

Appendix I

Wild and Scenic River Review

I. Wild and Scenic River Review

The Arctic National Wildlife Refuge (Refuge, Arctic Refuge) is completing a Wild and Scenic River Review as part of this revision of the Comprehensive Conservation Plan (Plan, Revised Plan). The Wild and Scenic Rivers Act requires that such a study be completed whenever Federal agencies revise their land use plans. The process consists of several steps, including inventory, eligibility evaluation, suitability study, and potential congressional designation.

The first two steps are to inventory the Refuge's rivers, and then determine which of the rivers meet the criteria for eligibility (i.e., that they are free flowing and contain one or more outstanding river-related values (as defined in the Wild and Scenic Rivers Act). The findings are presented in this appendix in the Eligibility Report.

The third step, the suitability study, determines whether each eligible river or river segment would be a worthy addition to the National Wild and Scenic Rivers System. Preliminary suitability determinations are included in this appendix in the draft Suitability Report. The final decision on the suitability of a given river segment will be made in the record of decision for the Revised Plan.

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U.S. Fish & Wildlife Service

Wild and Scenic River Eligibility Report

Arctic National Wildlife Refuge

Ivishak River - a Designated Wild River

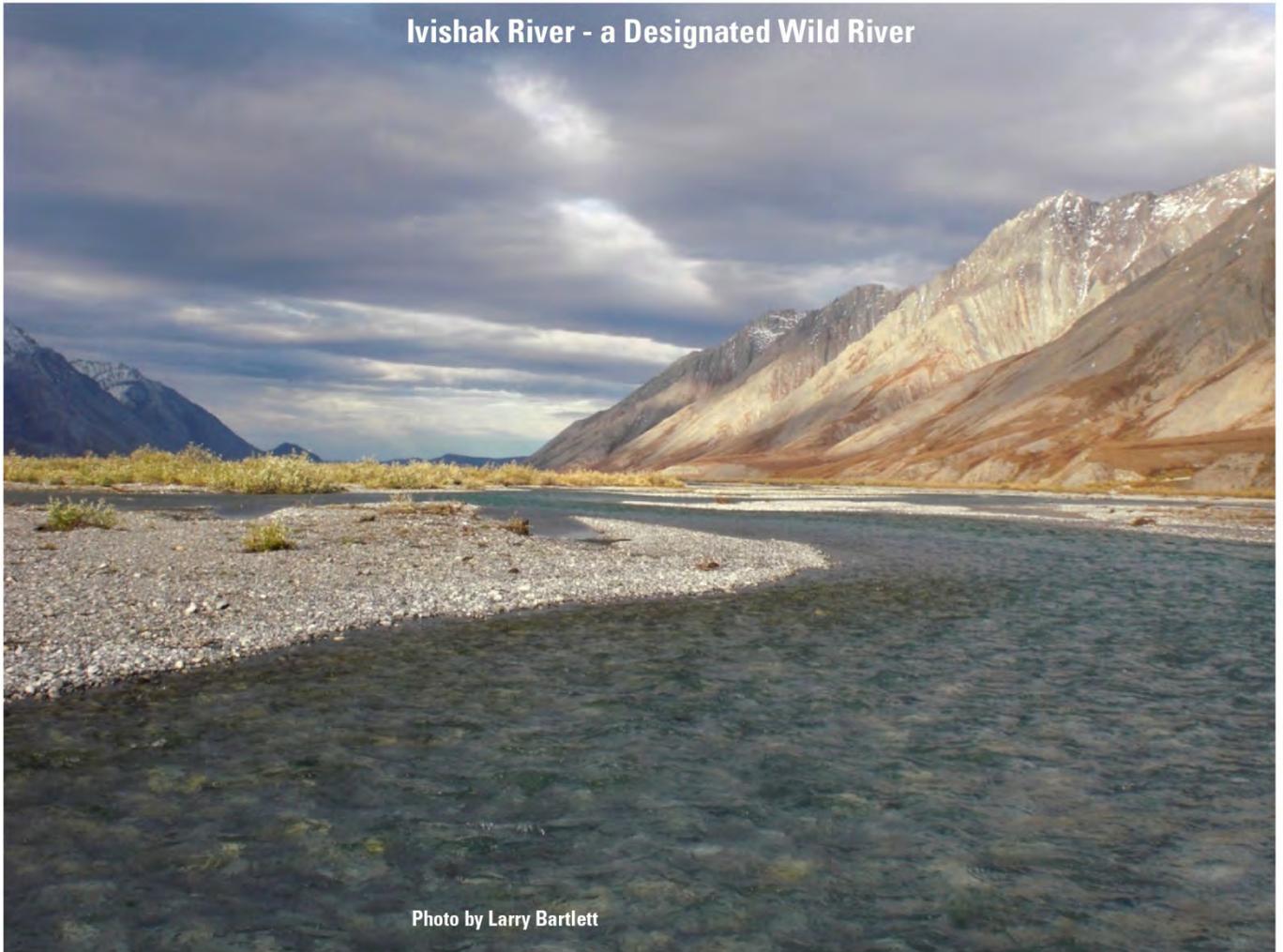


Photo by Larry Bartlett

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1. Introduction

The U.S. Fish and Wildlife Service (Service), Arctic National Wildlife Refuge (Refuge, Arctic Refuge), is conducting an inventory and analysis of Refuge rivers as part of the revised Comprehensive Conservation Plan (Plan, Revised Plan) planning process. The review of rivers in the planning area will determine whether rivers or segments of rivers are “eligible” and “suitable” for consideration in the National Wild and Scenic Rivers System (NWSRS). Wild and scenic river considerations are a required element of comprehensive conservation plans and are conducted in accordance with the refuge planning process outlined in 602 FW 3 3.4 C (1) (c) and (d) (Service 2000), including public involvement and National Environmental Policy Act compliance. The results of the eligibility phase are reported herein.

The Wild and Scenic Rivers Act (Public Law 90-542, as amended) establishes a method for providing Federal protection for certain free-flowing rivers and preserving them and their immediate environments for the use and enjoyment of present and future generations. The function of the Wild and Scenic River Review is to inventory and study the rivers and water bodies within the boundary of the Refuge to determine whether they merit inclusion in the NWSRS.

The act requires us to consider all river segments that are in the planning area and/or listed in the Nationwide Rivers Inventory (National Park Service 2008). The NRI is maintained by the National Park Service (NPS) and lists more than 3,400 free-flowing river segments in the United States that are believed to possess one or more “outstandingly remarkable” natural or cultural values judged to be of more than local or regional significance.

