3. Issues and Alternatives

This chapter discusses the issues and alternatives considered and analyzed as part of this Comprehensive Conservation Plan (Plan, Revised Plan) and Environmental Impact Statement (EIS). The chapter presents three significant issues and six alternatives for managing Arctic National Wildlife Refuge (Arctic Refuge, Refuge). Included is the "No Action" alternative (Alternative A) which is the continuation of current management, as detailed in the 1988 Plan (Service 1988a).

3.1 Issues

The U.S. Fish and Wildlife Service (Service) defines an issue as any unsettled matter that requires a management decision. Issues were identified internally be Refuge staff and externally by the public. Refuge staff reviewed all identified issues and discussed each during a series of workshops. The State of Alaska and other agency planning team partners were included in the discussions, as were the regional planning chief and the Refuge supervisor. Several of the identified issues were eliminated from further consideration because the issues have already been, or could be, addressed through existing laws, regulations, or policies. Others were determined to be outside the scope of the Plan. Those issues that remained were considered significant. Significant issues are those that are in our jurisdiction to address, suggest different actions or alternatives to, and/or will influence the record of decision. The Refuge's role in identifying and analyzing significant issues is to objectively consider a wide range of approaches that could be taken to address each issue.

Three significant planning issues were identified for consideration during revision of the Plan. Refuge staff then developed a range of actions (i.e., different options or strategies) for addressing each issue. The regional planning chief, refuge manager, refuge supervisor, and regional chief of the Refuge System reviewed and edited the suite of issues and actions. Lastly, the regional director reviewed and approved the issues and actions for inclusion in the draft Plan and EIS.

3.1.1 Significant Issues

This section includes a detailed description of the three significant planning issues. Included are a few of the comments we received from the public on each issue.

3.1.1.1 Wilderness

Issue 1: Should one or more areas of the Refuge be recommended for wilderness designation?

Currently about 41 percent of Arctic Refuge (eight million acres) is designated wilderness. As part of the comprehensive conservation planning process, the Service reviews areas (or lands) not designated as wilderness to determine if they are qualified and suitable to be recommend for wilderness designation. This review divided the Refuge's non-wilderness lands into three Wilderness Study Areas (WSAs): Brooks Range, Porcupine Plateau, and Coastal Plain (Appendix H). All three WSAs were determined to meet the minimum criteria for wilderness. This Plan will decide whether one, two, three, or none of the units will be recommended as wilderness. Only Congress can designate wilderness.

Summary of Comments

Nearly all commenters addressed this issue. A primary focus was the Coastal Plain and the effect wilderness designation would have on potential oil and gas development there. The primary concern of those opposing or supporting wilderness designation for this area was that wilderness would either preclude development or protect the area from it. The Gwich'in people and others generally supported a wilderness recommendation for the area because they felt it would provide protection for caribou and other wildlife. The Iñupiat people and others generally opposed a wilderness recommendation for the area because they felt it would limit or preclude economic opportunities and would interfere with subsistence activities.

There were relatively few comments specific to either the Brooks Range or the Porcupine Plateau Wilderness Study Areas. Most wilderness comments not focused on the Coastal Plain stated that either all or none of the Refuge's non-wilderness areas should be recommended for designation. Those supporting wilderness recommendations said wilderness status would provide needed permanent protection for the Refuge's wildlife, ecological, scientific, recreational, subsistence, and other values. Those opposing wilderness recommendations said the Refuge or the State currently has enough or too much wilderness and that wilderness unnecessarily limits public access and use.

Representative Comments

"The entire Coastal Plain should be recommended for wilderness designation for its importance to wildlife, symbol of wilderness and subsistence values for future generations."

"The 1002 area of ANWAR should not only continue to be excluded from wilderness designation but it should be open up to responsible on shore oil and gas exploration and development as soon as possible."

"Wilderness status for the 1002 would also deprive the people of Kaktovik, KIC, ASRC, and the North Slope Borough of economic development opportunities there."

"Alaskans firmly believe that we can coexist with nature successfully without any need to lock up the land by imposing no-go designations through wilderness status."

"The only way to guarantee the protection of the Arctic NWR is to permanently protect it with Wilderness designation."

"The CCP plan should recommend the Coastal Plain be proposed wilderness designation to protect the caribou and Gwich'in way of life for future generations."

"Above all, it is my strong conviction that we cannot forgo the chance to protect and keep one of the last places on Earth truly wild"

"Wilderness designation carries with it significant limitations on access and uses that choke off traditional activities."

"The only way to guarantee the protection of Arctic NWR is to permanently protect it with Wilderness designation."

"Additional wilderness will do nothing but add red tape to our subsistence lifestyle."

"I very strongly oppose any wilderness designation for the Coastal Plain of the Arctic National Wildlife Refuge, or for any part of ANWR, period."

3.1.1.2 Wild and Scenic Rivers

Issue 2: Should additional Wild and Scenic Rivers be recommended for inclusion in the National Wild and Scenic River System?

The Wild and Scenic Rivers Act and agency policy (602 FW 1 and 3) require land managers to consider potential wild and scenic rivers during land management planning. Twenty waters in Arctic Refuge were evaluated for inclusion in the National Wild and Scenic Rivers System (NWSRS), and ten rivers were determined to be eligible. All 10 rivers are free-flowing and possess at least one of the following outstandingly remarkable values (ORVs, values): scenic, recreational, geologic, fish, wildlife, historic, or cultural. A suitability study was also conducted for the 10 eligible rivers, and 4 of the rivers were preliminarily determined to be suitable. According to the Wild and Scenic Rivers Act, values must *"be protected for the benefit and enjoyment of future generations."* Values can be protected by recommending rivers for inclusion in the NWSRS and/or implementing a variety of management prescriptions. Only Congress can designate rivers for inclusion in the NWSRS.

Summary of Comments

Those comments received that addressed wild and scenic rivers were generally in favor of the Service conducting a review, although we also received comments expressing opposition. Comments ranged from descriptions of specific rivers or areas in rivers, to discussions of the review process and requirements under the Wild and Scenic Rivers Act. We also received comments addressing the relationship of wild and scenic rivers to designated wilderness.

Representative Comments

"The Ramparts of the Porcupine River have been recommended as national natural landmarks. This portion of the Porcupine Plateau is thought by many to be one of the state's outstanding scenic features."

"You should, on the wild river side of things, please focus on the rivers within the non-wilderness portions of the refuge.… Wild rivers inside wilderness really don't offer much additional protection and therefore the focus should be on those that may require additional protection."

"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."

"I also recommend Wild and Scenic River status for the north flowing rivers in the Refuge."

"The Canning, the Hulahula and the Kongakut are pristine, wild rivers that should be recommended for Wild and Scenic River status. I have never seen a river more qualified for wild river status than the Canning and the Marsh Fork of the Canning."

"The Refuge is in the awkward position of having a dream team of all star rivers. Nearly every river in the Refuge would qualify for W and S status. If you have the time start listing them."

"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."

3.1.1.3 Kongakut River Visitor Management

Issue 3: How will the Refuge manage Kongakut River visitor use to protect resources and visitor experience?

The Kongakut River, on the north side of the Brooks Range, offers spectacular views from the mountains to the coastal plain; contains a variety of unique geologic features; receives nearly one-quarter (24 percent) of the documented visitors to the Refuge; and its entire extent is in designated wilderness.

Visitation patterns, such as numerous groups launching on the same day during peak use periods and larger groups staying for longer periods, are threatening the wilderness character of the Kongakut River. Poor camping practices and weather-related transportation backlogs have further affected the visitor's experience. Refuge staff have received feedback from visitors indicating concerns that group crowding; user conflicts; excessive overflights; fire rings, tent rings, and human waste accumulations at concentrated access points and popular camp areas; hardening or impairment of fragile riparian and tundra habitats; and increased footprint of aircraft landing areas are having a negative effect on the Refuge's wilderness and biological resources.

The Kongakut River visitor use management issue focuses on: developing targeted messages to inform visitors about preferred camping and hiking practices; increasing rehabilitation efforts at impaired and impacted sites; spreading out visitor use and the number of groups during peak use periods; dispersing commuter aircraft over flights in the Kongakut valley; initiating an adaptive management framework for monitoring recreation impacts; and upon completion of the Plan, expanding Kongakut River visitor management strategies into a comprehensive step-down plan for managing visitor use Refuge-wide.

Summary of Comments

The vast majority of public comments we received specific to the Kongakut River suggest a need for greater management efforts along the river corridor. Requests for increased management efforts for the Kongakut River are focused on retaining—or restoring—quality of visitor experience. Many comments suggest specific ways to improve visitor experiences, particularly by addressing crowding. Some specific suggestions included modifying group size

limits, implementing a lottery system for float trips, and spreading out launch days. Other concerns raised by the public included the need to designate the Kongakut as a wild river and to address potential impacts to river access landing areas.

Representative Comments

"I do have some concerns about the impacts of recreational traffic in some areas, in particular along the Kongakut corridor…you'll see a lot of traffic and there are places that are popular campsites where it's kind of hard to pick up a rock and not find a gift from previous visitors to that campsite. And that's pretty disturbing to come across."

"The Arctic Refuge did a great thing when it introduced regulations for commercial operators on the…Kongakut. It's time to codify these regs and revisit them. I would like to see group size limited to 8, including guides. I'd like to see a limit on the number of trips each company can run on each river, to one trip per river per month, and then have a reservation system that spreads out launch dates so there's a 2-3 day buffer between launch dates. This would eliminate the large number of trips that tends to launch between June 11 and 21 each summer, creating a large number of groups on the river at the same time."

"I suspect that some of the more popular rivers, such as the Kongakut…are losing their lonely nature. Implement permitting or other controls to prevent overuse and preserve the solitude of those who are there."

"Visitor use has greatly increased from the years when I first visited. This is especially true of the major river valleys such as the Kongakut…I strongly feel that the Conservation Plan should incorporate restrictions on visitor use, particularly in the major river valleys by float trip parties."

3.1.2 Issues Considered but Eliminated from Detailed Study

The following discussion describes the issues and actions the staff considered but subsequently eliminated from detailed study and National Environmental Policy Act (NEPA) analysis through this Plan. Issues raised by the public and the agency included development, policy, ecological, management, visitor use, and administrative concerns. Many of these issues are important to the management of the Refuge and will be deferred to and incorporated into various step-down plans (see Chapter 6). For a more detailed discussion of the 34 issues considered but eliminated, please refer to Appendix D.

A major issue identified by the public is oil and gas development on the Refuge's Coastal Plain. Some commenters, including the State of Alaska, asked that the Plan address oil and gas leasing or development scenarios in the range of alternatives. An oil and gas alternative would not satisfy NEPA's requirement that alternatives meet the purpose and need for the Revised Plan, and the Service has no administrative authority over oil and gas development. Others expressed concern that the Service is violating Alaska National Interest Lands Conservation Act (ANILCA) by conducting wilderness and wild and scenic river reviews. Service policy directs the Refuge to conduct these reviews, and they do not violate ANILCA because the reviews do not constitute a withdrawal, nor or they being conducted for the sole purpose of establishing a conservation system unit.

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. Rather than incorporating climate change into the alternatives, the Refuge established several objectives to evaluate climate change through scientific research and monitoring and the sharing of traditional knowledge in local communities. Concerns were also expressed about changes in fire behavior, the Service's response (or lack thereof) to fires, and smoke impacts. These concerns are best addressed through a Fire Management Plan (FMP) so as to provide maximum flexibility in Refuge response to wildfires.

The Plan did not provide a range of management alternatives for the Refuge's Public Use Natural Area, two Research Natural Areas, Marine Protected Area, or the three existing wild rivers. Refuge staff determined that existing management, in combination with Refuge purposes, afford a high degree of protection for the features and values in these specially designated areas and that no additional management guidance is needed.

Numerous issues were raised about visitor use of the Refuge, the impacts such use is having on Refuge resources and visitor experience, and perceived or real conflicts between different user groups. Identified public use-related issues included crowding, human waste accumulations, different standards for different user groups, how the Refuge interacts with the public, group size, conflicts among and between commercial and private users, preference for guided or non-guided visitors, and aircraft impacts. Most of these issues are major and important planning issues that could be addressed through the Plan's alternatives. Refuge staff decided, however, that the best way to address these complex and often interrelated concerns is through a step-down planning effort focused on these issues. Thus, these issues have been deferred to a Visitor Use Management Plan (see Chapter 2, objective 5.3).

