years ago. The Cretaceous was a period of development of dinosaurs, flowering plants, and modern insects. The period ended and the Cenozoic Era began with the K-T extinction event, probably caused by a massive asteroid strike in the Yucatán Peninsula of Mexico. The event was marked by widespread extinctions of numerous species on Earth, including dinosaurs, pterosaurs, and large marine reptiles.

Critical habitat – A specific geographic area(s) that is essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area not currently occupied by the species but that will be needed for its recovery.

Crustacean – A subphylum of (mostly) aquatic invertebrates related to insects with a body segmented in three parts: the head, thorax, and abdomen. Crustacea includes such species as shrimp, brine shrimp, lobsters, crayfish, krill, copepods, amphipods, and barnacles.

Cultural resources – The remains of sites, structures, or objects used by humans in the past—historic or prehistoric. More recently referred to as heritage resources.

Cultural worldview – Worldview refers to a cultural frame of reference. As children grow up in family units within particular cultural systems, they develop a worldview—a general way of experiencing and interpreting the social, natural, and spiritual events of life. These ways of experiencing life create knowledge and belief systems that are integral in maintaining ties to their culture.

Culture – Culture is the integrated pattern of human behavior to deal with the environment. Humans use speech to transfer knowledge and beliefs, maintain and pass on traditions that are important for cultural values, teach through actions and practices the traditional ways of doing, use artifacts and efficient technologies that link past to the present cultures, and pass on their worldview from one generation to the next. Cultural systems are not static in time; they are always changing in big and small ways. Tribal cultures change with technology, as do all other cultures.

Customary and traditional use – The Federal Subsistence Board decides which communities or areas have customarily and traditionally used a species. Each wildlife management unit lists these customary and traditional use determinations, along with season and bag limits. When there is a positive determination for a specific community or area, only residents of those communities and areas have a Federal Subsistence priority for that species in that unit and are eligible to hunt or trap under the Federal regulations.

Deltaic fan – An alluvial fan located in the delta or outlet of a river.

Designated Wilderness area – An area designated in legislation and administered as part of the National Wilderness Preservation System (see *Wilderness*).

Desired conditions – The physical, biological, or experiential qualities determined by managers to be important for the perpetuation, enhancement, or restoration of resources and values (see *Visitor use capacity* and *User capacity*).

Desired future conditions – Within the context of planning, "Desired Future Conditions" means the state of a management area that we plan to attain by achieving the goals and objectives identified in the Comprehensive Conservation Plan.

Disperse – In biology, dispersion refers to the movement of organisms away from their existing home range and not returning.

Displaced visitor – A visitor driven from a particular destination due to changed conditions or management actions.

Dolomite – Rocks consisting largely of calcium magnesium carbonate.

Easement – A legal interest in land owned by another (i.e., a non-possessory property interest) that entitles the holder of the easement to limited use of the land.

Ecological integrity – The integration of biological integrity, natural biological diversity, and environmental health; the replication of natural conditions.

Ecoregion – A distinct area defined by environmental conditions, climate, landforms, soil characteristics, and vegetation.

Ecosystem – A biological community of interacting organisms and their physical environment.

Ecotone – Transition area between two adjacent but different patches of landscape, such as forest and grassland. It may be narrow or wide, and it may be local (e.g., the zone between a meadow and forest), or regional (e.g., the transition between forest and grassland ecosystems).

Eligible rivers – Rivers that are free-flowing and possess at least one outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values (Wild and Scenic Rivers Act of 1968, as amended).

Endangered species – The Endangered Species Act (1973) protects both threatened and endangered species. Any species that is in danger of extinction throughout all or a significant portion of its range.

Environmental education – Curriculum-based learning programs that may or may not occur in a traditional educational setting that aim to teach people about the natural world and, particularly, about ways in which ecosystems work (see *Outreach*).

Environmental health – Composition, structure, and functioning of soil, water, air, and other abiotic features comparable with historic conditions, including the natural abiotic processes that shape the environment.

Environmental impact statement (EIS) – Serves as an action-forcing device to insure that the policies and goals defined in NEPA are infused into the ongoing programs and actions of the Federal government. It provides full and fair discussion of significant environmental impacts and informs decision makers and the public of the reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment.

Environmental justice – The fair treatment and meaningful involvement of all people, regardless of natural origin or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and/or commercial operations or the execution of Federal, State, local, and/or tribal programs and policies. Executive Order 12898 directs Federal agencies to achieve environmental justice as part of their missions by identifying and addressing disproportionately high adverse effects of agency programs, policies, and activities on minority and low-income populations.

Ephemeral – Short-lived, transient, or lasting only a limited time.

Epoch – A subdivision of the geologic timescale based on rock layering. Higher subdivisions are periods, eras, and eons.

Era – A subdivision of the geologic timescale based on rock layering. Higher subdivisions are eons and lower subdivisions are periods and epochs.

Erosion – The geologic process by which rock, sand, gravel, or soil are worn away or moved by the action of water, wind, and glaciers.

Estuarine – An adjective for organisms found in an estuary. An estuary is an enclosed coastal body of water with one or more streams flowing into it.

Experience dimension – Within the context of recreation management, the environmental, social, and psychological conditions available to visitors.

Faulted – An adjective meaning to undergo faulting. A fault is a break or planar fracture in a continuous body of rock accompanied by movement along the plane of the fracture. A fault line is the surface trace line of the fault.

Federally qualified subsistence user – A rural Alaska resident qualified to harvest wildlife or fish on Federal public lands or waters in accordance with the annual Federal Subsistence management regulations for harvest of wildlife or fish [not to be confused with *Local resident*].