“In all planning for the use and development of water and related land resources, consideration shall be given by all federal agencies involved to potential national wild, scenic and recreational river areas, and all river basin and project plan reports submitted to the Congress shall consider and discuss any such potential. The Secretary of the Interior and the Secretary of Agriculture shall make specific studies and investigations to determine which additional wild, scenic and recreational river areas within the United States shall be evaluated in planning reports by all federal agencies as potential alternative uses of the water and related land resources involved.”

1.1 Wild and Scenic Rivers Act of 1968

The Wild and Scenic Rivers Act was enacted by Congress in 1968 with the realization that, *“the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.”* Rivers that fall under this designation have to meet criteria of being free-flowing (Section 16(b) *“existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway”*) and possessing at least one outstandingly remarkable values (ORV): scenic, recreational, geologic, fish, wildlife, historic, cultural, or other. The act provides protection for included river segments so they are *“preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.”*

Rivers and river segments designated under the act are protected and managed to maintain their free-flowing character and ORVs that led to designation. Section 10 of the act mandates, *“each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values.”* Protections put in place for designated rivers are intended to protect and/or enhance the river at its current state. If a river or segment is added to the NWSRS, a specific plan based on the characteristics of the river or segment corridor would be created.

Under the authority of Section 5(a) of the act, the act has been amended to add rivers to the NWSRS and to require additional rivers and river segments to be studied for potential inclusion in the system. Enacted in 1980, the Alaska National Interest Lands Conservation Act (ANILCA) designated numerous rivers throughout Alaska as wild rivers, including the Ivishak, Sheenjek, and Wind Rivers (within the Refuge boundary). ANILCA also required that the Porcupine River be studied for potential designation. In 1985, the NPS completed an eligibility and suitability report for the Porcupine River and found that although the Porcupine River was eligible for the NWSRS, it was not suitable for inclusion (NPS 1984).

1.2 Steps in the Wild and Scenic River Process

The study and designation of watercourses under the act follows a multi-step process that occurs sequentially (eligibility and suitability are determined; a recommendation is made to the U.S. Department of the Interior; the President approves the recommendation and forwards it to Congress for action). The Refuge is examining the eligibility and suitability of waters during its comprehensive conservation plan revision process. The eligibility portion begins with an inventory of all potential rivers (Section 1.5) utilizing multiple sources (including public input) to identify all potential rivers. These rivers are then evaluated to determine if they meet the criteria set forth in the act. The rivers must be free-flowing and possess one or more ORVs (Section 2). Generally, the area surveyed for ORVs includes one-half mile on each side of the river (ANILCA 605 and 606). Rivers determined eligible are then classified as one of three tentative categories (wild, scenic, or recreational), depending on the level of development in the river corridor. This report covers these steps and details the reasoning behind finding a river segment eligible (Appendices A and B). A separate report studies and determines the preliminary suitability of rivers found eligible (see “Wild and Scenic River Suitability Report” in this appendix). The final decision on the suitability of a given river segment will be made in the record of decision (ROD) for the Refuge Revised Plan.

1.3 Protection of Eligible Rivers

Rivers determined eligible in this report are subject to protection until the suitability stage is finalized at the ROD. Following suitability determinations, river segments determined non-suitable return to the underlying management prescribed in the effective Plan, while suitable rivers are managed to maintain their free-flowing character and ORVs per the alternative selected in the Final Revised Plan.

1.4 Refuge Wild and Scenic Evaluation Team

The interdisciplinary study team is made up of specialists covering resources and programs under the Refuge's jurisdiction. This team compiled the initial inventory list, outlined resource concerns, determined and executed the evaluation process, and assessed ORVs based on knowledge of their assigned resource and/or program. The eligibility study relies on data and professional judgment, making the collective knowledge and experience of this team critical to the eligibility determination.

Table 1-1. Wild and Scenic River Review Team

Team Member	Title
Heather Bartlett	Law Enforcement Officer/Pilot – Team Leader
Alan Brackney	Wildlife Biologist/GIS Specialist
Jennifer Reed	Park Ranger/Visitor Services Specialist
Sharon Seim	Natural Resource Planner

1.5 Inventory Determination and Results

The team identified a comprehensive list of all named Refuge rivers and river segments from the U.S. Geological Survey (USGS) Geographic Names Information System and the National Hydrography Dataset (USGS 2010). A total of 160 named rivers and creeks were identified, all of which are free-flowing.

With 160 named rivers and creeks identified on the Refuge, and a general lack of information about most of these named waterways, the team decided to focus on a subset of these rivers at this time. Reviewing a subset does not preclude other waters from being reviewed at a future date, nor does it preclude the same waters from being reviewed again if they are found to not be eligible, suitable, and/or recommended for designation. The act recognizes that river values are not static in time and therefore allows for additional reviews to occur either at a particular site or across a conservation unit. At this time, the intent is not a comprehensive and final Wild and Scenic River Review.

The act was established to protect free-flowing rivers against threats such as damming, water pollution, and natural resource extraction, but it also provides land managers mechanisms to protect resources and values. Due to the isolated location of the Refuge and the difficulty in accessing the Refuge's lands and waters, the issue with the greatest potential to affect the river-related ORVs is visitor use. Therefore, visitor use is the greatest management concern. For these reasons, the team decided to focus on named

waters with visitor use and reliable flow. (The team did not review intermittent or unnamed waters.) The team used data about commercially supported visitor use (visitors that access the Refuge using a commercial operator—an air service and/or a guide) because data about independent visitor use (i.e., people who access the Refuge by private means—private airplane, via foot, etc.) is not available.

The data revealed that 32 waters receive commercially-supported visitor use, but 12 of those 32 waters receive visitor use that is not river related (e.g., mountaineering access, hunting outside the river corridor, etc.). Because the act states that ORVs must be directly river related, the team decided not to evaluate eligibility for those 12 waters. Therefore, 20 waters were identified as having river-related visitor use and were evaluated for eligibility (Table 1-2, Map 1-1).