Some commenters expressed concern over the administrative facility at Peters Lake and asked the Refuge to remove it. The Refuge will take action to modify or remove the facility's buildings by conducting an environmental analysis separate from the Revised Plan (see Chapter 2, objective 2.5). Other people wanted the Refuge to establish one or more commercial-free zones and/or an area free from mechanization where solitude and natural

quiet are protected. The Refuge gave strong consideration to this issue and developed a range of options for the alternatives. However, the Refuge did not have the necessary data to adequately describe effects on access, private aircraft use, big-game hunting, and scientific research. Further, there were unresolved questions about specific ANILCA requirements for establishment of such an area. The issue was deferred to a Wilderness Stewardship Plan where these questions can be more fully explored (see Chapter 2, objective 2.3).

3.1.3 Other Actions, Options, and Strategies

Actions are different management options or strategies that could be employed to address a planning issue. Each of the three significant planning issues considered in the alternatives presents a range of actions. However, some of the ideas generated by the public and Refuge staff for wilderness, wild and scenic rivers, and Kongakut River visitor management were not carried forward. If they had, there could have been more or different alternatives. In this section, we identify the actions considered for the three significant planning issues but not carried into the alternatives.

3.1.3.1 Wilderness Actions not in the Alternatives

The Wilderness Review attached to this Plan (Appendix H) established three WSAs: Brooks Range, Porcupine Plateau, and Coastal Plain. Five options are presented in Alternatives A through F, and the range of actions extends from no new wilderness recommendations to nearly the entire Refuge being recommended for wilderness designation.

Some of the options considered but not carried forward included different combinations of the three WSAs. We could not include all combinations and maintain a manageable number of alternatives. The Porcupine Plateau WSA was not recommended by itself, nor was it put forward in combination with the Coastal Plain WSA. Similarly, the Brooks Range WSA was not put forward in combination with the Coastal Plain WSA.

Originally, the boundaries of the Brooks Range and Coastal Plain WSAs included all Refuge lands. After the first two phases of the wilderness review were completed, the boundaries of the WSAs were adjusted in the vicinity of Arctic Village and Kaktovik to eliminate lands and waters that do not meet the criteria for wilderness (Appendix H). The staff also discussed whether lands and waters proximate to these villages could effectively be managed as wilderness, or whether we should introduce a different land management category to these areas (e.g., Moderate Management). The suitability phase of the wilderness review addresses wilderness manageability. The Refuge manager decided to let the wilderness review process make the determination rather than making a decision about manageability independent of the review process.

3.1.3.2 Wild River Actions not in the Alternatives

The Wild and Scenic River Review attached to this Plan (Appendix I) identified 10 rivers that are eligible for inclusion in the NWSRS. These rivers were moved forward into the suitability phase of the analysis, and four rivers were preliminarily determined suitable. Five actions are presented in Alternatives A through F, ranging from no new wild river recommendations to all suitable rivers recommended for inclusion in the NWSRS.

Some of the ideas considered but not carried forward included different combinations of the suitable rivers, but we could not include all combinations of suitable rivers and maintain a manageable number of alternatives. Other actions considered but not carried forward, include:

- recommend only those suitable rivers and river segments in designated wilderness
- recommend only those suitable rivers and river segments outside designated wilderness
- recommend only the Kongakut River
- recommend all suitable rivers except the Kongakut River
- recommend only suitable rivers with a particular value, such as "recreational," "cultural," or "fish"
- do not recommend any rivers but develop a river management plan for all refuge rivers, including suitable rivers
- limit access or user numbers on suitable rivers
- limit commercial and/or private recreational activity on suitable rivers

3.1.3.3 Kongakut River Actions not in the Alternatives

The Kongakut River is a site-specific issue that, based on public comments, needs to be addressed as much as possible through the Plan. Public comments about the Kongakut River focused on group sizes and an interest in regulating launch dates.

Five strategies for addressing the Kongakut River issue were proposed in the alternatives:

- Under Alternative A, current management would continue. Current management includes: group size limits for commercially guided groups; special use permits for commercial service providers with occasional compliance checks; visitor use monitoring every other year or less frequently; air-taxi landings restricted to non-vegetated surfaces; flight paths and distance above ground level recommendations; and campsite conditions monitored periodically.
- The strategy presented in Alternatives B and C would maintain current management plus develop educational materials with targeted messages; publish a schedule of proposed guided launch dates; conduct site-specific rehabilitation of impacted areas; initiate a monitoring program of physical and social conditions; and address Kongakut River management issues in a step-down plan.
- The strategy presented in Alternative D would be the same as Alternatives B and C except efforts to enforce compliance of special use permit conditions would be increased. In addition, the Refuge would work with guides to reduce the number of groups on the river during heavy use periods and with air-taxi operators to disperse commuting flight paths in and out of the Kongakut River valley.
- The strategy proposed for Alternative E is identical to Alternative D except the Refuge would commit to initiating step-down planning within two years of the Plan's record of decision.
- The strategy presented in Alternative F would be the same as Alternatives B and C except special use permit compliance and general law enforcement strategies would be identified through a step-down plan that would be initiated within two years of the Plan's record of decision.

The staff considered numerous actions and strategies to address public concerns about the Kongakut River. Some of these actions could be addressed through the Plan. Others are best handled through a refuge-wide Visitor Use Management Plan or River Management Plan to avoid the displacement of issues from the Kongakut to other areas of the Refuge. Still others would require rule making. In order to keep the number of alternatives to a manageable number, these actions were not carried forward into the alternatives:

- restrict use during the two peak use periods
- restrict use during the entire open water season
- restrict the number of commercial trips each company can do on the river
- limit launch dates
- develop a commercial prospectus in which commercial operators tell the Refuge how they will improve conditions on the Kongakut
- provide targeted education and outreach messages, including a voluntary orientation package
- require the removal of human waste
- require mandatory, site-specific, trip orientation and certification
- prohibit camping at drop-off and pick-up locations
- limit the number of nights allowed at specific camping areas
- designate camp sites
- establish group size limits for all users

3.2 Alternatives

Multiple elements combine to create each of the alternatives: 1) a set of goals and objectives (except for Alternative A); 2) management categories (which are the same across all alternatives); 3) a suite of management policies and guidelines; and 4) different strategies to respond to issues, public concerns, and opportunities identified during the planning process. The Refuge's goals, objectives, management categories, and management guidelines are described in Chapter 2. These plan elements, especially the goals, objectives, and management guidelines, are considered to be the heart of this Plan. They explain the approach the Service would like to take to manage the Refuge. The alternatives provide a basis for comparing potential impacts and help managers make better decisions regarding the physical, biological, economic, and social effects that could result from proposed actions and activities on Refuge lands.

The alternatives presented in this Plan were designed to meet the purposes and goals of Arctic Refuge, achieve the mission of the Service, fulfill the purpose and need for the planning document, and respond to key issues and concerns that were identified during public and internal scoping. The alternatives described in this chapter were developed to comply with NEPA, ANILCA, and other pertinent laws and the regulations and directives applied to implement those laws. NEPA directs the Service to develop a range of reasonable alternatives and consider those alternatives in an equal manner. NEPA also requires alternatives considered in an EIS meet the purpose and need for the proposed action.

The Service decided that six alternatives would address the three significant planning issues and provide a reasonable range for approaching Refuge management for the next 15 years. Alternative A represents the current management situation at Arctic Refuge; it is also called the "No Action" alternative. Alternative A would not adopt any management objectives, and it would maintain the management policies and guidelines identified in the 1988 Plan. Alternative F is similar to Alternative A, but it would adopt all the proposed management objectives (Chapter 2, Section 2.1) and the updated management policies and guidelines identified in Chapter 2, Sections 2.3, 2.4, and 2.5. Alternatives B through E would adopt the Refuge management objectives, management policies, and guidelines but differ in how they would address the three significant planning issues. All six alternatives would maintain three management categories for Refuge lands: Minimal, Wilderness, and Wild River (see Chapter 2, Section 2.3).

3.2.1 Management Actions Common to All Alternatives

This section identifies some of the key components to be included in this Plan regardless of which alternative is selected. These management actions are either already occurring and will continue, or are currently in the process of being implemented and will be carried forward as part of this Plan. These actions address common issues; public concerns; and Refuge purposes, goals, and objectives as described in this Plan.

3.2.1.1 Environmental Conservation and Monitoring

Standard Practice

Arctic Refuge will continue to be managed in accordance with existing laws, Executive orders, regulations, and policies that govern how the Service administers and operates the Refuge System. Accordingly, the Service and the Refuge will:

- monitor and address the effects of accelerating climate change at a landscape level
- protect and maintain fish and wildlife populations, habitat values, ecological processes, and biological diversity
- maintain water quality and quantity and protect the Wind, Ivishak, and Sheenjek wild river corridors
- provide opportunities to pursue research on wildlife and habitats and conduct inventory and monitoring projects
- protect and monitor cultural and historical sites
- protect designated wilderness and maintain the wilderness characteristics of the Refuge
- provide and support law enforcement on Refuge lands

Migratory Birds

Arctic Refuge provides vital breeding and staging habitat for large numbers of migratory waterfowl and shorebirds (Chapter 4, Section 4.3.6, and Appendix F). The Migratory Bird Treaty Act was amended in 1996 to legalize subsistence hunting and taking of eggs of migratory birds in Alaska during spring and summer. This amendment led to the establishment of the Alaska Migratory Bird Co-management Council. Regardless of the alternative selected, the Service and the Refuge will continue to work with the Alaska Migratory Bird Co-management Council and other partners to collect accurate and extensive baseline data on species distribution and abundance and subsistence harvests to ensure that healthy populations are maintained, subsistence opportunities provided, and the Service fulfills its international obligation to comply with the Migratory Bird Treaty Act.

Porcupine Caribou Herd

The government of Canada and the government of the United States of America are signatories of the International Porcupine Caribou Herd Conservation Agreement (Department of the Interior 1987). Under all management alternatives, the Service and Arctic Refuge would continue to cooperatively manage caribou on Refuge lands according to this agreement and any future revisions or amendments to the agreement.

Invasive Species

Invasive species are plants and animals that are not native to an area but become established there and have adverse effects on native species. In the arctic, invasive species are thought to be a relatively new and growing phenomenon, associated with human activities and climate change. Invasive plants may be introduced to Arctic Refuge from the Dalton Highway corridor and villages. Refuge visitors can spread seeds on their clothing, recreational gear, domestic animals such as dogs or packstock, and aircraft or watercraft. Non-native wildlife species may expand their ranges to include Refuge lands due to changes in habitat associated with climate change. The Refuge will continue to conduct invasive-species surveillance and may implement means to prevent, control, or eradicate these species if necessary and practicable.

Environmental Contaminants

The Service conducted a study of contaminants in water, sediments, and fish on Arctic Refuge in 1987 and 1988 and recommended that further work be conducted to establish baseline data for concentrations of heavy metals (Snyder-Conn and Lubinski 1993). The baseline data indicated that except for well-used harbor areas around Kaktovik, contaminants concentrations were reflective of a relatively pristine and remote Arctic region (Snyder-Conn and Lubinski 1993).

Current and future planned activities have potential to create sources of contamination, including spills or development activities outside of Refuge boundaries. Under all management alternatives, Arctic Refuge would work with the Service's Environmental Contaminants Program and other appropriate regulatory agencies, such as the U.S. Environmental Protection Agency (EPA) and the State of Alaska Department of Environmental Conservation

(ADEC), to document baseline environmental conditions and establish a plan for long-term monitoring in response to continued human activities outside and inside the Refuge.

3.2.1.2 Public Use and Access

Standard Practice

The Service and Arctic Refuge will continue to:

- allow appropriate and compatible private and commercial uses
- provide methods of public access currently allowed by law and regulation
- provide land status information within the Refuge boundary
- provide information about 17(b) easements on Native Corporation land that allow access to public lands
- provide opportunities to pursue social, cultural, and economic research

Subsistence

Providing for continued subsistence opportunities is an important purpose of Arctic Refuge. Under all alternatives, the Service and the Refuge would monitor fish, wildlife, and plant populations and their harvest to ensure that subsistence uses of these resources remain compatible with other Refuge purposes.