Federally recognized tribes – There are approximately 565 tribes are currently recognized by the United States government that are eligible to receive the support, benefit, and protection of Federal programs and services, as well as the right to government-to-government Formal Consultation regarding Federal actions, initiatives, and/or policy development that may affect those tribes, its membership, or its resources. The Bureau of Indian Affairs maintains and periodically publishes a list of Federally-recognized tribes in the Federal Register.

Fire Management Plan (FMP) – A plan that identifies and integrates all wildland fire management and related activities within the context of approved land and/or resource management plans. It defines a program to manage wildland fires (wildfire and prescribed fire). The plan is supplemented by operational plans, including but not limited to preparedness plans, preplanned dispatch plans, prescribed fire burn plans, and prevention plans. FMPs assure that wildland fire management goals and components are coordinated (NWCG 2008).

Fire suppression – the work of extinguishing or confining a fire or a portion of a fire, beginning with its discovery, to protect, prevent, or reduce the loss of identified values. The Bureau of Land Management Alaska Fire Service (BLM-AFS) Upper Yukon Fire Management Zone provides emergency suppression services on Arctic Refuge under the direction of the Arctic Refuge manager. The highest priority of all suppression actions is ensuring the safety of firefighters and the public.

Fishery enhancement – Activities applied to a fish stock to supplement numbers of harvestable fish to a level beyond what could be naturally produced based upon a determination or reasonable estimate of historic levels

Fishery restoration – The reestablishment of fish populations in a stream or lake, generally through restocking.

Fluvial – Processes related to, produced by, or occurring in a river or stream.

Folded – Where a stack or originally flat or horizontal surfaces of rock are bent or curved by geologic processes.

Formal consultation – Formal Consultation is the communication on a government-to-government basis in a meaningful good-faith manner to create effective collaboration and informed decision making. It is conducted between the decision makers, who are tribal government leaders and senior representatives from the Service. Consultation is built upon government-to-government exchange of information and promotes enhanced communication that emphasizes trust, respect, and shared responsibility. Maintaining positive relations and providing open, continuous, and meaningful communications with tribal governments will enable Service employees to fully succeed in fulfilling our Trust Responsibility and carrying out the mission of the Service.

Formal trails – Intentionally planned and developed trails established to provide recreational access to roadless areas and to protect resources by concentrating visitor traffic on resistant tread surfaces to avoid trail braiding, erosion, etc., or to minimize threats (spread of invasive species, disturbance of sensitive habitats, etc.) to natural conditions (Monz et al. 2009).

Formation – A geologic formation consisting of a number of rock strata with similar properties.

Frontcountry (or front country) – Outdoor areas that are easily accessible by vehicle and mostly visited by day users. Frontcountry locations tend to be more crowded and attract a wider range of visitors than backcountry (Leave No Trace 2004).

Frost boils – Upwelling of soil that occurs through the action of permafrost or frost heaving.

Fry – A juvenile fish that has fully absorbed the yolk sac and may consume food.

Game Management Unit (GMU) – A geographic division made by the Alaska Department of Fish and Game for the management of fish and wildlife in the State. Different GMUs have different hunting and fishing seasons, harvest limits, and other harvest regulations.

Gateway communities – Refers to established communities that act as transportation hubs for entry to and/or exit from the Refuge. Examples include Arctic Village, Coldfoot, and Kaktovik.

Gelifluction lobes – Surface structure where soil rolls up or folds on itself when moving downhill.

General fishing visitor – General fishers are Refuge visitors engaged in fishing under the State of Alaska fishing regulations. The terms “general fishing visitor” or “general fisher” are preferable to “sport fisher” due to differing Federal and State definitions of the term “subsistence” (see *Federally qualified subsistence user*).

General hunting visitor – Refuge visitors engaged in hunting under the State of Alaska hunting regulations. The terms “general hunting visitor” or “general hunter” are preferable to “sport hunter” due to differing Federal and State definitions of the term “subsistence” (see *Federally qualified subsistence user*).

Genetics – The molecular structure and function of genes as related to the hereditary variation in organisms.

Geographic Information System (GIS) – A system of computer software to analyze, store, and display location data.

Glacial moraine – A ridge or mound of boulders, gravel, sand, and clay that was deposited by a glacier.

Glacial-fluvial – Material eroded by a glacier and moved or deposited by a stream or river.

Glacier – A large continuous mass of ice formed from snow accumulation over many centuries and millennia and slowly moving downhill in a valley or outward, as in continental glaciers.

Goal – Descriptive, open-ended, and often broad statement of desired future conditions that conveys a purpose but does not define measurable units.

Government-to-government relationship – A government-to-government relationship is a mutual recognition of the authority of the respective parties. It is a concept that draws upon principles of international law and diplomacy, particularly those used for establishing and maintaining a formal relationship between nations. In order to successfully engage in this type of relationship, it is necessary for the parties to be respectful of each other’s positions as governmental entities.

Granite – A coarse-grain igneous rock composed of quartz, feldspar, and other minerals.

Graywacke – A dark-gray, coarse-grained sandstone containing fragments of rock and cemented with clay.

Guide – A commercial service provider that is compensated in exchange for guiding clients on the Refuge for recreational, hunting, or fishing activities. Guides are required to have a special use permit, or to be employed by a business that has a special use permit, prior to conducting activities on the Refuge (see *Commercial guide* and *Commercially-supported*).

Historic conditions – Composition, structure, and functioning of ecosystems resulting from natural processes that we believe, based on sound professional judgment, were present prior to substantial human related changes to the landscape.

Hunting guide use areas – There are 16 exclusive hunting guide use areas within Arctic Refuge where only one hunting guide is authorized to operate in each area. This exclusive use restriction applies only to hunt guides and their clients, not to non-guided hunters. Permits authorizing use of the 16 separate, exclusive, areas are awarded to individual hunt guides through a competitive process.