Table 1-2. Reviewed Rivers

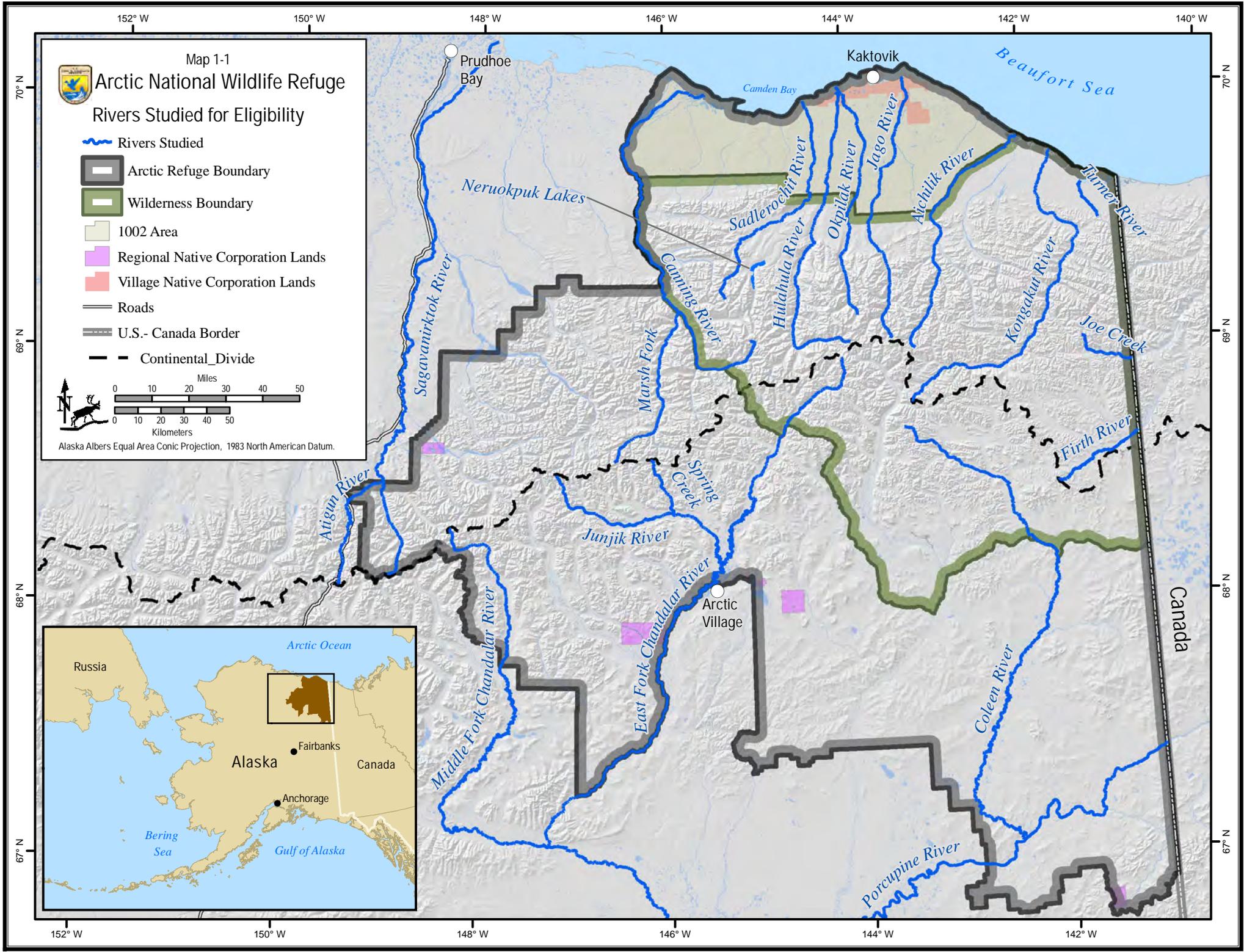
▪ Aichilik River	▪ Joe Creek
▪ Atigun River	▪ Junjik River
▪ Canning River	▪ Spring Creek
▪ Marsh Fork Canning River	▪ Kongakut River
▪ Coleen River	▪ Okpilak River
▪ East Fork Chandalar River	▪ Sadlerochit River
▪ Middle Fork Chandalar River	▪ Neruokpuk Lakes (Peters and Schrader Lakes)
▪ Firth River	▪ Porcupine Rivers
▪ Hulahula River	▪ Sagavanirktok River
▪ Jago River	▪ Turner River

1.6 Other Agency and Public Input

The Refuge initiated a formal comment period for the Revised Plan on April 7, 2010, that ended on June 7, 2010. The Service received 94,061 responses, consisting of 1,480 substantive original responses and 92,581 form letters. Of these, 54 mentioned wild and scenic rivers. A majority of comments regarding wild and scenic rivers expressed either support or opposition for the study of specific rivers to designate as part of the NWSRS. Several comments referred to personal experiences on specific rivers and pointed out particular characteristics as reasons why such rivers should or should not be considered for designation. Multiple river specific comments were also generated by the public in regard to an increase in visitor use, watershed protection, physical and social setting character, development, wilderness character, and resource protection.

Comments opposing designation asserted that rivers in the Refuge receive adequate protection under Refuge mandates and policies. Many commenters indicated that the focus for wild and scenic river designation should be on rivers outside of designated wilderness. Others indicated wild and scenic river designations could affect subsistence activities. A few comments were made regarding legal authority to regulate or manage uplands in the river corridors.

Comments supporting wild and scenic river designation pointed out unique characteristics of specific rivers (e.g., ramparts on the Porcupine River), as well as the wildlife supported by the



river systems, and recommended that the Revised Plan outline protective measures for wild and scenic river characteristics and values, especially those threatened with increased visitor use or development. Several other characteristics, ranging from cultural and historical significance to bioacoustics of specific rivers, were specified as criteria for designation. Many commenters recommended an inventory of all rivers in the Refuge to identify unique characteristics and values, as well as published methods and selection criteria for determining wild and scenic river designation.

Others commented on the importance of management approaches to maintain the integrity and purposes of designated rivers, and that these should be outlined in the Revised Plan.

Many comments provided ideas about how to gather information about potential wild and scenic rivers on the Refuge. For example, some comments indicated that tribal watershed management could provide important information regarding river management. Others pointed out the importance of continued monitoring of waters in the Refuge for water quality and quantity.

2. Eligibility Criteria

2.1 Determination of Free-Flowing

The term “free-flowing” is defined as:

“Existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway....”

2.2 Outstandingly Remarkable Values and Region of Comparison

Section 1(b) of the act identifies outstandingly remarkable values (ORVs) in the following manner:

“It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.”

While the spectrum of resources that may be considered is broad, ORVs must be directly river related. They should:

1. Be located in the river or on its immediate shore lands (within one-half mile on either side of the river);
2. Contribute substantially to the functioning of the river ecosystem; and/or
3. Owe their location or existence to the presence of the river.