Big-game guide use area ARC 12 will continue to remain vacant. It surrounds Arctic Village and includes the Arctic Village Sheep Management Area, which is reserved for federally qualified subsistence users from the villages of Arctic Village, Fort Yukon, Venetie, Kaktovik, and Chalkyitsik. The Federal Subsistence Board established this area to minimize conflicts and competition with general hunters.

Recreation and Outreach

Hunting, fishing, wildlife observation and photography, environmental education, and interpretation are the six priority public uses identified in the National Wildlife Refuge System Improvement Act or 1997. The Service and the Refuge will emphasize these uses where compatible with Refuge purposes. Regardless of the alternative selected, the recreational opportunities that currently exist at Arctic Refuge will continue to be provided.

3.2.2 Alternative A – Current Management

Alternative A is the "No Action" Alternative. It describes current management of Arctic Refuge, provides the baseline against which to compare Alternatives B through F, and is required by NEPA. Under Alternative A, general management of Arctic Refuge would continue to follow the 1988 Plan (Service 1988a) and associated record of decision (Service 1988b), as amended by the FMP for Arctic Refuge (Service 2008b).

With the exceptions of the Refuge land management categories, much of the management direction described in the 1988 Plan for Arctic Refuge is outdated. However, under Alternative A, the updated version of the Refuge management policies and guidelines described in Chapter 2 (Sections 2.3, 2.4, and 2.5) would not take effect. Table 3-2 of this chapter (Section 3.3.2) discusses the major differences between the 1988 management direction and the updated version of the policies and guidelines for Refuge management. Table 3-3 identifies key differences between Minimal and Wilderness management.

3.2.2.1 Objectives

The 1988 Plan did not include any goals or objectives for Refuge management. Under Alternative A, management would continue as detailed in the 1988 Plan, thus objectives would not be adopted if Alternative A is selected.

3.2.2.2 Management Categories

Under Alternative A, the original land management categories, as described in the 1988 Plan, would continue to apply to lands in Arctic Refuge. Lands administered by Arctic refuge would fall into three categories as follows: Minimal (10.8 million acres), Wilderness (8 million acres), and Wild River (0.5 million acres) (Map 3-1).

3.2.2.3 Specific Management by Major Issue

The following discussion describes how Alternative A would address the significant issues identified during internal and public scoping.

Map 3-1

Arctic National Wildlife Refuge

Alternative A - Current Management

Management Areas

- Wild River Management
- Minimal Management
- Wilderness Management

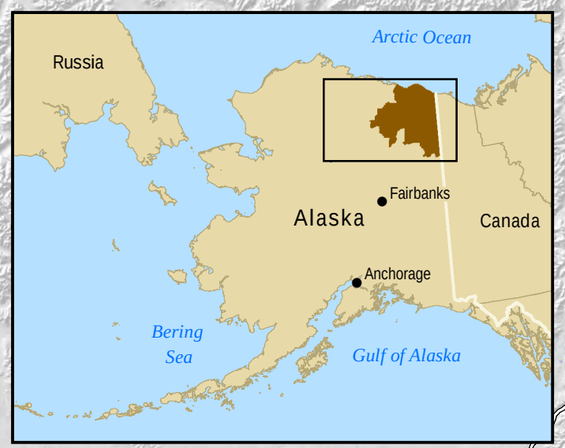
Other Features

- Arctic Refuge Boundary
- Private Lands
- Roads
- U.S.- Canada Border

Miles: 0 10 20 30 40 50 60 70 80

Kilometers: 0 10 20 30 40 50 60 70 80

Alaska Albers Equal Area Conic Projection, 1983 North American Datum.



154° W 152° W 150° W 148° W 146° W 144° W 142° W 140° W

70° N 69° N 68° N 67° N

Prudhoe Bay
Kaktovik
Camden Bay
Beaufort Sea
Dalton Highway
Ivishak River
Wind River
Sheenjek River
Kongakut River
Kongakut River: Wilderness management with commercial Special Use Permit conditions; commercial group size limits; commercial aircraft restrictions; and occasional compliance and monitoring.
Arctic Village
Canada
Old Crow
Wiseman
Coldfoot
Venetie

Wilderness

No new areas would be recommended for wilderness designation.

Wild and Scenic Rivers

No new rivers would be recommended for wild river designation. The Refuge would use existing management tools to maintain values on the Atigun, Hulahula, Kongakut, and Marsh Fork Canning rivers.

Kongakut River Visitor Management

Group size limits exist for commercially guided groups (7 hikers, 10 floaters). There are no group size limits for non-guided visitors, but the Refuge recommends non-guided visitors limit their groups to the same size as commercial groups. Guides are limited to one group on a river at a time, and commercial service providers have special use permits. The Refuge conducts occasional compliance checks to determine if permit holders are complying with the terms and conditions of their permits. In the Kongakut valley, air-taxi special use permits are conditioned to limit landings to non-vegetated surfaces only. Subject to safety concerns and weather, operators must maintain a minimum altitude of 2,000 feet above ground level flight operations with no intentional low flights over camps or people. Aircraft operations cannot harass wildlife or interfere with Refuge visitors or subsistence users. Visitor use monitoring occurs every other year or less frequently. Campsite conditions are monitored periodically.

3.2.2.4 Funding and Personnel Requirements

All current management programs would continue under Alternative A. The base operational budget ($3,352,000) would continue, with periodic adjustments to balance the offsets of fixed costs and inflation. The Refuge currently has a staff size of 49 employees and volunteers: 22 permanent or term full-time; 1 permanent part-time; 5 temporary intermittent; 10–12 temporary or seasonal; and 12 volunteers. This level of staffing would continue should Alternative A be selected.

3.2.3 Alternative B

Under Alternative B, the management policies and guidelines for Arctic Refuge (Chapter 2, Sections 2.3, 2.4, and 2.5), would take effect (see Section 3.3.2 for a comparison of the proposed management policies and guidelines to those in the 1988 Plan). The Refuge vision, goals, and objectives, described in Chapter 1, Section 1.6 and Chapter 2, Section 2.1, would also be adopted under Alternative B.

Although most of the general management direction described in Alternative A would continue, some specific directions and actions occurring under Alternative A would change under Alternative B. Management actions under Alternative B are discussed here.

3.2.3.1 Objectives

Alternative B would adopt all the objectives described in Chapter 2, Section 2.1.

3.2.3.2 Management Categories

Under Alternative B, lands in Arctic Refuge would be managed under the Minimal, Wilderness, and Wild River Management categories described in Chapter 2, Section 2.3. The alternative would maintain the same acreages in each of the management categories as Alternative A (current management): Minimal (10.8 million acres), Wilderness (8 million acres), and Wild River (0.5 million acres). If Congress were to designate the Brooks Range WSA as wilderness, there would be a reduction of 5.4 million acres of Minimal Management and an increase of the same amount of acres of lands under Wilderness Management. Similarly, if the recommended rivers were designated by Congress for inclusion in the NWSRS, there would be a further reduction of approximately 52,500 acres of Minimal Management and an increase of 52,200 acres of Wild River Management.

3.2.3.3 Specific Management by Major Issue

Wilderness

The Brooks Range WSA would be recommended for wilderness designation (Map 3-2).

Wild and Scenic Rivers

The Hulahula, Kongakut, and Marsh Fork Canning rivers would be recommended for inclusion in the NWSRS as wild rivers. The Refuge would use existing management tools to maintain values for the Atigun River.

Kongakut River Visitor Management

As under Alternative A, group size limits would exist for commercially guided groups (7 hikers, 10 floaters). There would be no group size limits for non-guided visitors. Refuge staff would continue to recommend that non-guided visitors limit their groups to the same size as commercial groups. Guides would be limited to one group on a river at a time, and commercial service providers would have special use permits. The Refuge would conduct occasional compliance checks to determine if permit holders were complying with the terms and conditions

Map 3-2

Arctic National Wildlife Refuge

Alternative B

Management Areas

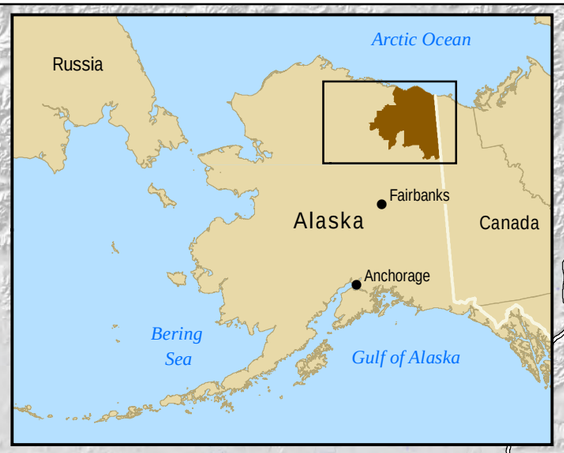
- Wild River Management
- Minimal Management
- Wilderness Management
- Minimal Management with Wilderness Recommendation
- Suitable Rivers *

Other Features

- Arctic Refuge Boundary
- Private Lands
- Roads
- U.S.- Canada Border

Miles
0 10 20 30 40 50 60 70 80
0 10 20 30 40 50 60 70 80
Kilometers

Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
* Rivers preliminarily determined suitable through the Arctic Refuge Wild & Scenic River review.



154° W 152° W 150° W 148° W 146° W 144° W 142° W 140° W
70° N 69° N 68° N 67° N

Prudhoe Bay
Kaktovik
Camden Bay
Beaufort Sea
Dalton Highway
Hulahula River
Kongakut River
Ivishak River
Marsh Fork
Wind River
Sheenjek River
Arctic Village
Canada
Old Crow
Wiseman
Coldfoot
Venetie

Kongakut River: Alternative A, plus: revise monitoring program; increase education & outreach; publish guided launch schedule; conduct site rehabilitation; address Kongakut in step-down plan.

of their permits. In the Kongakut valley, air-taxi special use permits would continue to be required to limit landings to non-vegetated surfaces only. Subject to safety concerns and weather, operators must maintain a minimum altitude of 2,000 feet above ground level flight operations with no intentional low flights over camps or people. Aircraft operations would continue to not be allowed to harass wildlife or interfere with Refuge visitors or subsistence users. Visitor use monitoring would occur every other year or less frequently.

Additionally, Refuge staff would revise its monitoring program of physical and social conditions to evaluate the effectiveness of management actions. Refuge staff would develop educational materials for the public with targeted messages explaining preferred practices and strategies for minimizing impacts, such as proper waste disposal practices, avoiding wildlife impacts, and alleviating crowding among groups. The Refuge would also publish schedules of proposed guided launch dates and past visitor use activity patterns that visitors could use to plan their trips. We would continue to periodically monitor campsite conditions and conduct site-specific rehabilitation of impaired and impacted areas. We would further address Kongakut River management issues in step-down planning (i.e., a Wilderness Stewardship Plan and a Visitor Use Management Plan).

3.2.3.4 Funding and Personnel Requirements

Current management programs would continue under Alternative B, and some new programs would begin. All funding and staffing changes would result from implementing Refuge management objectives (Chapter 2, Section 2.1). No additional costs would be incurred from the management actions in Alternative B. The base Refuge operational budget of $3,352,000 would continue with additions to cover the new programs, as described in the subsequent text.

Staffing Needs Beyond Current Level

Alternative B would require 21 additional employees and volunteers: five permanent or term full-time; two permanent or term part-time; two temporary seasonal; and 12 volunteers. These positions are outlined here:

- One full-time Visitor Use/Public Use Manager, GS-11/12: This position would oversee and manage the larger visitor/public use programs of the Refuge, including education and outreach programs; commercial use permitting of service providers; resource and visitor use monitoring programs; liaison and community relations for villages, organizations, and tribes; and development of various public and visitor use planning efforts.
- One full-time or term Outdoor Recreation Planner, GS-12: An experienced planner would lead the following major Refuge step-down planning efforts: Visitor Use Management Plan, Wilderness Stewardship Plan, and Comprehensive River Management Plans. Additionally, this position would likely be involved in the Refuge's Integrated Cultural Resource Management and Land Protection plans, and other step-down plans and studies identified in the management objectives. Another agency employee on detail to the Refuge could potentially fill this position.
- One full-time Law Enforcement Officer and Pilot, GS-12: This position would perform a full range of resource protection across northern Alaska refuges and adjacent Dalton Highway corridor and conduct public outreach and education regarding Federal and State conservation regulations.