Ice wedge – Narrow, vertical ice mass that is 10 to 13 feet (3–4 meters) wide at the ground surface, and extends as much as 33 feet (10 meters) into the ground. Ice wedges begin with soil cracking due to intense cold and thermal contraction. The cracks accumulate meltwater in the summer, which later freezes. As this process continues over many years, ice wedges grow thicker. Ice wedges usually appear in a polygonal pattern known as ice wedge polygons.

Igneous rock (basalt and breccia) – Rock produced of a volcanic origin. Basalt is a dark, dense rock produced from lava of a columnar structure, whereas breccia is composed of angular fragments of older rocks melded together.

Impaired – Recreation ecologists classify areas with undesirable visitor-related changes in resources that would likely, if managed for recovery, not return to natural condition until decades have passed, as *impaired* (J. L. Marion, Unit Leader of Virginia Tech Field Station, Patuxent Wildlife Research Center, USGS, pers. comm.).

Indicator thresholds – A specified condition that, when reached, triggers an action. For example, a level could be set for a survey result for a species that, when exceeded, would trigger protective action for that species, e.g., by adjusting harvest levels or restricting human disturbance to the species' breeding area.

Informal consultation – The communication that frequently occurs between Federal and tribal mid-level management and technical staff at meetings, through telephone contacts, in e-mails, and during on-site visits. Although generally not recognized by tribes as consultation on a government-to-government basis, it serves as a useful conduit for communication and sharing information, satisfying certain legal requirements, and developing positive relationships. This communication at a lower level may be part of a consultation if it meets the negotiated terms of the consultation between the Service and a tribe. The distance between these two points on the consultation continuum is at times subtle.

Informal trails – Visitor-created trails that can contribute substantially greater impacts to protected area resources than formal trails (Monz et al. 2009) (see *Formal trails*).

Inholding – A privately owned parcel of land within the boundaries of public lands of the United States, especially within a national park, forest, or wildlife refuge.

Integrated Cultural Resource Management Plan (ICRMP) – An Integrated Cultural Resource Management Plan is a step-down plan that will assist Refuge staff in meeting legal requirements to protect and manage the cultural resources of the Refuge. It provides a ready reference to cultural resource laws and regulations, the Service Manual, and the Cultural Resource Management Handbook. The ICRMP outlines a program for implementing Section 110 of the National Historic Preservation Act and Section 14 of the Archaeological Resources Protection Act requirements to determine the nature and extent of cultural resources on the Refuge and evaluate them for eligibility to the National Register of Historic Places. ICRMPs identify funding needs and possible timetables for completion of identified work.

Intensity of impact – Refers to the severity of an impact of an action. The range of impacts includes: No effect, Negligible, Minor, Moderate, and Major (see Chapter 5 for more detail).

Invasive species – Alien or non-native species whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Inventory and Monitoring Plan (I&M) – A written plan that outlines all facets of a natural resources inventory and monitoring program for a unit of the Refuge System. The I & M Plan includes methods for identifying species of plants, animals, and selected invertebrates that are present, and for conducting monitoring efforts on selected species and habitats. The I & M Plan also addresses prioritization of biological inventory and monitoring efforts, and lists cooperators.

Issue – Any unsettled matter that requires a management decision (e.g., an initiative, opportunity, resource management problem, threat to the resources of the unit, conflict in uses, public concern, or the presence of an undesirable resource condition).

Landbird – Bird species that principally use terrestrial habitats throughout the year. This diverse group includes raptors (hawks, eagles, falcons, and owls), grouse and ptarmigan, woodpeckers, flycatchers, jays and ravens, chickadees, thrushes, wagtails and pipits, warblers, sparrows, and finches, among other species.

Leave No Trace – An organization whose namesake has become synonymous with minimum impact practices, because of their commitment to promoting awareness of these principles of outdoor recreation designed to minimize effects on the natural environment and other visitors. These principles are: (1) plan ahead and prepare, (2) travel and camp on durable surfaces, (3) dispose of waste properly, (4) leave what you find, (5) minimize campfire impacts, (6) respect wildlife, and (7) be considerate of other visitors (Leave No Trace 2004).

LexisNexis database – LexisNexis is a company that provides database services and electronic research for professionals in the legal, corporate, government, law enforcement, risk management, accounting, and academic markets. LexisNexis maintains a database of billions of searchable documents and records from more than 45,000 legal, news, and business sources worldwide.

Life history – In biology, life history refers to the reproductive characteristics of plants and animals but may also be used to reference diet, habitat needs, and behavior.

Limestone – A sedimentary rock consisting primarily of calcium carbonate (CaCO₃) formed from the skeletons of marine microorganisms and coral; it may also contain chert, clay, silt, and sand.

Lisburne Group – A sedimentary layer of carbonate rock (dolomite, limestone) in Northern Alaska deposited in the Paleozoic Era 345 to 280 million years ago (Hanks et al. 1997).

Lithic – Pertaining to sedimentary or volcanic rock containing large fragmented quantities of other rock.

Local resident – A local resident is a rural resident who relies upon the Refuge for a range of subsistence activities but who may not be a federally qualified subsistence user based on his or her residence in a community with customary and traditional patterns of use in the area [not to be confused with *Federally qualified subsistence user*]

Loess – Silt, loam, or sand deposited by wind.

Management categories – These are five categories used to describe management levels throughout the Alaska refuges: Intensive, Moderate, Minimal, Wilderness, and Wild River. A management category is used to define the level of human activity and development that is appropriate for a specific area of a refuge. A management category is a set of management directions applied to an area based on its resources and existing and potential activities or uses. These categories have been adopted and applied to accomplish Refuge purposes and achieve management goals (see Chapter 3 for more detail).