2.2.1 Defining ORVs

The Refuge evaluated the seven ORVs mentioned in the act: scenic, recreational, geologic, fish and wildlife, historic, and cultural or some other similar value. The team clearly defined each ORV in advance of the eligibility evaluation to encourage an unbiased assessment. To provide consistency with other wild and scenic river reviews across the nation, the team looked at ORV definitions developed by other agencies and guidance provided by the Interagency Wild and Scenic Rivers Coordinating Council. The council offers eligibility criteria for establishing the presence of an ORV but does not specifically define what each ORV means (Interagency Wild and Scenic Rivers Coordinating Council 1999).

Both the U.S. Forest Service (U. S. Forest Service 2006) and the Bureau of Land Management (Bureau of Land Management et al. 1992) have developed a standard set of definitions for the seven ORVs identified by the act. The Bureau of Land Management definitions sometimes reference their agency policy, whereas definitions from the U.S. Forest Service are not tied to policy. In the State of Utah, Federal land managers took these definitions one step further (Bureau of Land Management et. al. 1996). They developed sub-definitions (also called “components”) for each ORV and explained how each sub-definition would be rated.



Map 2-1

Arctic National Wildlife Refuge

Regions of Comparison for Wild & Scenic River Eligibility Analysis

A

Arctic Refuge divided into North and South Slopes



B

Interior Yukon River Basin



C

Native Alaskan Language Groups on the Arctic Slope and Upper Yukon Basin

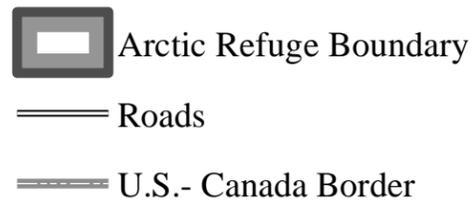


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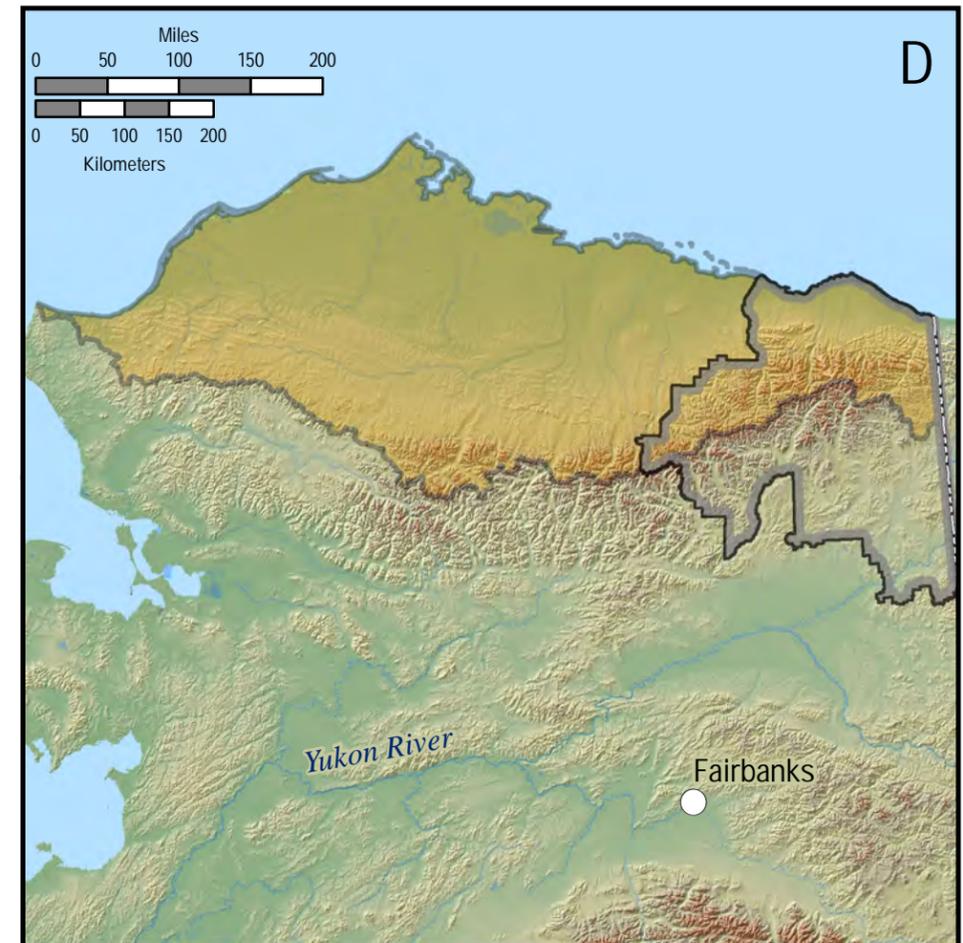
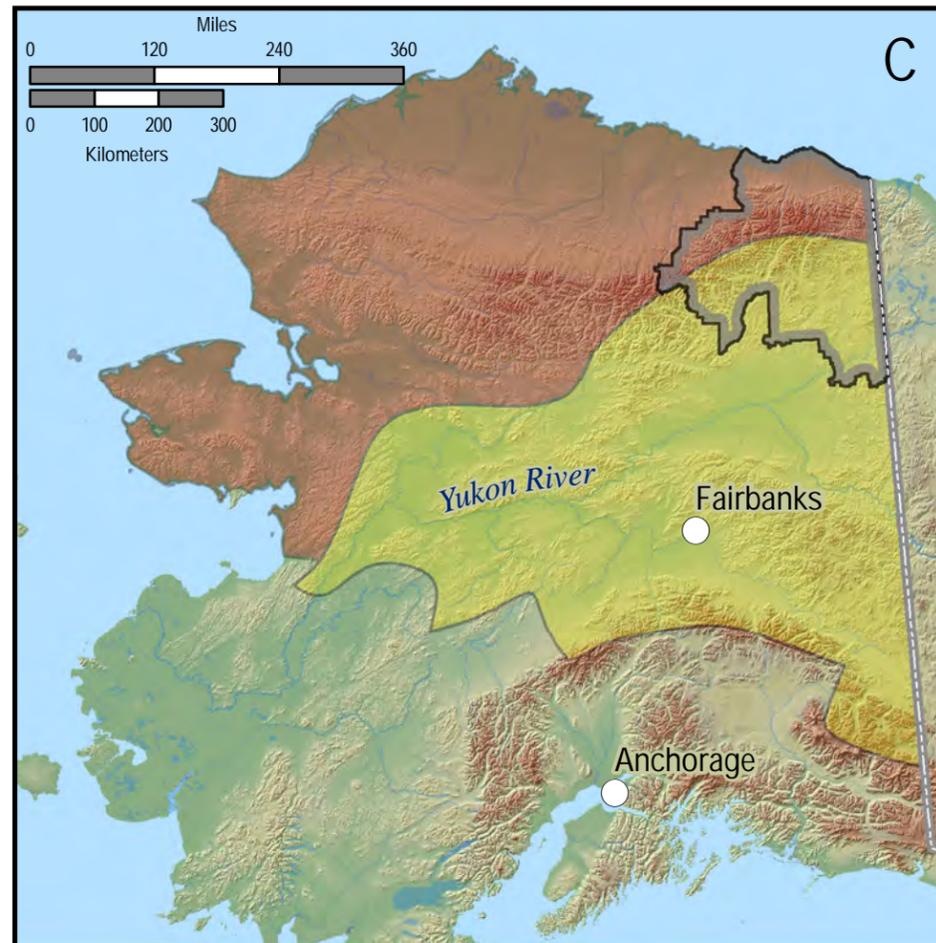
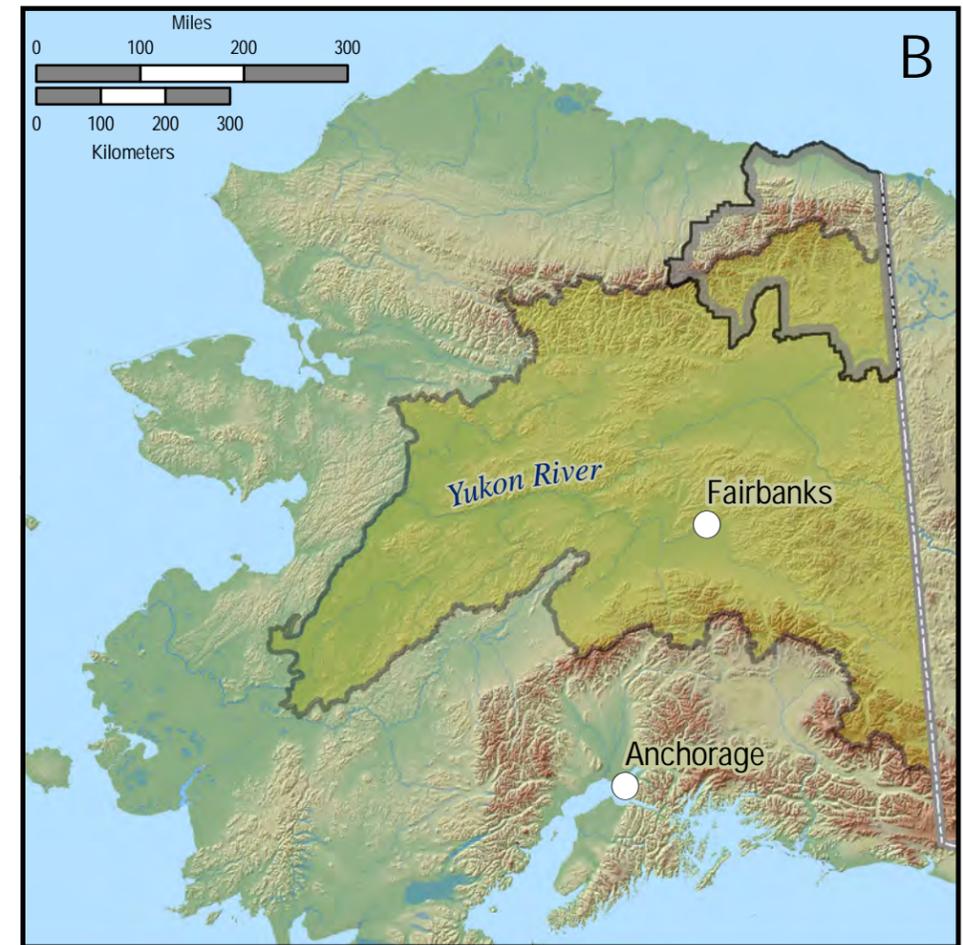
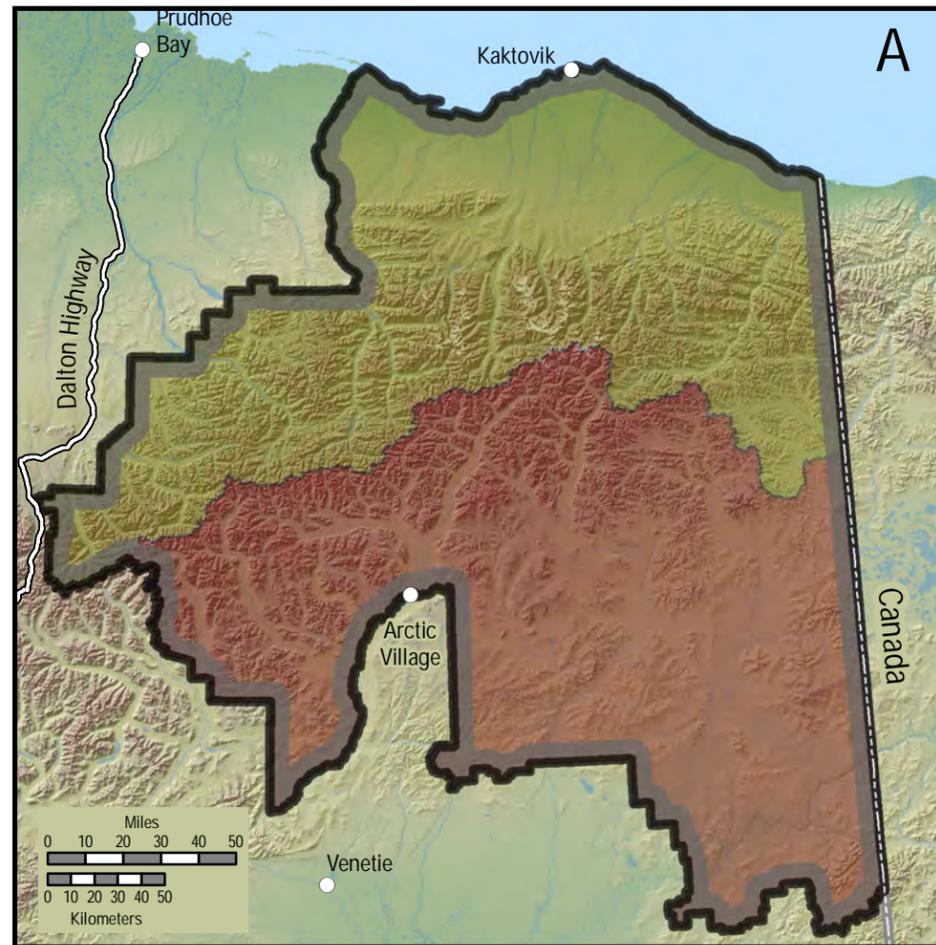
Arctic Slope of Alaska



Other Features



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



For the Refuge eligibility study, definitions and components were created for each ORV specific to Alaska resources and are included as Appendix A of this document.