- One full-time Ecologist/Interdisciplinary Scientist, GS-11/12: This position would assist with preparation and implementation of the Refuge's Ecological Inventory and Monitoring and Research plans and bring a climate change focus to the Refuge.
- One full-time or term Biological Technician, GS-5/7: This position would assist with field projects, logistics, data management, and report preparation.
- One permanent or term part-time Visitor Services Specialist, GS-5/7: This position would work in gateway communities (such as Arctic Village, Coldfoot, and Kaktovik) to provide information and guidance to commercial service providers, visiting publics, and local communities about appropriate use of the Refuge, its conservation issues and needs, and best visitor and use practices.
- One temporary intermittent Outreach/Visitor Use Specialist, GS-5/7: This position would develop multi-media products and education and outreach materials to a full range of audiences (local, national, and international).
- Eight seasonal Biological Technicians, GS-5/7: Each would have a three-month appointment to assist with inventory, monitoring, and field project logistics. (Because each position is three months, these positions are the equivalent to two temporary seasonals.)
- Four Public Use Volunteers: Two would be placed in visitor centers, one in villages for visitor contact and information exchange, and one would assist with field monitoring assessments on visitation and public use.
- Eight Field Volunteers: These volunteers would assist with inventory, monitoring, and research field projects.

Budget Needs Beyond Current Level

Salary costs for the additional employees would increase budget needs by $749,000 per year. Base costs would need to increase by $500,000 per year to adequately support the inventory, monitoring, and research efforts of current staff, including climate change effects. Base cost increases would also be used to acquire or replace equipment and supplies, fund biometrician support contracts, and fund cooperative monitoring and research programs.

Alternative B would result in $220,000 one-time costs:

- $50,000 to conduct the Visitor Study in 2013
- $50,000 to upgrade the Marion Creek residences at Coldfoot for year-round use
- $120,000 to acquire a shallow-draft vessel and motor suitable for fish, wildlife, lagoons, barrier islands, and coastal habitat surveys

These one-time cost estimates do not take into account a one-time cost of $4,000,000 to acquire spatial data products covering the Refuge and adjacent North Slope landscapes. While costs would be shared with partners such as Federal and State agencies, university researchers, Arctic and Interior Landscape Conservation Cooperatives, and the North Slope Science Initiative, the actual cost to the Refuge will vary depending on the cost-share agreements and partnerships that are developed.

3.2.4 Alternative C

Alternative C would adopt the Refuge management policies and guidelines presented in Chapter 2, Sections 2.3, 2.4, and 2.5. The Refuge vision, goals, and objectives, described in Chapter 1, Section 1.6 and Chapter 2, Section 2.1, would go into effect under Alternative C.

Although most of the general management direction described in Alternative A would continue, some specific directions and actions occurring under Alternative A would change under Alternative C. Management actions under Alternative Care discussed here.

3.2.4.1 Objectives

Alternative B would adopt all the objectives described in Chapter 2, Section 2.1.

3.2.4.2 Management Categories

Under Alternative C, lands in Arctic Refuge would be managed under the Minimal, Wilderness, and Wild River Management categories described in Chapter 2, Section 2.3. The alternative would maintain the same acreages in each of the management categories as Alternative A (current management): Minimal (10.8 million acres), Wilderness (8 million acres), and Wild River (0.5 million acres). If Congress were to designate the Coastal Plain WSA as wilderness, there would be a reduction of 1.4 million acres of Minimal Management and an increase of the same amount of acres of lands under Wilderness Management. Similarly, if Congress were to designate the rivers recommended under Alternative C for inclusion in the NWSRS, there would be a further reduction of approximately 7,000 acres of Minimal Management and an increase of 7,000 acres of Wild River Management.

3.2.4.3 Specific Management by Major Issue

Wilderness

Under this alternative, the Coastal Plain WSA would be recommended for wilderness designation (Map 3-3).

Wild and Scenic Rivers

The Atigun River would be recommended for inclusion in the NWSRS as a wild river. The Refuge would use existing management tools to maintain values for the Hulahula, Kongakut, and Marsh Fork Canning rivers.

Kongakut River Visitor Management

As under Alternative A, group size limits would exist for commercially guided groups (7 hikers, 10 floaters). There would be no group size limits for non-guided visitors. Refuge staff would continue to recommend that non-guided visitors limit their groups to the same size as commercial groups. Guides would be limited to one group on a river at a time, and commercial service providers would have special use permits. The Refuge would conduct occasional compliance checks to determine if permit holders were complying with the terms and

conditions of their permits. In the Kongakut valley, air-taxi special use permits would continue to be required to limit landings to non-vegetated surfaces only. Subject to safety concerns and weather, operators must maintain a minimum altitude of 2,000 feet above ground level flight operations with no intentional low flights over camps or people. Aircraft operations would continue to not be allowed to harass wildlife or interfere with Refuge visitors or subsistence users. Visitor use monitoring would occur every other year or less frequently.

Additionally, as under Alternative B, Refuge staff would revise its monitoring program of physical and social conditions to evaluate the effectiveness of management actions. Refuge staff would develop educational materials for the public with targeted messages explaining preferred practices and strategies for minimizing impacts, such as proper waste disposal practices, avoiding wildlife impacts, and alleviating crowding among groups. The Refuge would publish schedules of proposed guided launch dates and past visitor use activity patterns that visitors could use to plan their trips. We would continue to periodically monitor campsite conditions and would conduct site-specific rehabilitation of impaired and impacted areas. We would further address Kongakut River management issues in step-down planning (i.e., a Wilderness Stewardship Plan and a Visitor Use Management Plan).

3.2.4.4 Funding and Personnel Requirements

Current management programs would continue under Alternative C, and some new programs would begin. All funding and staffing changes would result from implementing Refuge management objectives (Chapter 2, Section 2.1). No additional costs would be incurred from the management actions in Alternative C. The base Refuge operational budget of $3,352,000 would continue with additions to cover the new programs, as follows.

Staffing Needs Beyond Current Level

Alternative C would require 21 additional employees and volunteers: 5 permanent or term full-time; 2 permanent or term part-time; 2 temporary seasonal; and 12 volunteers. These positions are as follows:

- One full-time Visitor Use/Public Use Manager, GS-11/12: This position would oversee and manage the larger visitor/public use programs of the Refuge, including education and outreach programs; commercial use permitting of service providers; resource and visitor use monitoring programs; liaison and community relations for villages, organizations, and tribes; and development of various public and visitor use planning efforts.
- One full-time or term Outdoor Recreation Planner, GS-12: An experienced planner would lead the following major Refuge step-down planning efforts: Visitor Use Management Plan, Wilderness Stewardship Plan, and Comprehensive River Management Plans. Additionally, this position would likely be involved in the Refuge's Integrated Cultural Resource Management and Land Protection plans, and other step-down plans and studies identified in the management objectives. Another agency employee on detail to the Refuge could potentially fill this position.
- One full-time Law Enforcement Officer and Pilot, GS-12: This position would perform a full range of resource protection across northern Alaska refuges and adjacent Dalton

Map 3-3

Arctic National Wildlife Refuge

Alternative C

Management Areas

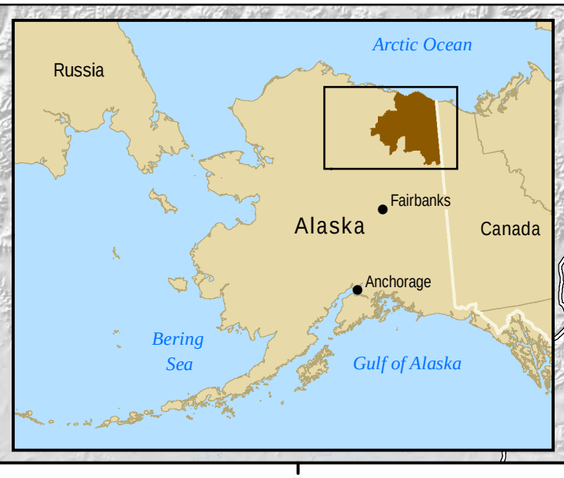
- Wild River Management
- Minimal Management
- Wilderness Management
- Minimal Management with Wilderness Recommendation
- Suitable Rivers *

Other Features

- Arctic Refuge Boundary
- Private Lands
- Roads
- U.S.- Canada Border

Miles
0 10 20 30 40 50 60 70 80
0 10 20 30 40 50 60 70 80
Kilometers

Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
* Rivers preliminarily determined suitable through the Arctic Refuge Wild & Scenic River review.



154° W 152° W 150° W 148° W 146° W 144° W 142° W 140° W
70° N 69° N 68° N 67° N

Prudhoe Bay
Kaktovik
Camden Bay
Beaufort Sea
Kongakut River: Same as Alternative B
Kongakut River
Dalton Highway
Ivishak River
Wind River
Atigun River
Sheenjek River
Arctic Village
Canada
Old Crow
Wiseman
Coldfoot
Venetie

Highway corridor and conduct public outreach and education regarding Federal and State conservation regulations.

- One full-time Ecologist/Interdisciplinary Scientist, GS-11/12: This position would assist with preparation and implementation of the Refuge's Ecological Inventory and Monitoring and Research plans and bring a climate change focus to the Refuge.
- One full-time or term Biological Technician, GS-5/7: This position would assist with field projects, logistics, data management, and report preparation.
- One permanent or term part-time Visitor Services Specialist, GS-5/7: This position would work in gateway communities (such as Arctic Village, Coldfoot, and Kaktovik) to provide information and guidance to commercial service providers, visiting publics, and local communities about appropriate use of the Refuge, its conservation issues and needs, and best visitor and use practices.
- One temporary intermittent Outreach/Visitor Use Specialist, GS-5/7: This position would develop multi-media products and education, and outreach materials to a full range of audiences (local, national, and international).
- Eight seasonal Biological Technicians, GS-5/7: Each would have a three-month appointment to assist with inventory, monitoring, and field project logistics. (Because each position is three months, these positions are the equivalent to two temporary seasonals.)
- Four Public Use Volunteers: Two would be placed in visitor centers, one in villages for visitor contact and information exchange, and one would assist with field monitoring assessments on visitation and public use.
- Eight Field Volunteers: These volunteers would assist with inventory, monitoring, and research field projects.

Budget Needs Beyond Current Level

Salary costs for the additional employees would increase budget needs by $749,000 per year. Base costs would need to increase by $500,000 per year to adequately support the inventory, monitoring, and research efforts of current staff, including climate change effects. Base cost increases would also be used to acquire or replace equipment and supplies, fund biometrician support contracts, and fund cooperative monitoring and research programs.

Alternative C would result in $220,000 one-time costs:

- $50,000 to conduct the Visitor Study in 2013
- $50,000 to upgrade the Marion Creek residences at Coldfoot for year-round use
- $120,000 to acquire a shallow-draft vessel and motor suitable for fish, wildlife, lagoons, barrier islands, and coastal habitat surveys

These one-time cost estimates do not take into account a one-time cost of $4,000,000 to acquire spatial data products covering the Refuge and adjacent North Slope landscapes. While costs would be shared with partners such as Federal and State agencies, university researchers, Arctic and Interior Landscape Conservation Cooperatives, and the North Slope Science Initiative, the actual cost to the Refuge will vary depending on the cost-share agreements and partnerships that are developed.

3.2.5 Alternative D

Alternative D would adopt the Refuge management policies and guidelines presented in Chapter 2, Sections 2.3, 2.4, and 2.5. The Refuge vision, goals, and objectives, described in Chapter 1, Section 1.6 and Chapter 2, Section 2.1, would go in effect under Alternative D.

Although most of the general management direction described in Alternative A would continue, some specific directions and actions occurring under Alternative A would change under Alternative D. Management actions under Alternative D are discussed here.

3.2.5.1 Objectives

Alternative D would adopt all the objectives described in Chapter 2, Section 2.1.