Management emergencies – Actions not authorized on the Refuge or in specific management categories may be allowed for situations or events that threaten human health or safety, or that make the action necessary to meet legal mandates

Marine – Pertaining to the ocean and adjacent waters with saline or brackish water.

Marine Protected Area (MPA) – Any area of the marine environment that has been reserved by Federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein (Executive Order 13158).

Master Memorandum of Understanding – A statement of cooperation about a specific or general topic between two (or more) parties. It is used to clarify the roles and responsibilities of each party in a shared situation of interest. In the U.S. Fish and Wildlife Service, it is normally used in situations when there is no exchange of funds or property among the cooperators. A Master Memorandum of Understanding is general and more of an umbrella or overarching agreement that is often supplemented by more specific Memoranda of Understanding about specific topics or projects. See Appendix B for an example of a Master Memorandum of Understanding.

May be allowed – Activity, use, or facility may be allowed subject to site-specific NEPA analysis, an appropriate use finding (when required), a specific Refuge compatibility determination (when required), and compliance with all applicable laws and regulations of the Service, other Federal agencies, and the State of Alaska.

May be authorized – Activity, use, or facility may only be allowed with a required special use permit or other authorization.

Mesozoic – The Era on the geologic timeline encompassing the age of the dinosaurs 250 million to 65 million years ago

Metamorphic rock – Rock transformed by heat or pressure that caused significant physical and chemical changes.

Migratory – Refers to an organism that makes two-way movements, generally over relatively long distances and organized seasonally.

Migratory bird – Generally speaking, a migratory bird is a bird that has a seasonal and somewhat predictable pattern of movement. In the Migratory Bird Treaty Act, migratory birds are defined as all species covered by bilateral treaties between the U.S. and Canada, Mexico, Japan, and Russia.

Minimum requirement – The least intrusive tool, equipment, device, force, regulation, technique, or practice (as determined by a Minimum Requirement Analysis) necessary to achieve a Refuge management activity objective in designated Wilderness.

Minimum Requirement Analysis (MRA) – A decision making process, documented in writing, used to determine if proposed Refuge management activities conducted in designated Wilderness are necessary to administer the area as designated Wilderness and to accomplish the purposes of the Refuge, including Wilderness Act purposes. If the MRA finds the activity permissible, then tools or techniques are selected to minimize impacts. In Alaska, MRAs are only required for Refuge management activities in designated Wilderness and are not required for activities and commercial services in Wilderness Study Areas (WSAs) or recommended wilderness (see *Wilderness Study Area* and *Recommended wilderness*).

Mitigation – A process for reducing impacts on the environment outlined in NEPA, which includes: (1) avoiding the impact altogether by not taking a certain action or parts of an action; (2) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (3) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (4) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, and/or (5) compensating for the impact by replacing or providing substitute resources or environments (40 CFR Part 1508.20).

Moraine – A ridge or mound of boulders, gravel, sand, and clay that was deposited by a glacier.

Natal site – The location where an organism was born or hatched.

National Register of Historic Places – The official list of the Nation's historic places worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the National Park Service's National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources.

Native allotment – Private lands in the Refuge that are owned, or have been selected, by Alaska Natives under the Alaska Native Allotment Act of 1906 or the Alaska Native Vietnam Veterans Allotment Act of 1998.

Native corporation lands – Private lands in the Refuge that have been conveyed by the United States to Alaska Native village and regional corporations pursuant to the terms and conditions of ANCSA and its amendments.

Native species – With respect to a particular ecosystem, a species that—other than as a result of an introduction—historically occurred or currently occurs in that ecosystem.

Natural condition – A landscape exhibits natural condition to the degree it remains undeveloped, substantially free from the effects of modern civilization, dominated by natural processes, and is perceived by the average visitor as “natural.”

Natural diversity – The total range and variety of living organisms found in biological systems.

Natural quiet – A state experienced when a person with normal hearing can perceive nothing but the sounds produced by the natural components of the Refuge, or an apparent absence of any sound at all.

Nearshore – Refers to that area near the shore of an ocean, lake, or river.

Non-commercial user – A non-commercial user is a local rural resident or a visitor not relying on commercial guides, air operations, or any other commercial services during a stay on the Refuge. In non-commercial activities, there is no compensation paid to an individual, group, or organization for the service of conducting, leading, or guiding. A person conducting non-commercial activities cannot profit from activities in any way and cannot participate in advertising for profit. Managers currently have no way to consistently document non-commercial use of the Refuge.

Non-competitively awarded refuge permit – Special use permits that are issued for activities that do not require management limits. In other words, anyone who applies and meets the minimum standards will receive a permit (see *Special use permit*).

Non-guided visitor – May be commercially supported through air-taxi or transporter services but is not accompanied by a guide in the field, also referred to as an “unguided” visitor.

Objective – A concise statement of what we want to achieve, how much we want to achieve, when and where we want to achieve it, and who is responsible for the work. Objectives derive from goals and provide the basis for determining strategies, monitoring Refuge accomplishments, and evaluating the success of strategies. Objectives should be attainable, time-specific, and measurable.

Other contractual services – Formal contracts to local and large vendors to support Refuge operations such as: purchase of computers and information technology-related services, purchases and maintenance of printers and other office equipment, aerial photography and related mapping, heating and aviation fuel purchases and delivery, interagency agreements, satellite and cell phone services, certain facility maintenance services, contractual services for hire or charter of aircraft, and contractual work acquired through the Government Services Administration for buildings and vehicles.

Outreach – Generally encompasses environmental education and information services (see *Environmental education*).