2.2.2 *Defining Region of Comparison*

The next step in the process was to determine what region of comparison (ROC) would be used to evaluate each river. The Interagency Wild and Scenic Rivers Coordinating Council guidance says the ROC is not fixed and that it should provide for meaningful comparative analysis (Interagency Wild and Scenic Rivers Coordinating Council 1999). The ROC should not be so large that no river would be eligible or so small that every river would be eligible. The guidance also says the ROC does not need to be the same for each ORV. Each ORV was reviewed separately and evaluated to determine a reasonable ROC (Appendix A, Map 2-1).

For example, the scenery on the Refuge is drastically different on the north side (north of Continental Divide) versus the south side of the Brooks Range. Each ORV was reviewed separately and evaluated to determine a reasonable ROC. Scenery north of the Brooks Range is drastically different in form, line, color, and texture than scenery south of the Brooks Range. Due to this dramatic variation, two ROCs were selected for the scenic ORV.

Conversely, recreation occurs across the entire Refuge in generally the same manner (e.g., bush planes are required for access; there are no roads or trails directing travel to specific locations; the entire Refuge is extremely remote; commercial operators report visitation the same way across the Refuge). Therefore, the Refuge would serve as the Recreational ROC. The ORV definitions follow for the individual ROCs.

2.3 Potential Classifications

After a river is determined to be eligible, it must be classified using the definitions in the act. Classifications are based on the amount of development and access on and around the immediate shorelines of the river. Section 2(b) of the act defines the classifications of wild and scenic rivers in the following manner:

“Every wild, scenic or recreational river in its free-flowing condition, or upon restoration to this condition, shall be considered eligible for inclusion in the National Wild and Scenic Rivers System and, if included, shall be classified, designated, and administered as one of the following:

*1) **Wild river areas** – Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.*

*2) **Scenic river areas** – Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.*

*3) **Recreational river areas** – Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.”*

The classification assigned at this stage is preliminary and can be changed during the suitability study.

3. Eligibility Study

ORV Assessment

Each member of the team gathered information on each of the 20 rivers, whether narrative (qualitative), numerical (quantitative), or a combination thereof, and then presented their research to the full team. In many—if not all—cases, other team members identified additional resources and datasets. In the end, data was gathered from all possible known sources, which sometimes included institutional knowledge from other Refuge and agency staff.

The purpose of the eligibility evaluation is to compare and contrast each river to other waters in the ROC for each ORV. In some instances, datasets were rejected or component definitions were not analyzed because the available data did not allow the team to compare and contrast the rivers. It was not helpful to include a dataset that had the same result for all the rivers or a dataset that applied only to a subset of the rivers being evaluated.

As a team, each definition and sub-definition was reviewed for each ORV to make a final determination of the appropriate data to use and how each dataset would be analyzed to meet the requirements of the ORV definitions. A system was developed to rank the analytical results river-by-river for each ORV. While each of the ORVs and their components were evaluated separately using a distinct process, some commonalities exist for the assessment process:

- 1) All component scores were evaluated on a scale of zero to five, with five being the maximum number of points a component definition could score. This was to avoid weighting one component of an ORV over another.
- 2) The team used both single datasets and multiple datasets to fully evaluate each component. If multiple datasets were used, averages of the scores for each dataset were used so that the total component would score no higher than five.
- 3) A dataset was only used once across all ORVs. This was to avoid weighting certain data over others.
- 4) The team chose to use numeric (quantitative) data over narrative (qualitative) data whenever possible. For some datasets, only qualitative data were available.
- 5) The maximum number of points a river could score varied across ORVs based on the number of sub-definitions. For example, there are six components for the recreational ORV for a maximum score of 30, while the Scenic ORV has three components for a maximum score of 15.
- 6) According to Department of Interior guidance (47 FR 39453-39461 1982), “The determination of whether a river area contains ‘outstandingly remarkable’ values is a professional judgment on the part of the study team.” The study team decided to “grade” the rivers being reviewed by percent-of-total-score for each ORV. A river which received a score of at least 70 percent of the total possible points was assigned that ORV.

3.1 Eligibility Results

Of the rivers studied for eligibility at this time, 10 rivers were identified as free-flowing and possessing at least one ORV. The locations of inventoried and eligible rivers are shown in Table 3-1 and on Map 3-1.

Eligible rivers are subject to protection until the suitability study is finalized with a ROD. Following suitability determinations, rivers (or river segments) determined non-suitable return to the underlying management prescribed in the applicable Plan, while suitable rivers are managed to maintain their free-flowing character and ORVs per the alternative selected in the Final Revised Plan.