3.2.5.2 Management Categories

Under Alternative D, lands in Arctic Refuge would be managed under the Minimal, Wilderness, and Wild River Management categories described in Chapter 2, Section 2.3. The alternative would maintain the same acreages in each of the management categories as Alternative A (current management): Minimal (10.8 million acres), Wilderness (8 million acres), and Wild River (0.5 million acres). If Congress were to designate the Brooks Range and Porcupine Plateau WSAs as wilderness, there would be a reduction of 9.8 million acres of Minimal Management and an increase of the same amount of acres of lands under Wilderness Management. Similarly, if recommended rivers were designated by Congress for inclusion in the NWSRS, there would be a further reduction of approximately 54,200 acres of Minimal Management and an increase of 54,200 acres of Wild River Management.

3.2.5.3 Specific Management by Major Issue

Wilderness

Under this alternative, the Brooks Range and Porcupine Plateau WSAs would be recommended for wilderness designation (Map 3-4).

Wild and Scenic Rivers

The Atigun, Hulahula, Kongakut, and Marsh Fork Canning rivers would be recommended for inclusion in the NWSRS as wild rivers. Only those portions of the Hulahula River managed by the Refuge would be included in the recommendation.

Kongakut River Visitor Management

As under Alternative A, group size limits would exist for commercially guided groups (7 hikers, 10 floaters). There would be no group size limits for non-guided visitors, but Refuge staff would continue to recommend that non-guided visitors limit their groups to the same size as commercial groups. Guides would be limited to one group on a river at a time, and commercial service providers would have special use permits.

Map 3-4

Arctic National Wildlife Refuge

Alternative D

Management Areas

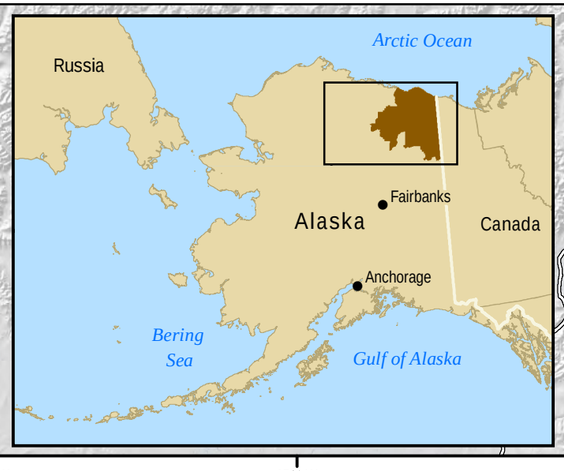
- Wild River Management
- Minimal Management
- Wilderness Management
- Minimal Management with Wilderness Recommendation
- Suitable Rivers *

Other Features

- Arctic Refuge Boundary
- Private Lands
- Roads
- U.S.- Canada Border

Miles
0 10 20 30 40 50 60 70 80
Kilometers
0 10 20 30 40 50 60 70 80

Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
* Rivers preliminarily determined suitable through the Arctic Refuge Wild & Scenic River review.



154° W 152° W 150° W 148° W 146° W 144° W 142° W 140° W
70° N 69° N 68° N 67° N

Prudhoe Bay
Kaktovik
Camden Bay
Beaufort Sea
Dalton Highway
Atigun River
Ivishak River
Wind River
Marsh Fork
Hulahula River
Kongakut River
Sheenjek River
Arctic Village
Canada
Old Crow
Wiseman
Coldfoot
Venetie

Kongakut River: Alternative B plus: increase permit compliance; work with guides to redistribute users during peak periods; ask air taxis to disperse flight paths

Unlike Alternative A, this alternative would result in increased efforts to enforce compliance of special use permit conditions and existing visitor use regulations. We would also redistribute the number of groups on the river during heavy use periods (late June and mid-August) by working with commercial guides to modify their use of the river throughout the season.

In the Kongakut valley, air-taxi special use permits would continue to be required to limit landings to non-vegetated surfaces only. Subject to safety concerns and weather, operators must maintain a minimum altitude of 2,000 feet above ground level flight operations with no intentional low flights over camps or people. Aircraft operations would continue to not be allowed to harass wildlife or interfere with Refuge visitors or subsistence users. We also would work with commercial air-taxi operators to disperse commuting flight paths in and out of the Kongakut valley, subject to safe aircraft operation, inclement weather conditions, and takeoff and landing approach requirements. Visitor use monitoring would occur every other year or less frequently.

Additionally, Refuge staff would revise its monitoring program of physical and social conditions to evaluate the effectiveness of management actions. Staff would develop educational materials for the public with targeted messages explaining preferred practices and strategies for minimizing impacts, such as proper waste disposal practices, avoiding wildlife impacts, and alleviating crowding among groups. The Refuge would publish schedules of proposed guided launch dates and past visitor use activity patterns that visitors could use to plan their trips. We would continue to periodically monitor campsite conditions and would conduct site-specific rehabilitation of impaired and impacted areas. We would further address Kongakut River management issues in step-down planning (i.e., a Wilderness Stewardship Plan and a Visitor Use Management Plan).

3.2.5.4 Funding and Personnel Requirements

Current management programs would continue under Alternative D, and some new programs would begin. All funding and staffing changes would result from implementing Refuge management objectives (Chapter 2, Section 2.1). No additional costs would be incurred from the management actions in Alternative D. The base Refuge operational budget of $3,352,000 would continue with additions to cover the new programs, as described here.

Staffing Needs Beyond Current Level

Alternative D would require 21 additional employees and volunteers: 5 permanent or term full-time; 2 permanent or term part-time; 2 temporary seasonal; and 12 volunteers. These positions are outlined as follows:

- One full-time Visitor Use/Public Use Manager, GS-11/12: This position would oversee and manage the larger visitor/public use programs of the Refuge, including education and outreach programs; commercial use permitting of service providers; resource and visitor use monitoring programs; liaison and community relations for villages, organizations, and tribes; and development of various public and visitor use planning efforts.
- One full-time or term Outdoor Recreation Planner, GS-12: An experienced planner would lead the following major Refuge step-down planning efforts: Visitor Use Management Plan, Wilderness Stewardship Plan, and Comprehensive River Management Plans. Additionally, this position would likely be involved in the Refuge's

Integrated Cultural Resource Management and Land Protection plans, and other step-down plans and studies identified in the management objectives. Another agency employee on detail to the Refuge could potentially fill this position.

- One full-time Law Enforcement Officer and Pilot, GS-12: This position would perform a full range of resource protection across northern Alaska refuges and adjacent Dalton Highway corridor and conduct public outreach and education regarding Federal and State conservation regulations.
- One full-time Ecologist/Interdisciplinary Scientist, GS-11/12: This position would assist with preparation and implementation of the Refuge's Ecological Inventory and Monitoring and Research plans and bring a climate change focus to the Refuge.
- One full-time or term Biological Technician, GS-5/7: This position would assist with field projects, logistics, data management, and report preparation,
- One permanent or term part-time Visitor Services Specialist, GS-5/7: This position would work in gateway communities (such as Arctic Village, Coldfoot, and Kaktovik) to provide information and guidance to commercial service providers, visiting publics, and local communities about appropriate use of the Refuge, its conservation issues and needs, and best visitor and use practices.
- One temporary intermittent Outreach/Visitor Use Specialist, GS-5/7: This position would develop multi-media products, education, and outreach materials to a full range of audiences (local, national, and international).
- Eight seasonal Biological Technicians, GS-5/7: Each would have a three-month appointment to assist with inventory, monitoring, and field project logistics. (Because each position is three months, these positions are the equivalent to two temporary seasonals.)
- Four Public Use Volunteers: Two would be placed in visitor centers, one in villages for visitor contact and information exchange, and one would assist with field monitoring assessments on visitation and public use.
- Eight Field Volunteers: These volunteers would assist with inventory, monitoring, and research field projects.

Budget Needs Beyond Current Level

Salary costs for the additional employees would increase budget needs by $749,000 per year. Base costs would need to increase by $500,000 per year to adequately support the inventory, monitoring, and research efforts of current staff, including climate change effects. Base cost increases would also be used to acquire or replace equipment and supplies, fund biometrician support contracts, and fund cooperative monitoring and research programs.

Alternative D would result in $220,000 one-time costs:

- $50,000 to conduct the Visitor Study in 2013
- $50,000 to upgrade the Marion Creek residences at Coldfoot for year-round use
- $120,000 to acquire a shallow-draft vessel and motor suitable for fish, wildlife, lagoons, barrier islands, and coastal habitat surveys

These one-time cost estimates do not take into account a one-time cost of $4,000,000 to acquire spatial data products covering the Refuge and adjacent North Slope landscapes. While costs would be shared with partners such as Federal and State agencies, university researchers, Arctic and Interior Landscape Conservation Cooperatives, and the North Slope Science Initiative, the actual cost to the Refuge will vary depending on the cost-share agreements and partnerships that are developed.

3.2.6 Alternative E

Alternative E would adopt the Refuge management policies and guidelines presented in Chapter 2, Sections 2.3, 2.4, and 2.5. The Refuge vision, goals, and objectives, described in Chapter 1, Section 1.6 and Chapter 2, Section 2.1, would also go in effect under Alternative E.

Although most of the general management direction described in Alternative A would continue, some specific directions and actions occurring under Alternative A would change under Alternative E. Management actions under Alternative E are discussed here.

3.2.6.1 Objectives

Alternative E would adopt all the objectives described in Chapter 2, Section 2.1.

3.2.6.2 Management Categories

Under Alternative E, lands in Arctic Refuge would be managed under the Minimal, Wilderness, and Wild River Management categories described in Chapter 2, Section 2.3. The alternative would maintain the same acreages in each of the management categories as Alternative A (current management): Minimal (10.8 million acres), Wilderness (8 million acres), and Wild River (0.5 million acres). If Congress were to designate the Brooks Range, Porcupine Plateau, and Coastal Plain WSAs as wilderness, there would be a reduction of 11 million acres of Minimal Management, and the acres of lands under Wilderness Management would increase by the same amount. If rivers recommended under this alternative were designated as wild rivers by Congress, there would be a further reduction of 59,300 acres of Minimal Management and an increase of 59,300 acres of Wild River Management.

3.2.6.3 Specific Management by Major Issue

Wilderness

Under this alternative, the Brooks Range, Porcupine Plateau, and Coastal Plain WSAs would be recommended for wilderness designation (Map 3-5).

Wild and Scenic Rivers

The Atigun, Hulahula, Kongakut, and Marsh Fork Canning rivers would be recommended for inclusion in the NWSRS as wild rivers.

Kongakut River Visitor Management

This issue would be addressed in the same manner as under Alternative D.

As under Alternative A, group size limits would exist for commercially guided groups (7 hikers, 10 floaters). There would be no group size limits for non-guided visitors, but Refuge staff would continue to recommend that non-guided visitors limit their groups to the same size as commercial groups. Guides would be limited to one group on a river at a time, and commercial service providers would have special use permits.

Map 3-5

Arctic National Wildlife Refuge

Alternative E

Management Areas

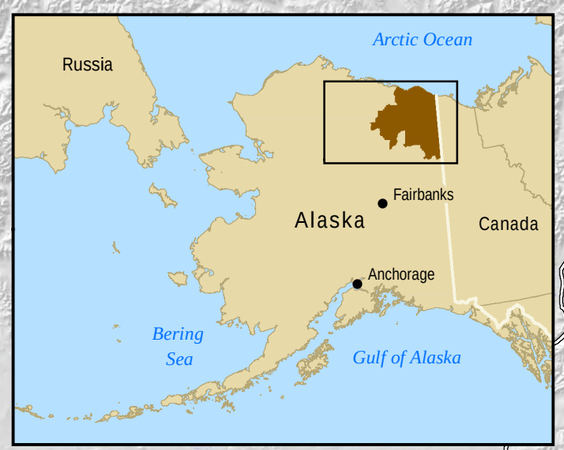
- Wild River Management
- Wilderness Management
- Minimal Management with Wilderness Recommendation
- Suitable Rivers *

Other Features

- Arctic Refuge Boundary
- Private Lands
- Roads
- U.S.- Canada Border

Miles
0 10 20 30 40 50 60 70 80
Kilometers
0 10 20 30 40 50 60 70 80

Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
* Rivers preliminarily determined suitable through the Arctic Refuge Wild & Scenic River review.