Outstandingly remarkable values (ORVs) – The scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values that shall be protected for the benefit and enjoyment of present and future generations. In order to be assessed as outstandingly remarkable, a river-related value must be a unique, rare, or exemplary feature that is significant at a comparative regional or national scale (Interagency Wild and Scenic Rivers Coordinating Council 1999).

Outwash terrace – A raised bench of boulders, gravel, sand, or soil deposited by meltwater from a glacier.

Packraft – A lightweight inflatable raft that can be carried in a backpack.

Paleozoic – An Era in the geologic timescale prior to the Mesozoic that spanned from 543 to 252 million years ago. The Paleozoic ended with the Permian-Triassic extinction event, the largest mass extinction in Earth’s history.

Peat – An accumulation of partially decayed plant matter found primarily in wetlands, bogs, and muskegs.

Per capita – Per person, such as per capita income, which is total income divided by the total population.

Permittee – An individual whose activities are authorized by a special use permit. The categories, descriptions, and general restrictions are:

- Commercial air operations permittees provide two types of air transportation services offered on Arctic Refuge: air-taxi and air transporters (refer to *Air-taxi services* and *Air transporter services*). Depending on the season, licenses possessed, and rates charged, air-taxis and air transporters may interchange their services; air-taxis may offer transporter services and transporters may offer air-taxi services.
- Commercial big-game hunting permittees are subject to the permit conditions detailed in their competitive prospectus application. Each hunting guide is limited to a specific geographic area within the Refuge and restricted to a specified number of hunting clients.
- Commercial recreation permittees and their employees (guides) are subject to standardized group size limits and other special conditions. Guided recreational activities include river floating, hiking, polar bear viewing, mushing, and fishing. Commercial guided recreation client numbers are included within reported recreational visitation numbers.
- Commercial videography permits are evaluated on an individual basis to minimize overall impact to the Refuge. This permit applies to visual motion recordings by firms or individuals (other than news media representatives) who intend to distribute their film content for money or other consideration. This includes the creation of products by educational, entertainment, or commercial enterprises, including advertising audio-visuals for the purpose of paid products or services, publicity, and commercially oriented photo contests. Still photography permit requirement is occasionally required, subject to factors such as work crew group size totals but, in most cases, is allowed without permit due to its minimal impact to the Refuge, relative to commercial filming operations.
- Miscellaneous activities permits include those issued to individuals engaged in activities conducted by organized entities, such as service organizations, that are not profit-oriented.
- Scientific research permits and their work crew group size totals are evaluated on an individual basis to minimize overall impact to the Refuge.

Pingos – A conical hill of earth-covered ice in the Arctic or subarctic that can exceed 250 feet (75 meters) in height.

Piscivorous – Commonly used to describe fish or other animals that prey on fish.

Pleistocene – An epoch of the Cenozoic Era that occurred from 2.588 million to 12,000 years before present. The end of the Pleistocene was marked by the retreat of the last continental glaciers in North America and Europe-Asia.

Policy – A framework that provides for the effective accomplishment of an agency's or organization's work and a process for making good management decisions that reflect organizational history and mission. Over time, policies must evolve to address new and changing uses, issues, and opportunities. The Service Manual is the set of policies under which the U.S. Fish and Wildlife Service operates.

Polygons – Begins with cracking of the ground due to intense cold and thermal contraction. The cracks accumulate meltwater in the summer, which later freezes. As this process continues, ice wedges form in the cracks and grow thicker. Polygons refer to the polygonal surface pattern that forms as ice wedges develop and intersect, forming a network of three- to six-sided polygon shapes on the ground surface. The visible surface pattern is a result of soil being pushed up or slumping above the ice wedges. Polygons can be a few meters to over 325 feet (100 meters) in diameter.

Prescribed fires – Planned ignitions designed to meet specific management objectives. Prior to ignition, a written and approved prescribed fire plan must exist, and NEPA requirements (where applicable) must be met. Use of prescribed fires must comply with the Alaska Enhanced Smoke Management Plan for Prescribed Fire.

Public Land Order (PLO) – An order creating, affecting, modifying, or canceling a withdrawal or reservation by the Secretary of the Interior pursuant to powers of the President delegated to the Secretary by Executive orders 9146 of April 24, 1942, or 9337 of April 24, 1943.

Public use – Any use of the Refuge by local rural residents or by visitors (including recreational and general hunting and fishing visitors). The term "user" includes both visitors and local and/or federally-qualified rural residents engaged in subsistence activities; in contrast, the term "visitor" is limited to recreational and general hunting and fishing users.

Public Use Natural Areas (PUNA) – The purposes of Public Use Natural Areas are to preserve significant natural areas for public use and to preserve these areas essentially unmodified by human activity for future use (U.S. Fish and Wildlife Service 1988.).

Quartz – A crystal composed of silicon and oxygen (SiO₂). Quartz is the second most abundant crystal on Earth after feldspar and the primary component of sand.

Quaternary – The most recent of the three periods of the Cenozoic Era in the geologic timescale. The Quaternary spans the time from 2.588 million years ago to the present and is the period in which human species have existed.

Recommended wilderness – An area of the Refuge System that has been found qualified for Wilderness designation that the Director of the Service has recommended to the Secretary through the Assistant Secretary for Fish, Wildlife, and Parks for inclusion in the National Wilderness Preservation System.

Record of decision (ROD) – The formal decision document, which is recorded for the public in cases requiring environmental impact statements. The record, which may be integrated into any other record prepared by the agency, shall: (1) state what the decision was; (2) identify all alternatives considered by the agency in reaching its decision, specifying the alternative or alternatives which were considered to be environmentally preferable; (3) state whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not. A monitoring and enforcement program shall be adopted and summarized where applicable for any mitigation.