Table 3-1. Eligible Rivers

River System	Description	River Length	*Segment Length	**Preliminary Classification	Remarkable Values
Atigun River	The Atigun River, which is a tributary of the Sagavanirktok River, flows into the Refuge from bordering lands with the State and Bureau of Land Management and can be accessed by the Dalton Highway. The Refuge's portion is often referred to as Atigun River Gorge.	43	11	Wild	Geologic, Recreational
Canning River	The Canning River is the longest north-flowing river in the Refuge. It forms the western boundary of the Refuge and flows through mountains, foothills, coastal plain, and empties into the Beaufort Sea.	125	125	Wild	Wildlife, Fish, Cultural
Marsh Fork Canning River	The Marsh Fork is the Canning River's main tributary, and it flows in from the west as it cuts through the rugged, striking landscape of the Phillip Smith Mountains.	54	54	Wild	Recreational
East Fork Chandalar River	The East Fork Chandalar River is a major tributary of the Chandalar River and serves as a highway to subsistence hunting, fishing, and trapping areas. From approximately Arctic Village south, the eastern half of the river, including the eastern stream bed, is not within the Refuge boundary.	223	204	Wild	Cultural
Hulahula River	The Hulahula River originates in glaciers of the Romanzof Mountains, flows west for a ways, and then sharply turns to the north as it flows between Mt. Chamberlin and Mt. Michelson and out to Camden Bay.	97	97	Wild	Recreational, Cultural
Jago River	The Jago River is flanked by the Romanzof Mountains and is fed by the McCall Glacier on Mt. Itso. It flows through the mountains to the coastal plain and finally to the Beaufort Sea.	84	84	Wild	Wildlife
Kongakut River	The Kongakut is the only major floatable North Slope river whose entire watershed is in designated wilderness. Originating high in the mountains of the eastern Brooks Range, the river flows north through miles of rugged mountains to the coastal plain and empties into the Beaufort Sea.	116	116	Wild	Recreational, Scenic, Geologic

River System	Description	River Length	*Segment Length	**Preliminary Classification	Remarkable Values
Okpilak River	The silt-laden Okpilak begins in the heart of the most active glacial area of the Refuge. Its rugged, steep terrain and melting icy masses create a torrent of water in the headwaters that is channeled through a vertical canyon and then abruptly flattens as it flows onto the coastal plain to the Beaufort Sea.	73	73	Wild	Scenic, Geologic
Neruokpuk Lakes (Peters and Schrader Lakes)	These lakes are the two largest and most northern arctic alpine lakes in North America. The two large, deep, connected lakes are surrounded by steep slopes rising to some of the highest peaks in the Brooks Range.	10	10	Wild	Scenic, Geologic, Fish
Porcupine River	The Porcupine is one of the largest tributaries of the Yukon River and is a historically important travel route. The Refuge portion begins at the Canada/U.S. border and flows downstream for approximately 85 miles.	476	85	Wild	Historic, Cultural, Geologic, Wildlife

**Segment length is approximate; it refers to the portion of the river that flows within the boundaries of Arctic Refuge and was evaluated. River length is the entire river. Both lengths are identified in miles.*

*** Preliminary classifications are interim classifications and can change through the Suitability, Recommendation, or Designation phases*

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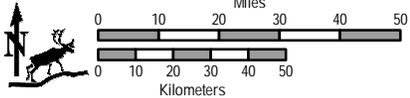
Map 3-1



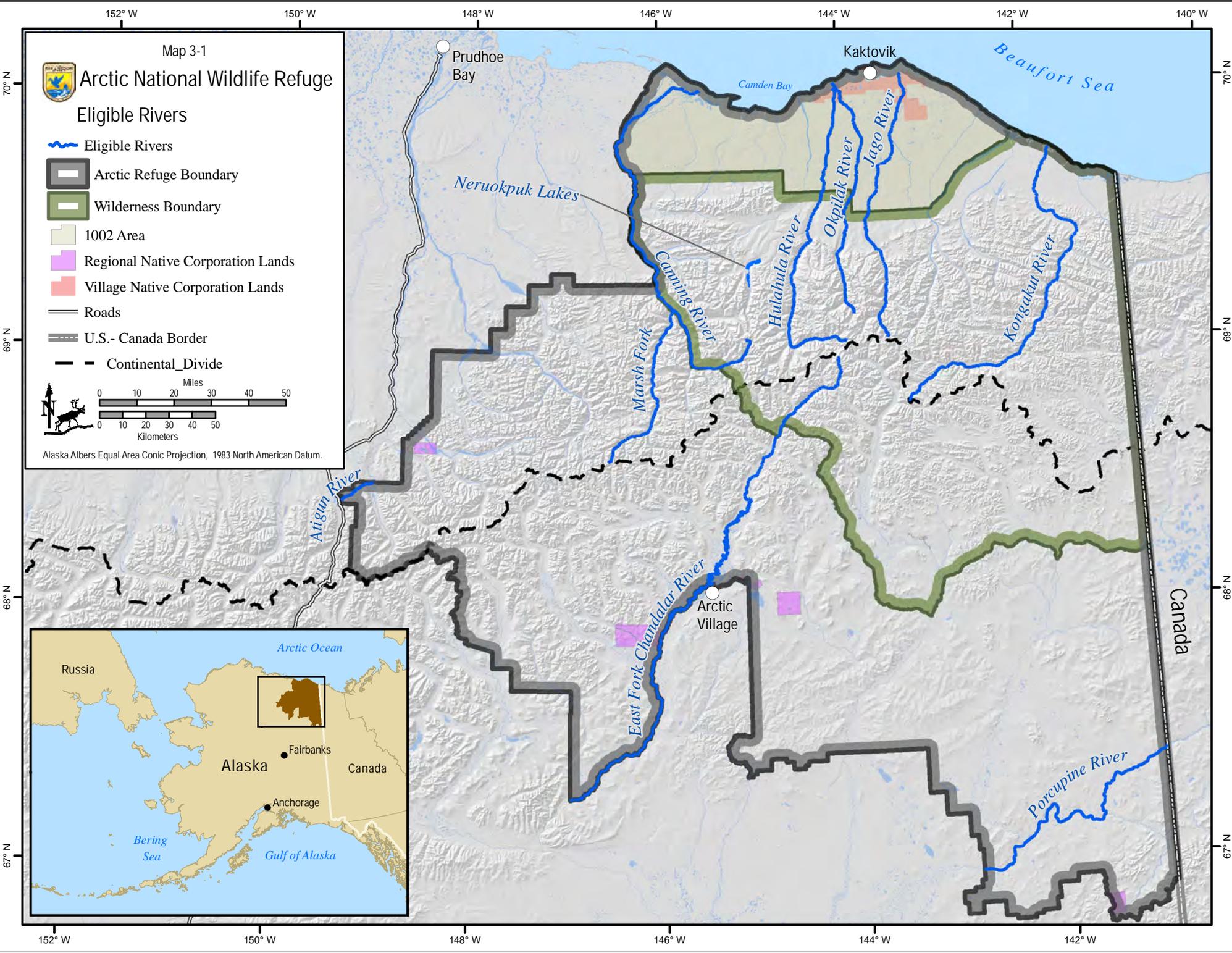
Arctic National Wildlife Refuge

Eligible Rivers

-  Eligible Rivers
-  Arctic Refuge Boundary
-  Wilderness Boundary
-  1002 Area
-  Regional Native Corporation Lands
-  Village Native Corporation Lands
-  Roads
-  U.S.- Canada Border
-  Continental Divide



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



4. Suitability Analysis

4.1 Process for the Suitability Phase

For information about the suitability phase and results, please see the “Wild and Scenic River Suitability Report” in this appendix.