154° W 152° W 150° W 148° W 146° W 144° W 142° W 140° W
70° N 69° N 68° N 67° N

Prudhoe Bay
Kaktovik
Camden Bay
Beaufort Sea
Dalton Highway
Hulahula River
Kongakut River
Kongakut River: Same as Alternative D
Ivishak River
Marsh Fork
Wind River
Atigun River
Sheenjek River
Arctic Village
Canada
Old Crow
Wiseman
Coldfoot
Venetie

Unlike Alternative A, this alternative would result in increased efforts to enforce compliance of special use permit conditions and existing visitor use regulations. We would also redistribute the number of groups on the river during heavy use periods (late June and mid-August) by working with commercial guides to modify their use of the river throughout the season.

In the Kongakut valley, air-taxi special use permits would continue to be required to limit landings to non-vegetated surfaces only. Subject to safety concerns and weather, operators must maintain a minimum altitude of 2,000 feet above ground level flight operations with no intentional low flights over camps or people. Aircraft operations would continue to not be allowed to harass wildlife or interfere with Refuge visitors or subsistence users. We also would work with commercial air-taxi operators to disperse commuting flight paths in and out of the Kongakut valley, subject to safe aircraft operation, inclement weather conditions, and takeoff and landing approach requirements. Visitor use monitoring would occur every other year or less frequently.

Additionally, Refuge staff would revise its monitoring program of physical and social conditions to evaluate the effectiveness of management actions. Staff would develop educational materials for the public with targeted messages explaining preferred practices and strategies for minimizing impacts, such as proper waste disposal practices, avoiding wildlife impacts, and alleviating crowding among groups. The Refuge would publish schedules of proposed guided launch dates and past visitor use activity patterns that visitors could use to plan their trips. We would continue to periodically monitor campsite conditions and would conduct site-specific rehabilitation of impaired and impacted areas. We would further address Kongakut River management issues in step-down planning (i.e., a Wilderness Stewardship Plan and a Visitor Use Management Plan).

3.2.6.4 Funding and Personnel Requirements

Current management programs would continue under Alternative E, and some new programs would begin. All funding and staffing changes would result from implementing Refuge management objectives (Chapter 2, Section 2.1). No additional costs would be incurred from the management actions in Alternative E. The base Refuge operational budget of $3,352,000 would continue with additions to cover the new programs, as described here.

Staffing Needs Beyond Current Level

Alternative E would require 21 additional employees and volunteers: 5 permanent or term full-time; 2 permanent or term part-time; 2 temporary seasonal; and 12 volunteers. These positions are outlined here:

- One full-time Visitor Use/Public Use Manager, GS-11/12: This position would oversee and manage the larger visitor/public use programs of the Refuge, including education and outreach programs; commercial use permitting of service providers; resource and visitor use monitoring programs; liaison and community relations for villages, organizations, and tribes; and development of various public and visitor use planning efforts.
- One full-time or term Outdoor Recreation Planner, GS-12: An experienced planner would lead the following major Refuge step-down planning efforts: Visitor Use Management Plan, Wilderness Stewardship Plan, and Comprehensive River Management Plans. Additionally, this position would likely be involved in the Refuge's Integrated Cultural Resource Management and Land Protection plans, and other step-down plans and studies identified in the management objectives. Another agency employee on detail to the Refuge could potentially fill this position.
- One full-time Law Enforcement Officer and Pilot, GS-12: This position would perform a full range of resource protection across northern Alaska refuges and adjacent Dalton Highway corridor and conduct public outreach and education regarding Federal and State conservation regulations.
- One full-time Ecologist/Interdisciplinary Scientist, GS-11/12: This position would assist with preparation and implementation of the Refuge's Ecological Inventory and Monitoring and Research plans and bring a climate change focus to the Refuge.
- One full-time or term Biological Technician, GS-5/7: This position would assist with field projects, logistics, data management, and report preparation,
- One permanent or term part-time Visitor Services Specialist, GS-5/7: This position would work in gateway communities (such as Arctic Village, Coldfoot, and Kaktovik) to provide information and guidance to commercial service providers, visiting publics, and local communities about appropriate use of the Refuge, its conservation issues and needs, and best visitor and use practices.
- One temporary intermittent Outreach/Visitor Use Specialist, GS-5/7: This position would develop multi-media products, education, and outreach materials to a full range of audiences (local, national, and international).
- Eight seasonal Biological Technicians, GS-5/7: Each would have a three-month appointment to assist with inventory, monitoring, and field project logistics. (Because each position is three months, these positions are the equivalent to two temporary seasonals.)
- Four Public Use Volunteers: Two would be placed in visitor centers, one in villages for visitor contact and information exchange, and one would assist with field monitoring assessments on visitation and public use.
- Eight Field Volunteers: These volunteers would assist with inventory, monitoring, and research field projects.

Budget Needs Beyond Current Level

Salary costs for the additional employees would increase budget needs by $749,000 per year. Base costs would need to increase by $500,000 per year to adequately support the inventory, monitoring, and research efforts of current staff, including climate change effects. Base cost increases would also be used to acquire or replace equipment and supplies, fund biometrician support contracts, and fund cooperative monitoring and research programs.

Alternative E would result in $220,000 one-time costs:

- $50,000 to conduct the Visitor Study in 2013
- $50,000 to upgrade the Marion Creek residences at Coldfoot for year-round use
- $120,000 to acquire a shallow-draft vessel and motor suitable for fish, wildlife, lagoons, barrier islands, and coastal habitat surveys

These one-time cost estimates do not take into account a one-time cost of $4,000,000 to acquire spatial data products covering the Refuge and adjacent North Slope landscapes. While costs would be shared with partners such as Federal and State agencies, university researchers, Arctic and Interior Landscape Conservation Cooperatives, and the North Slope Science Initiative, the actual cost to the Refuge will vary depending on the cost-share agreements and partnerships that are developed.

3.2.7 Alternative F

Alternative F would adopt the Refuge management policies and guidelines presented in Chapter 2, Sections 2.3, 2.4, and 2.5. The Refuge vision, goals, and objectives, described in Chapter 1, Section 1.6 and Chapter 2, Section 2.1 would also go in effect under Alternative F.

Although most of the general management direction described in Alternative A would continue, some specific directions and actions occurring under Alternative A would change under Alternative F. Management actions under Alternative F are discussed here.

3.2.7.1 Objectives

Alternative F would adopt all the objectives described in Chapter 2, Section 2.1.

3.2.7.2 Management Categories

Under Alternative F, lands in Arctic Refuge would be managed under the Minimal, Wilderness, and Wild River Management categories described in Chapter 2, Section 2.3. The alternative would maintain the same acreages in each of the management categories as Alternative A (current management): Minimal (10.8 million acres), Wilderness (8 million acres), and Wild River (0.5 million acres) (Map 3-6).

3.2.7.3 Specific Management by Major Issue

Wilderness

As under Alternative A, no new areas would be recommended for wilderness designation.

Wild and Scenic Rivers

As under Alternative A, no new rivers would be recommended for wild river designation. The Refuge would use existing management tools to maintain values on the Atigun, Hulahula, Kongakut, and Marsh Fork Canning rivers.

Kongakut River Visitor Management

This alternative would be the same as Alternative B, except a step-down plan would decide how to enforce compliance of special use permit conditions and existing visitor use regulations.

Group size limits would exist for commercially guided groups (7 hikers, 10 floaters). There would be no group size limits for non-guided visitors. Refuge staff would continue to recommend that non-guided visitors limit their groups to the same size as commercial groups. Guides would be limited to one group on a river at a time, and commercial service providers would have special use permits. The Refuge would conduct occasional compliance checks to determine if permit holders were complying with the terms and conditions of their permits. In the Kongakut valley, air-taxi special use permits would continue to be required to limit landings to non-vegetated surfaces only. Subject to safety concerns and weather, operators must maintain a minimum altitude of 2,000 feet above ground level flight operations with no

Map 3-6

Arctic National Wildlife Refuge

Alternative F

Management Areas

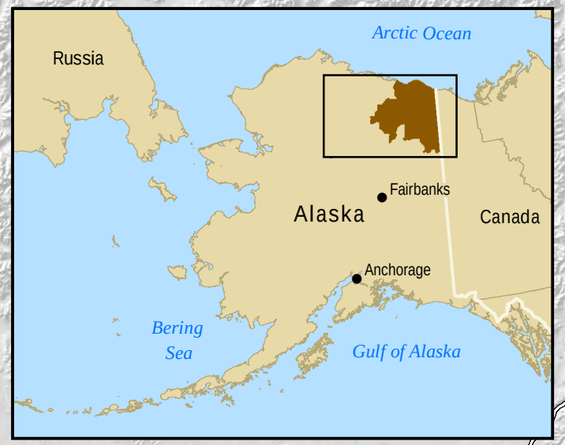
- Wild River Management
- Minimal Management
- Wilderness Management

Other Features

- Arctic Refuge Boundary
- Private Lands
- Roads
- U.S.- Canada Border

Miles
0 10 20 30 40 50 60 70 80
0 10 20 30 40 50 60 70 80
Kilometers

Alaska Albers Equal Area Conic Projection, 1983 North American Datum.



154° W 152° W 150° W 148° W 146° W 144° W 142° W 140° W

70° N 69° N 68° N 67° N

Prudhoe Bay
Kaktovik
Camden Bay
Beaufort Sea
Dalton Highway
Kongakut River
Kongakut River: Same as Alternative B, except: enforcement/compliance decided in step-down plan.
Ivishak River
Wind River
Sheenjek River
Arctic Village
Canada
Old Crow
Wiseman
Coldfoot
Venetie

intentional low flights over camps or people. Aircraft operations would continue to not be allowed to harass wildlife or interfere with Refuge visitors or subsistence users. Visitor use monitoring would occur every other year or less frequently.

Additionally, Refuge staff would revise its monitoring program of physical and social conditions to evaluate the effectiveness of management actions. Refuge staff would develop educational materials for the public with targeted messages explaining preferred practices and strategies for minimizing impacts, such as proper waste disposal practices, avoiding wildlife impacts, and alleviating crowding among groups. The Refuge would also publish schedules of proposed guided launch dates and past visitor use activity patterns that visitors could use to plan their trips. We would continue to periodically monitor campsite conditions and conduct site-specific rehabilitation of impaired and impacted areas. We would further address Kongakut River management issues in step-down planning (i.e., a Wilderness Stewardship Plan and a Visitor Use Management Plan).

3.2.7.4 Funding and Personnel Requirements

Current management programs would continue under Alternative F, and some new programs would begin. All funding and staffing changes would result from implementing Refuge management objectives (Chapter 2, Section 2.1). No additional costs would be incurred from the management actions in Alternative F. The base Refuge operational budget of $3,352,000 would continue with additions to cover the new programs, as described here.

Staffing Needs Beyond Current Level

Alternative F would require 21 additional employees and volunteers: 5 permanent or term full-time; 2 permanent or term part-time; 2 temporary seasonal; and 12 volunteers. These positions are outlined here:

- One full-time Visitor Use/Public Use Manager, GS-11/12: This position would oversee and manage the larger visitor/public use programs of the Refuge, including education and outreach programs; commercial use permitting of service providers; resource and visitor use monitoring programs; liaison and community relations for villages, organizations, and tribes; and development of various public and visitor use planning efforts.
- One full-time or term Outdoor Recreation Planner, GS-12: An experienced planner would lead the following major Refuge step-down planning efforts: Visitor Use Management Plan, Wilderness Stewardship Plan, and Comprehensive River Management Plans. Additionally, this position would likely be involved in the Refuge's Integrated Cultural Resource Management and Land Protection plans, and other step-down plans and studies identified in the management objectives. Another agency employee on detail to the Refuge could potentially fill this position.
- One full-time Law Enforcement Officer and Pilot, GS-12: This position would perform a full range of resource protection across northern Alaska refuges and adjacent Dalton Highway corridor and conduct public outreach and education regarding Federal and State conservation regulations.