Recreational visitor – A visitor of the Refuge who engages in recreational activities other than general hunting and fishing is considered a recreational visitor (may include non-federally-qualified local or non-local individuals engaged in traditional activities, such as berry picking). For consistency, the term “recreational visitor” is preferable to “recreationist.”

Refuge lands – Federal lands within the external boundary of the Arctic National Wildlife Refuge that are managed by the U.S. Fish and Wildlife Service.

Refuge management activity – An activity conducted by the Service or a Service-authorized agent to fulfill one or more purposes of the Refuge or the Refuge System mission. Service authorized agents include contractors, cooperating agencies, cooperating associations, Refuge support groups, and volunteers.

Refuge permit – A special use permit issued by the Refuge manager that authorizes on-Refuge activities conducted by non-Refuge staff. Permits are required for scientific research, commercial activities (such as recreational guiding, big-game hunt guiding, and commercial videography), and other miscellaneous activities conducted by organized groups. Permitted uses have been deemed compatible with Refuge purposes, are found to not have a significant impact on subsistence activities, and are regulated in such a way that permit holders have specialized responsibilities to the Refuge (see *Special use permit*).

Refuge staff – Arctic Refuge employees, as well as any other agents of the Federal government, who are conducting work for the Refuge to achieve the Refuge mission. Such activities do not require a special use permit and may be contracted or performed by agency partners.

Region of comparison (ROC) – A term used in Wild and Scenic River Reviews. A region of comparison is used to assess a river’s outstandingly remarkable value(s) relative to a regional or national scale. The area, region, or scale of comparison is not fixed and should serve as a basis for meaningful comparative analysis; it may vary depending on the value being considered. Typically, a “region” is an administrative unit (such as a national wildlife refuge), a portion of a State (such as the North Slope of Alaska), or an appropriately scaled ecological, physical, or hydrological unit (e.g., an ecoregion or a watershed).

Research Natural Area (RNA) – The purpose of Research Natural Areas is to preserve examples of all major ecosystem types in the country, to provide opportunities for research and education, and to preserve a full range of genetic and behavioral diversity in native plants and animals (U.S. Fish and Wildlife Service 1988).

Resident – Organisms that do not migrate from the general area or habitat in which they were born or hatched.

Resident fish – Fish that do not migrate to the ocean but complete their entire life cycle in fresh water.

Riparian – A riparian zone or riparian area is the interface between land and a river or stream. Plant habitats and communities along the river margins and banks are called riparian vegetation.

RS 2477 right-of-way – Revised Statute 2477 (RS 2477) is a section in the Mining Act of 1866 that states, “*The right-of-way for the construction of highways over public lands, not reserved for public uses, is hereby granted.*” RS 2477 was repealed by the Federal Land Policy and Management Act of 1976, subject to valid existing claims. Assertion and identification of potential rights-of-way does not establish the validity of these claims nor the public’s right to use them. The validity of all RS 2477 rights-of-way will be determined on a case-by-case basis, either through the courts or by other legally binding document.

Rulemaking – A process through which a government agency establishes new Federal regulations. Rulemaking follows an established process that includes publishing a notice of the proposed rule and the issues concerned in the Federal Register, followed by a period of public comment, publication of the draft rule incorporating and responding to public comment, and, finally, publication of the final rule.

Rural resident – Rural means any community or area of Alaska determined by the Federal Subsistence Board to qualify as such. Only residents of communities or areas that the Federal Subsistence Board has determined to be rural are eligible for the subsistence priority. Resident means any person who has his or her primary permanent home for the previous 12 months within Alaska, and whenever absent from this primary permanent home, has the intention of returning to it.

Sandstone – A sedimentary rock composed of sand and cemented together by silica, calcium carbonate, iron oxide, or clay.

Schist – A crystalline metamorphic rock characterized as foliated, whereby the mineral grains easily split off into flakes or slabs.

Sealing certificates – When a species is required by game regulation to have a locking tag (seal) attached to a skin or skull, an individual authorized by the Alaska Department of Fish and Game attaches the seal and collects information about the biological conditions under which the animal was taken, measures the specimen, retains specific portions of the animal for biological information, and records all this information on a sealing form or sealing certificate.

Seasonal round – The annual cycle of subsistence activities undertaken by a group of people.

Sedimentary – The accumulation of sediment, mineral, and organic material deposited through the action of water, ice, or wind.

Selected lands – Selected lands are public lands identified by an Alaska Native regional or village corporation pursuant to Sections 11 and 12 of ANCSA and Sections 201 and 401 of the Alaska Land Transfer Acceleration Act for conveyance to the corporation to meet its land entitlement as determined by Section 14 of ANCSA.

Shale – Rock formed from the deposit of clay and often laminated and capable of being split or divided easily.

Significant issue – A problem, conflict, or opportunity we will address in our plan. A significant issue is a component of an alternative. A range of actions are developed for each significant issue.

Site-hardening – A process of sustained impact, which can lead to eventual impairment, due to concentrated visitor use in areas managed for natural conditions. The term is frequently applied in situations where a previously vegetated area is transitioning to a non-vegetated, permanent or semi-permanent site, but it can apply to areas with naturally non-vegetated conditions where the surface (soil or rocky cobble) is compacted, thus retaining evidence of previous use in areas managed for natural conditions.

Socio-cultural – Of, relating to, or involving a combination of social and cultural factors.

Socioeconomic – Pertaining to, or signifying the combination or interaction of, social and economic factors.

Solitude – Wilderness solitude is a state of mind—a mental freedom that emerges from settings where visitors experience nature essentially free of the reminders of society, its inventions, and conventions. Privacy and isolation are important components, but solitude also is enhanced by the absence of distractions, such as large groups, mechanization, unnatural noise and light, unnecessary managerial presence (such as signs), and other modern artifacts.