- One full-time Ecologist/Interdisciplinary Scientist, GS-11/12: This position would assist with preparation and implementation of the Refuge's Ecological Inventory and Monitoring and Research plans and bring a climate change focus to the Refuge.
- One full-time or term Biological Technician, GS-5/7: This position would assist with field projects, logistics, data management, and report preparation,
- One permanent or term part-time Visitor Services Specialist, GS-5/7: This position would work in gateway communities (such as Arctic Village, Coldfoot, and Kaktovik) to provide information and guidance to commercial service providers, visiting publics, and local communities about appropriate use of the Refuge, its conservation issues and needs, and best visitor and use practices.
- One temporary intermittent Outreach/Visitor Use Specialist, GS-5/7: This position would develop multi-media products, education, and outreach materials to a full range of audiences (local, national, and international).
- Eight seasonal Biological Technicians, GS-5/7: Each would have a three-month appointment to assist with inventory, monitoring, and field project logistics. (Because each position is three months, these positions are the equivalent to two temporary seasonals.)
- Four Public Use Volunteers: Two would be placed in visitor centers, one in villages for visitor contact and information exchange, and one would assist with field monitoring assessments on visitation and public use.
- Eight Field Volunteers: These volunteers would assist with inventory, monitoring, and research field projects.

Budget Needs Beyond Current Level

Salary costs for the additional employees would increase budget needs by $749,000 per year. Base costs would need to increase by $500,000 per year to adequately support the inventory, monitoring, and research efforts of current staff, including climate change effects. Base cost increases would also be used to acquire or replace equipment and supplies, fund biometrician support contracts, and fund cooperative monitoring and research programs.

Alternative F would result in $220,000 one-time costs:

- $50,000 to conduct the Visitor Study in 2013
- $50,000 to upgrade the Marion Creek residences at Coldfoot for year-round use
- $120,000 to acquire a shallow-draft vessel and motor suitable for fish, wildlife, lagoons, barrier islands, and coastal habitat surveys

These one-time cost estimates do not take into account a one-time cost of $4,000,000 to acquire spatial data products covering the Refuge and adjacent North Slope landscapes. While costs would be shared with partners such as Federal and State agencies, university researchers, Arctic and Interior Landscape Conservation Cooperatives, and the North Slope Science Initiative, the actual cost to the Refuge will vary depending on the cost-share agreements and partnerships that are developed.

Table 3-1. Comparison of alternatives by major planning issue and budget and staff requirements.

Issue	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Issue 1: Wilderness						
Should additional Wilderness Study Areas be recommended for inclusion in the National Wilderness Preservation System, and if so, which areas?	No new wilderness recommended.	Recommend the Brooks Range Wilderness Study Area.	Recommend the Coastal Plain Wilderness Study Area.	Recommend the Brooks Range and Porcupine Plateau Wilderness Study Areas.	Recommend the Brooks Range, Porcupine Plateau, and Coastal Plain Wilderness Study Areas.	Same as Alternative A
Issue 2: Wild and Scenic Rivers						
Should additional rivers be recommended for inclusion in the National Wild and Scenic River System (NWSRS), and if so, which rivers?	No rivers recommended. Use existing management tools to maintain values on the Atigun, Hulahula, Kongakut, and Marsh Fork Canning rivers.	Recommend the Hulahula, Kongakut, and Marsh Fork Canning rivers. Use existing management tools to maintain values on the Atigun River.	Recommend the Atigun River. Use existing management tools to maintain values on the Hulahula, Kongakut, and Marsh Fork Canning rivers.	Recommend the Atigun, Kongakut, and Marsh Fork Canning rivers, and those portions of the Hulahula River managed by the Refuge.	Recommend the Atigun, Hulahula, Kongakut, and Marsh Fork Canning rivers.	Same as Alternative A
Issue 3: Kongakut River Visitor Use						
How will the Refuge manage Kongakut River visitor use to protect natural resources and visitor experience?	▪ Group size limits exist for commercially guided groups (7 hikers, 10 floaters). There are no group size limits for non-guided visitors, just recommendations. ▪ Guides limited to one group on a river at one time. ▪ Commercial service providers have Special Use permits with occasional compliance checks. ▪ In the Kongakut valley, air-taxi Special Use Permit holders are required to limit landings to non-vegetated surfaces only; subject to safety and weather, they must maintain minimum 2,000 feet above ground level flight operations with no intentional low flights over camps or people; aircraft operations cannot harass wildlife or interfere with Refuge visitors or subsistence users. ▪ Visitor use monitoring occurs every other year or less frequently. ▪ Campsite conditions are monitored periodically.	Same as Alternative A, except: ▪ Revise the interim monitoring program of physical and social conditions to evaluate the effectiveness of management actions. Plus: ▪ Develop educational materials for the public with targeted messages explaining preferred practices and strategies for minimizing impacts, such as proper waste disposal practices, avoiding wildlife impacts, and alleviating crowding among groups. ▪ Publish schedules of proposed guided launch dates and past visitor use activity patterns. ▪ Conduct site-specific rehabilitation of impaired and impacted areas. ▪ Address Kongakut River management issues in step-down planning (e.g., Visitor Use Management Plan or Wilderness Stewardship Plan), to be initiated within 2 years of Plan approval. The step-down plan(s) would include long-term monitoring protocols.	Same as Alternative B	Same as Alternative B, except: ▪ Increase efforts to educate about compliance and then enforce compliance of Special Use Permit conditions and existing visitor use regulations. Plus: ▪ Redistribute the number of groups on the river during heavy use periods (late June and mid-August) by working with commercial guides to voluntarily modify their use of the river basin throughout the season. ▪ Work with commercial air-taxi operators to avoid flight- seeing activities and to disperse commuting flight paths in and out of the Kongakut valley, subject to safe aircraft operation, inclement weather conditions, and takeoff and landing approach requirements.	Same as Alternative D	Same as Alternative B, except: ▪ A Visitor Use Management step-down plan would decide how to enforce compliance of Special Use Permit conditions and existing visitor use regulations.

Issue	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Budgetary and Staffing Needs						
Permanent Full-time Employees	22	27	27	27	27	27
Permanent Part-time	1	2	2	2	2	2
Temporary Intermittent	5	6	6	6	6	6
Temporary Seasonal	10-12	12-14	12-14	12-14	12-14	12-14
Volunteers	12	24	24	24	24	24
Base Costs	$3,352,000	$4,601,000	$4,601,000	$4,601,000	$4,601,000	$4,601,000
One-time Costs	n/a	$220,000	$220,000	$220,000	$220,000	$220,000

3.3 Comparison of the Alternatives

3.3.1 Summary of Alternatives by Major Issues

Table 3-1 compares the six alternatives by the three significant planning issues identified in scoping. The table also compares the alternatives by Refuge budgetary and staffing needs required for implementation.

3.3.2 Comparison of Old and New Management Policies and Guidelines

This discussion compares the Refuge's management policies and guidelines presented in Chapter 2, Table 2-1 (which apply to Alternatives B, C, D, E, and F) and the management direction from the 1988 Plan (that applies to Alternative A). Direct comparison of the management guidelines is difficult because the organization of the management guideline tables and levels of detail provided by various categories of actions differ substantially between the 1988 Plan and Revised Plan. For example, the 1988 Plan had very detailed descriptions of fisheries management activities and facilities, and the proposed management policy and guidance in this document (Chapter 2, Sections 2.3 through 2.5) does not. Table 3-2 provides a side-by-side comparison of the two sets of management guidelines. Wording changes that do not change management intent are not displayed. A detailed comparison of specific wording from the 1988 Plan as modified with the new direction in Chapter 2, Table 2-1 is filed in the administrative record for this Plan.

The 1988 Plan for Arctic Refuge describes five management categories: Intensive, Moderate, Minimal, Wild River, and Wilderness. The 1988 Plan adopted three of the management categories for the management of Refuge lands: Minimal, Wild River, and Wilderness. The current Plan describes management direction for the same five categories, and lands will be assigned to the same three categories: Minimal, Wild River and Wilderness management. None of the alternatives in this Revised Plan assign Refuge lands to the Intensive or Moderate Management categories. Lands recommended in this Plan for wilderness will be managed in the Minimal Management category. Rivers recommended for wild river designation will be managed according to the current underlying management category: Minimal Management for the Atigun, Marsh Fork Canning, and lower Hulahula rivers; and Wilderness Management for the Kongakut and upper Hulahula rivers. Only if Congress were to designate recommended lands to the National Wilderness Preservation System or rivers to the NWRS would management shift to the Wilderness or Wild River Management categories.

Table 3-2 compares major differences—by management category—between the 1988 Plan and the proposed management direction in this Revised Plan. If a specific management category is not identified, the new direction would apply to all management categories. A Minimum Requirements Analysis is required for administrative activities conducted in areas under Wilderness Management. Table 3-3 explains key differences between Wilderness and Minimal Management per the proposed new management direction in Chapter 2.

Table 3-2. Differences between current management direction in the 1988 Arctic Refuge Comprehensive Conservation Plan (Alternative A) and the new management direction proposed in this Plan (including Alternatives B, C, D, E, and F).

Management Topic	Alternative A: 1988 Plan	Alternatives B, C, D, E, & F: Revised Plan	Comments
Research and Management Facilities: Administrative Facilities	Permitted in Minimal, Moderate and Intensive Management	May be allowed in Minimal, Moderate, and Intensive Management	Current guidelines in Revised Plan is more restrictive
Research and Management Facilities: Fish Weirs	Wild River Management: May be permitted on a case-by-case basis subject to NEPA compliance and Refuge compatibility determination, except permanent facilities not normally permitted	May be authorized in Wild River Management	1988 Plan more restrictive in Wild River Management Category for permanent facilities
Habitat Management: Using mechanical means such as cutting, crushing, or mowing of vegetation; water control structures; fencing; artificial nest structures	Compared with Habitat Improvement, Mechanical Manipulation: May be permitted in Minimal Management subject to appropriate Plan revision	Not allowed in Minimal Management with exceptions	For exceptions, see sections 2.3.4 and 2.4.20
Habitat Management: Using mechanical means such as cutting, crushing, or mowing of vegetation; water control structures; fencing; artificial nest structures	Compared with Minor Habitat Improvements such as: *nest devices and temporary habitat actions* In Wilderness, Wild River, and Minimal Management: may be permitted subject to NEPA compliance, and Refuge compatibility. For Wilderness only, a Wilderness MRA is also required.	Wilderness, Wild River and Minimal Management: Not allowed with exceptions	For exceptions, see sections 2.3.3, 2.3.4, 2.3.5, and 2.4.20
Habitat Management: Using chemicals to remove or control non-native species (compared with chemical habitat modification for fishery management)	May be permitted on case-by-case basis subject to NEPA compliance and Refuge compatibility. In Wilderness and Wild River categories, permanent facilities not normally permitted	May be allowed on Refuge lands subject to NEPA compliance, Refuge compatibility, regional office review, and approval of a pesticide-use proposal	See sections 2.4.11.1 and 2.4.12.8, Refuge Manual 7 RM 14 and Administrative Manual 30 AM 12

Management Topic	Alternative A: 1988 Plan	Alternatives B, C, D, E, & F: Revised Plan	Comments
Fishery Enhancement Facilities	Minimal Management — May be permitted on a case-by-case basis subject to NEPA compliance and Refuge compatibility	Minimal Management — May be authorized (text states temporary facilities only).	See section 2.3.12.11
Temporary Facilities	May be permitted, subject to reasonable regulations under the provisions of ANILCA Section 1316; tent platforms require a special use permit	May be authorized in Wilderness (a permit is required) May be allowed in other categories	This Plan requires permits only in designated wilderness
Other Domestic Animals (including horses, mules, llamas, etc.)	Permitted for traditional activities, subject to reasonable regulation	Allowed (certified weed-free feed required)	Certified weed-free feed required for all alternatives in this Plan but not required in 1988 Plan
Motorized Transportation: Snowmobiles	Permitted for traditional activities on or off designate trails with adequate snow cover, subject to reasonable regulation. Machines must weigh under 1000 pounds and have an overall width of less than 46 inches driven by tracks and steered by a ski in contact with the snow	Allowed	Current regulations in 50 CFR 36.2 are silent on width restriction
Off-road Vehicle (All-Terrain Vehicles): Includes air boats and air-cushion vehicles	Not permitted for public use in Wilderness, Wild River, and Minimal Management Moderate and Intensive Management: Permitted only on designated routes or areas; air boats and air-cushion boats not permitted	Not allowed, with exceptions, in Wilderness, Wild River, and Minimal Management May be authorized in Moderate and Intensive Management	Air boats and air-cushion boats not permitted in Moderate and Intensive Management in 1988; now, "may be authorized"
Helicopters	May be permitted but only by special use permit	Not allowed for recreational access	This Plan provides more detail