Sonar – A technique using underwater sound propagation to count fish.

Sound professional judgment – The process of incorporating field experience, knowledge of Refuge resources, Refuge role within an ecosystem, applicable laws, and best available science, including consultation with others inside and outside the Service to make a decision regarding management of resources.

Special use permit – A permit issued by the Refuge manager, sometimes referred to as a Refuge permit, that authorizes on-Refuge activities conducted by non-Refuge staff. Permits are required for scientific research, commercial activities (such as recreational guiding, big-game hunt guiding, and commercial videography), cabins, tent platforms, and other miscellaneous activities conducted by organized groups. Permitted uses have been deemed compatible with Refuge purposes, are found to not have a significant impact on subsistence activities, and are regulated in such a way that permit holders have specialized responsibilities to the Refuge (see *Refuge permit*, *Competitively awarded refuge permit*, and *Non-competitively awarded refuge permit*).

Step-down management plan – A plan that provides specific guidance on management subjects (e.g., habitat, public use, fire, safety) or groups of related subjects. It describes strategies and implementation schedules for meeting Comprehensive Conservation Plan goals and objectives.

Stone stripes – Relating to the arrangement of stone, primarily on slope, by the action of frost heaving or permafrost action.

Strategy – A specific action, tool, technique, or combination of actions, tools, and techniques used to meet an objective.

Stratified – Eroded material deposited in layers or beds.

Subsistence use area – Area or region utilized by an individual, groups of individuals, community, village, or cultural groups for subsistence use and harvest of resources.

Subsistence user – A Refuge user engaged in subsistence activities who is a federally-qualified rural resident.

Subsistence – Harvesting of plants and wildlife for food, clothing, and/or shelter. The attainment of most of one's material needs (e.g., food and clothing materials) from wild animals and plants.

Suitable rivers – Rivers that are free-flowing; possess at least one outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar value; and are determined to be a worthy addition to the National Wild and Scenic Rivers System (Wild and Scenic Rivers Act of 1968, as amended).

Supplemental values – As used within a wilderness review, supplemental values are qualities that the Wilderness Act describes as “ecological, geological, or other features of scientific, educational, scenic, or historic value” that contribute value to an area being reviewed. However, they are not required for Wilderness designation.

Taxonomic – The science of classifying, naming, describing and identifying organisms.

Thermokarst – Land-surface configuration that results from the melting of ground ice in a region underlain by permafrost. Areas with large amounts of ice may have pits, valleys, and hummocks that are formed when the ice melts and the ground settles unevenly. The size and form of the features depends on the nature and extent of the ice.

Threatened species – The Endangered Species Act (1973) protects both threatened and endangered species. A threatened species is a plant or animal that is likely to become an endangered species throughout all or a significant portion of its range within the foreseeable future.

Tidal pumping – The strong pump-like movement of marine water by tidal action into and out of lagoons with narrow openings.

Traditional knowledge – An intimate understanding by indigenous peoples of their environment, which is grounded in a long-term relationship with the surrounding land, ocean, rivers, ice, and resources. This understanding includes knowledge of the anatomy, biology, and distribution of resources; animal behavior; seasons, weather, and climate; hydrology, sea ice, and currents; how ecosystems function; and the relationship between the environment and the local culture.

Tribal sovereignty – Sovereignty is the power to govern, and tribes historically have been recognized as distinct, independent, political communities with the power to exercise self-government. The right of tribes to govern themselves is based on a pre-existing sovereignty that has been recognized or acknowledged in treaties, statutes, Executive orders, and Supreme Court decisions. The United States continues to work with tribes on a government-to-government basis to address issues concerning tribal self-government, tribal trust resources, tribal treaties, and other rights and concerns that have tribal implications.

Tribe – From a sociological or anthropological perspective, an “Indian tribe” is a group of related people who share a common social, political, economic, and religious way of life in a defined geographic space and who speak a common language or dialect. A *tribe* in this sense derives its origin from a shared social or cultural experience.

Tributary – A stream that flows into another stream.

Unconsolidated – Eroded material that has not been compacted or turned into rock.

Unguided visitor – May be commercially supported through air-taxi or transporter services but is not accompanied by a guide in the field. Also referred to as “non-guided” visitor.

Untrammeled – Untrammeled is a landscape condition characterized by its freedom from the human intent to alter, restrain, or control its components and ecological and evolutionary processes, and thus is not subject to management interventions or manipulations. An untrammeled condition can persist in environments that have been changed or continue to be influenced by external factors (such as climate change) as long as ecosystems are allowed to adapt and evolve as they will.

User capacity – A term used for the Refuge’s wild river corridors specifying the amount and type of visitor and other public use compatible with the goals and desired conditions for protecting river-related values and outstandingly remarkable values (see *Outstandingly remarkable values*). Managers must establish user capacity for any rivers designated by Congress for inclusion in the National Wild and Scenic Rivers System (see *Visitor use capacity* and *Desired conditions*).

Visitor – Refers to recreational and general hunting and fishing users (see *Public use*).

Visitor services – Agency programs and activities that promote and support quality wildlife-dependent and other recreational experiences to people who visit the Refuge. Visitor services specialists design programs, provide information about these programs, and monitor public participation and recreational impacts. Visitor services can also include volunteer programs, community outreach, environmental education programs, strategic communication, partnerships, and issuing special use permits.

Visitor use – Any use of the Refuge by recreational, general hunting, and general fishing visitors. Subsistence users are not considered “visitors.”

Visitor use capacity – A term used for all areas of the Refuge (except the Refuge’s wild river corridors) specifying the maximum amount and type of visitor use that an area can accommodate while sustaining the physical and biological qualities and visitor experiences prescribed by management consistent with the values for which the area was established (see *Desired conditions*; not to be confused with *User capacity*).

Visitor use day – Each day, or portion thereof, a visitor spends on the Refuge. For example, one person who spends five days on the Refuge would be counted as one visitor and five visitor use days. A count of visitor use days more accurately depicts the total use of the Refuge than the number of visitors alone.

Visitor Use Management Plan (VUMP) – The Visitor Use Management Plan (VUMP) is a step-down plan that will develop visitor provisions that protect Arctic Refuge biophysical resources, experiential opportunities, wildlife, wilderness characteristics, and recreational values.

Visual resource management – Many public lands contain outstanding scenic landscapes. Visual resource management is a system for minimizing the visual impacts of surface-disturbing activities and maintaining scenic values for the future. The system involves inventorying scenic values and then evaluating proposed activities to determine whether they conform to management objectives for the scenic values. Management objectives for scenic values are usually included in an agency planning document, such as a comprehensive conservation plan.

Volcanic – Material produced by a volcano, which is typically an opening or rupture in the Earth’s crust that allows hot magma, ash, and gases to escape.

Washeteria – A place in a village or community where visitors and residents can access water, laundry facilities, showers, etc.

Waterbird – Species that are dependent on aquatic habitats to complete portions of their lifecycle

Water quality – Factors and their interactions that affect the usability or non-usability of water onsite and downstream. Major factors that affect water quality include temperature, turbidity, suspended sediment, conductivity, dissolved oxygen, pH, specific ions, discharge, contaminants, and fecal coliform.

Waterfowl – Refers to all species of ducks, geese, and swans in the family Anatidae.

Wild character – A synonym for “wildness” (*see Wildness*).

Wild river – A river or section of a river, and related adjacent land area, designated as a “Wild River” under the Wild and Scenic Rivers Act of 1968. Wild rivers are defined by the act to be free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted and representing vestiges of primitive America.

Wilderness – As a land designation, “Wilderness” (with a capital “W”) refers to lands and waters designated by Congress as a component of the National Wilderness Preservation System. When used as a descriptive adjective, “wilderness” (“w” not capitalized) refers to natural qualities or experiential values commonly associated with designated Wilderness or other undeveloped wildland such as Minimal Management areas (*see Wilderness values*).

Wilderness character – Wilderness character embodies both tangible and intangible dimensions. It is a combination of biophysical conditions, experiential opportunities, and symbolic meanings that distinguish designated Wilderness from other lands. An area possesses Wilderness character to the degree that: 1) it retains untrammeled, natural, and undeveloped conditions; 2) it provides opportunities for solitude or primitive and unconfined recreation; and 3) its stewardship upholds the notions of respect, restraint, humility, and obligation in our relationship with the land. Protection of Wilderness character is the primary criteria for judging the appropriateness of proposed actions in designated Wilderness.

Wilderness characteristics – Qualities commonly associated with designated Wilderness and other types of wildland such as Minimal Management areas. These include biophysical elements (e.g., undeveloped conditions, natural appearances, free-functioning ecosystems, native flora and fauna), and conditions conducive to experiential opportunities (e.g., solitude, natural quiet, adventure, primitive and unconfined recreation).

Wilderness review – The process we use to determine if we should recommend Refuge System lands and waters to Congress for Wilderness designation. The wilderness review process consists of three phases: inventory, study, and recommendation. The inventory is a broad look at the Refuge to identify lands and waters that meet the minimum criteria for Wilderness. The study evaluates all values (ecological, recreational, cultural), resources (e.g., wildlife, water, vegetation, minerals, soils), and uses (management and public) within the Wilderness Study Area. The findings of the study determine whether or not we will recommend the area for designation as Wilderness.

Wilderness Stewardship Plan – A step-down management plan that guides the preservation, stewardship, and use of a designated Wilderness area. The plan provides detailed strategies and implementation schedules for meeting the broader Wilderness goals and objectives identified in the Refuge’s Comprehensive Conservation Plan.

Wilderness Study Area (WSA) – An area being considered for recommendation as Wilderness. We identify and establish WSAs through the inventory component of a wilderness review. WSAs include all areas that are still undergoing the review process, areas for which a final determination of suitability and recommendation for Wilderness designation in the record of decision for the Comprehensive Conservation Plan is pending, and areas recommended for Wilderness designation in a Revised Plan and EIS and awaiting approval by the Service Director. We consider areas recommended by the Service Director “recommended wilderness.”

Wilderness values – Relatively enduring conceptions of characteristics of designated Wilderness or other wildland such as Minimal Management areas that are considered good and desirable to maintain. These characteristics are biophysical (e.g., ecosystems, scenery, and natural processes), psychological (e.g., opportunity for solitude or primitive and unconfined recreation), symbolic (e.g., national and natural remnants of American cultural and evolutionary heritage), and spiritual (e.g., sense of connection with nature and values beyond the self).

Wildfire – Unplanned ignitions (wildland fires started by lightning, volcanos, or unauthorized human activity) or prescribed fires that are declared wildfires.

Wildlife-dependent recreational use – A use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation. These are the six priority public uses of the Refuge System as established in the National Wildlife Refuge System Administration Act of 1997, as amended. Wildlife-dependent recreational uses, other than the six priority public uses, are those that depend on the presence of wildlife. We also will consider these other uses in the preparation of a Refuge comprehensive conservation plan; however, the six priority public uses always take precedence.

Wildland – a general term used to describe remote lands with wilderness characteristics (see *Wilderness characteristics*).

Wildness – The state of being free from human control and untrammelled (see *Untrammelled*).

Withdrawal – An action by the United States that restricts the use and disposal of Federal lands and/or minerals and holds them for a specific purpose or use by the United States.

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Yukon-Old Crow Basin, 4.53

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