Management Topic	Alternative A: 1988 Plan	Alternatives B, C, D, E, & F: Revised Plan	Comments
All Weather Roads	Not permitted except according to Title XI of ANILCA in Wilderness, Wild River, and Minimal Management Moderate and Intensive Management: Not provided; may be permitted subject to Title XI of ANILCA	Not allowed in Wilderness, Wild River, and Minimal Management May be allowed in Moderate and Intensive Management	1988 Plan more restrictive in Moderate and Intensive Management
Unimproved Roads	Not permitted except according to Title XI of ANILCA in Wilderness, Wild River, and Minimal Management Not provided; may be permitted subject to Title XI of ANILCA in Moderate and Intensive Management	Not allowed in Wilderness, Wild River, and Minimal Management May be allowed in Moderate and Intensive Management	1988 Plan more restrictive in Moderate and Intensive Management
Constructed and Maintained Airstrips	Primitive airstrips may be designated; no new construction allowed	Not allowed in Wilderness, Wild River, and Minimal Management May be allowed in Moderate and Intensive Management	1988 Plan more restrictive in Moderate and Intensive Management
Visitor Contact Facilities	Not provided in Wilderness, Wild Rivers, Minimal, and Moderate Management	Not allowed in Wilderness, Wild River and Minimal Management May be allowed in, Moderate and Intensive Management	
Administrative Field Camps: Temporary Facilities for Habitat/Population Management	Permitted in Minimal, Moderate, and Intensive Management	May be allowed in Minimal, Moderate, and Intensive Management	Revised Plan more restrictive for Minimal, Moderate, and Intensive Management
Administrative Field Sites: Permanent Facilities for Habitat/Population Management	Permitted in Minimal, Moderate, and Intensive Management	Use of existing sites allowed including replacement of existing facilities as necessary; new sites may be allowed in all categories	Current guidelines slightly more restrictive for Minimal, Moderate, and Intensive Management

Management Topic	Alternative A: 1988 Plan	Alternatives B, C, D, E, & F: Revised Plan	Comments
Sand and Gravel	Not permitted in Moderate Management	May be authorized in Moderate Management	
Commercial Timber and Firewood Harvest	Not permitted in Wild River and Minimal Management	May be authorized in Wild River and Minimal Management, but only if necessary to accomplish objectives in approved FMP	1988 Plan more restrictive

Table 3-3. Key differences between Minimal and Wilderness Management categories

Activity	Minimal Management	Wilderness Management
Management of Area	Subject to ANILCA	Managed under Wilderness Act, the exceptions provided by ANILCA, and the Service's Wilderness Stewardship Policy
Motorized Generators and Water Pumps	Can be allowed	Not allowed
Purposes	Subject to purposes of the Refuge	Wilderness Act purposes in addition to Refuge purposes
Granting Rights-of-way for Transportation or Utility System	Could be authorized through a Plan amendment changing the management category in the affected area	Requires Presidential and congressional approval
Refuge Environment	Minimal or no evidence of human modifications or changes	Retain its primeval character and influence
Mechanized and Motorized Equipment	May be allowed when overall impacts are temporary or its use furthers management goals. Minimum Requirements Analysis is not required	Such equipment would be subject to a Minimum Requirements Analysis or where ANILCA provides exceptions
Compatible Economic Activities	May be allowed if evidence of activities doesn't last past the season of use (except cabins)	Generally limited to activities that facilitate solitude and a primitive, unconfined type of recreation

3.4 Evaluation of Alternatives

3.4.1 Evaluation Criteria

The alternatives described in this chapter were evaluated against six criteria based on existing laws, policies, and guidelines. These criteria were selected as being the most important factors for evaluating the alternatives discussed in this Plan and for selecting the best option for Arctic Refuge.

- How well does the alternative satisfy the purposes of Arctic Refuge and other provisions of ANILCA?
- How well does the alternative satisfy the mission of the Refuge System?
- How well does the alternative contribute to meeting the goals of the Refuge?
- How does the alternative address the issues and concerns identified during scoping?
- How well does the alternative maintain biological integrity, diversity, and environmental health at the Refuge and ecosystem scales and contribute to managing the Refuge as part of an ecosystem?
- How well does the alternative promote relationship building, long-term partnering, and sharing of resources in the region?

The differences among the alternatives are relatively small. With few exceptions, each action alternative (Alternatives B through F) varies only slightly from the current management direction described under Alternative A. Therefore, the differences between Alternatives B through F in meeting the evaluation criteria are minor. Alternatives that would clearly not meet the purposes of the Refuge or the missions of the Refuge System and the Service were not developed. Scoping did not identify any major issues that would result in substantial changes in management direction for Arctic Refuge.

3.4.2 Response to Refuge Purposes

An important criterion used in evaluating the alternatives is the degree to which the alternatives achieve the purposes of Arctic Refuge as mandated by PLO 2214 and ANILCA (Chapter 1, Section 1.4) and other mandates found in law and policy (Chapter 1, Sections 1.2.3 and 1.3, and Appendix A).

Alternatives B through F would adopt the management objectives and policy direction described in sections 2.1 through 2.5 of this chapter. These alternatives support the Refuge purposes to preserve wildlife, wilderness, and recreational values; conserve fish and wildlife populations and habitats in their natural diversity; provide for continued subsistence opportunities; preserve water quality and quantity; and meet international treaty obligations.

Alternatives B, C, D, and E could provide a higher level of protection for wilderness values and the conservation of habitats by recommending additional lands for wilderness status. Water quality and other river values could achieve a higher level of protection for those rivers recommended for inclusion in the NWSRS. Alternative E recommends more lands and waters for these special designations than any of the other alternatives.

Under all alternatives, Arctic Refuge would continue to provide hunting, fishing, trapping, wildlife observation and photography, and education opportunities to learn about wildlife and habitats on Refuge lands. Alternatives B, C, D, and E have the potential to limit opportunities

for commercial use by guides and transporters to a greater degree than the current management situation under Alternative A.

3.4.3 Response to National Wildlife Refuge System Mission

All alternatives discussed in this Plan were developed to meet the mission of the Refuge System. Arctic Refuge plays a key role in conserving migratory birds, shorebirds, and waterfowl; salmon, Arctic char, grayling, and a variety of other fish species; Western Arctic and Porcupine caribou herds; and polar bears. Many other species such as grizzly bear, black bear, moose, Dall's sheep, muskox, wolf, and wolverine use the Refuge year-round. All the alternatives, in concert with the management direction described in sections 2.3, 2.4, and 2.5 of this chapter, would continue to protect these species and their habitats in perpetuity.

3.4.4 Response to Refuge Goals

The goals and objectives for Refuge management described in Section 2.1 reflect the purposes of the Refuge and the missions of the Refuge System and the Service. All the alternatives A through F would achieve the nine Refuge goals, although the alternatives differ in the specific management actions that would be employed to achieve the goals. All six alternatives conform with law and policy. Regardless of which alternative is selected, the Service is committed to supporting the Refuge's goals and objectives, and will monitor each of them for achievement.

All alternatives promote close working relationships with the State of Alaska, local communities, and other public and private partners. All alternatives discussed in this Plan support subsistence, recreational, educational, and commercial activities and would protect fish and wildlife resources and habitats. All alternatives would protect water resources and cultural resources.

Ecological condition, visitor experience, subsistence opportunities, and the tangible and intangible values of the Refuge would be maintained or improved if any of the Alternatives B through F, including all of their associated objectives and management guidelines, were to be selected.

3.4.5 Response to Issues

This section summarizes how the alternatives address the major planning issues identified during internal and public scoping.

3.4.5.1 Wilderness

The six alternatives explore different ways the Refuge can achieve its purpose of preserving wilderness values. Alternatives A and F would not recommend any additional lands for wilderness designation and would rely on current management (Alternative A) or the management policy and guidelines presented in sections 2.4 and 2.5 (Alternative F) to maintain wilderness character and values for Refuge lands and waters not currently designated as wilderness. Alternatives B through E would recommend different combinations of WSAs for inclusion in the National Wilderness Preservation System (NWPS), with Alternative E recommending nearly all currently undesignated lands.

The act of recommending wilderness would not change the underlying management category, nor would it necessarily result in congressional designation of wilderness. Should Alternatives B, C, D, or E be selected, any lands recommended for wilderness designation would continue to be managed according to the Minimal Management category outlined in Section 2.3.3 and the management objectives presented in Section 2.1. Only if Congress decides to designate recommended lands for inclusion in the NWPS would the underlying management category change from Minimal Management to Wilderness Management (section 2.3.4), at which time those lands would assume the additional purposes of the Wilderness Act and be managed in accordance with the Wilderness Act and associated ANILCA provisions.

3.4.5.2 Wild and Scenic Rivers

The six alternatives explore different ways the Refuge can manage the waters and values for rivers found suitable for inclusion in the NWSRS. Alternatives A and F would not recommend any rivers for inclusion in the NWSRS and would rely on current management (Alternative A) or the management policy and guidelines presented in Sections 2.4 and 2.5 of Chapter 2 to maintain each river's outstandingly remarkable values (ORVs). Under Alternatives B, C, D, and E, different combinations of rivers would be recommended for the NWSRS. Alternative E would recommend the largest number of rivers and the most river corridor acreage of all the alternatives.

Any rivers recommended through the record of decision of the Revised Plan would continue to be managed according to Minimal or Wilderness Management categories (Sections 2.3.3 and 2.3.4) and the management objectives listed in Section 2.1. Only if Congress were to designate some or all of the recommended rivers would the underlying management category convert to Wild River Management (Section 2.3.5).

3.4.5.3 Kongakut River Visitor Management

The six alternatives build upon each other to offer different approaches to managing visitor use in the Kongakut River Valley. Alternative A would maintain current management, which includes special use permit conditions, occasional compliance checks and monitoring of resource conditions and visitor experience, and group size limits for commercial groups. Alternatives B and C would retain all current management and add the following activities: increase education and outreach; publish a schedule of guided launches; conduct site rehabilitation; and address additional Kongakut River visitor management in the context of a Refuge-wide step-down plan. Alternative D would include all the management activities identified in Alternatives A and B, plus: increase permit compliance efforts; work with guides to reduce users during peak periods; and ask air-taxis to disperse flight paths. A Refuge-wide step-down plan would address remaining visitor use and resource issues along the Kongakut River in the context of such issues throughout the Refuge. Alternative E is identical to Alternative D except the Refuge would commit to initiating the step-down planning effort within two years of the record of decision for the Plan. Alternative F would be most similar to Alternative B with the following two exceptions: 1) enforcement and compliance would be decided in a step-down plan, and 2) the step-down plan would be initiated within two years of the record of decision for the Plan.

3.4.6 Response to Biological Integrity and Ecosystem Management

Service policy (601 FW 3) provides refuge managers with direction for assessing biological integrity, as well as maintaining and restoring biological integrity, diversity, and environmental health. Alternatives B through F, in concert with the management direction described in sections 2.4 and 2.5 of this chapter, would support the Service's policy on biological integrity. Should Alternative A be selected, the Refuge would have to comply with policy 601 FW 3, but the management direction adopted under this alternative (i.e., the management direction in the 1988 Plan) does not spell out how to achieve the policy.

The National Wildlife Refuge System Improvement Act of 1997 initiated an ecosystem approach to refuge management (Appendix A). Ecosystem management acknowledges that all living organisms (including people and their communities), the physical environment, and the ecological processes that sustain them are interconnected. A given ecosystem can be described as the intersection of natural forces, social relations, and the full range of meanings and values that people assign to the landscape (Williams and Patterson 1999). Ecosystems are not limited by land ownership or the boundaries of conservation units and human communities. Hence, Refuge planning and management should always take into account surrounding public and private lands, strive to maintain existing conservation partnerships, and seek opportunities to work with new partners. All the alternatives proposed in this Plan would support these principles of ecosystem management and contribute to maintaining the health of intact ecosystems in Alaska.

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