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Appendix A - Definition of ORVs

SCENIC

The landscape elements of landform, vegetation, water, color, and related factors result in notable or exemplary visual features and/or attractions. When analyzing scenic values, additional factors such as scale and diversity of view, special features, seasonal variations in vegetation, and cultural modifications may be considered. Scenic and visual attractions may be highly diverse over the majority of the river or river segment. Highly scenic, pristine rivers are of higher value compared to rivers that are visually monotonous or developed.

Region of Comparison

In Arctic Refuge, rivers north of the Continental Divide were compared to each other (with one exception—the Firth River was grouped with south side rivers because of the spruce trees), and rivers south of the Continental Divide were compared to each other.

Diversity of View

Consider the presence of high relief; severe surface variation; rich color combinations (i.e., high variety, vivid colors); pleasing contrast in soil, rock, vegetation, and water; views that greatly enhance visual quality; and still or cascading water that is dominant in the landscape. River corridors with the greatest diversity and variety of views, both foreground and background, and those providing a sense of vastness of scale are of higher value.

Special Features

Consider outstanding natural features; landforms with unusual or outstanding topographic features (e.g., gorges, high relief, rock outcrops, canyons, falls, rapids, springs, color, vegetation, plains, permafrost, wetlands, rolling hills, ridges, mountains, tundra, glaciers, flats, tundra benches, vast valleys, pingos, aufeis, etc.). River corridors with high relief and focal points that are visually striking, particularly memorable, or rare in the region are of higher value.

Seasonal Variations

Consider diversity of vegetation types in interesting patterns, textures, color, and contrast. River corridors with the greatest seasonal variation and diversity are of higher value.

RECREATIONAL

Arctic Refuge is valued for its true wilderness recreational experience as well as other opportunities (e.g., wildlife viewing, hiking, technical ease of floating, etc.) that draw visitors. River-related recreational values are, or have the potential to be, compelling enough to attract visitors from beyond the ROC or are unique or rare in the region. Values include, but are not limited to, a wide variety of river-related dependent opportunities for remote adventure, challenge, and exploration, and immersion in vast, unaltered landscapes.

Region of Comparison:

Recreation values were evaluated across the entire Refuge.

Diversity of Use

Consider the number and variety of watercraft that can be used on the river, as well as all other recreation uses occurring in the corridor that are directly river-dependent during fall, winter, and spring seasons. Rivers allowing for the largest number and diversity of watercraft and other use types are of higher value.

Experience Dimensions

Consider opportunities to experience a sense of adventure, exploration, challenge, discovery, independence, self-reliance, unknown, and risk, and/or opportunities to engage in expedition-style or epic-length trips. Consider the comparative number or percent of similar experiences available in the ROC. Rivers that provide the most remote opportunities are of higher value.

Access

This evaluative criterion ranks the two extremes at higher value. Consider ease of access to and use of the river corridor. Rivers with the most difficult access are of higher value because they reduce crowding and/or provide opportunities for true adventure. Rivers with easiest access are also of higher value because they allow for ready recreational opportunities.

Level of Use

This evaluative criterion ranks the two extremes at higher value. Consider the number of people using the river corridor. Rivers with the least amount of use are of higher value because they have limited crowding and provide opportunities for true adventure. Rivers with the most use are of higher value because they are destination points for many Refuge visitors.

Associated Opportunities

Consider the variety, frequency, and quality of opportunities encountered along the river for hiking, photography, fishing, hunting, wildlife viewing, and other similar experiences. Rivers with opportunities for superlative associated recreation are of higher value.

Attraction

Consider the ability to attract visitors from outside the geographic region. Rivers that attract a variety of users who are willing to travel some distance with their primary intent to use the river for water-oriented recreation and rivers that provide a setting for nationally renowned opportunities are of higher value.

GEOLOGIC

The river corridor contains geologic features, processes, or phenomena that are unique, rare, or representative in the ROC. The feature(s) may be in an unusually active stage of development and/or represent a unique, rare, or representative combination of geologic or hydrologic features.

Region of Comparison

Geology values were evaluated across the entire Refuge.

Feature Abundance

Consider landforms with unusual or outstanding geologic or hydrologic features (e.g., caves, relic shoreline, waterfalls, canyons, springs, pingos, active glaciers, rare fossils, unique rock formations, and outcrops). River corridors with an abundance of unusual, unique, and distinctive geologic features are of higher value.

Diversity of Features

Consider the number and variety of special geologic or hydrologic features and the value of these features to the ROC. Consider the unique or rare combination of geologic or hydrologic features (e.g., erosional, volcanic, and glacial). River corridors with the greatest diversity of geologic or hydrologic features are of higher value.

Educational/Scientific

Geologic and/or hydrologic features clearly and graphically reveal interesting and/or unique educational or scientific aspects of Earth's history. River corridors that contain rare; one-of-a-kind; or common but the best representative example of a geologic feature in the ROC are of higher value.

FISH

Fish populations on the Refuge remain wild and retain their natural population dynamics and cycles. In that context, fish values will be judged on the relative merits of fish populations and habitat. The river contains internationally, nationally, or regionally important populations of resident and/or anadromous species of indigenous fish. Of particular significance is the presence of rare species (federally listed, State-listed, or candidate threatened or endangered species). Diversity of species is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Region of Comparison

Fish values were evaluated in two sub-regions in the State of Alaska: the North Slope of the Brooks Range and the Yukon River Basin.

Habitat

The river provides exceptionally high quality habitat for fish of national or regional significance, or may provide unique or particularly valuable habitat for rare species (federally listed, State-listed, or candidate threatened or endangered species). Diversity of habitats is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Habitat Quality

Consider the presence, extent, and carrying capacity of spawning areas, rearing areas, and adult habitat; and habitat for wild stocks and rare species (federally listed, State-listed, sensitive species, or candidate species). Areas with the greatest amount and best habitat, especially for wild stock and rare species, are of higher value.

Diversity of Species

Consider the number of species present and the value of these species. Rivers with greater diversity of species, including wild stocks and rare species, are of higher value.

Abundance of Fish

Rivers with more fish are of higher value.

WILDLIFE

Wildlife populations on the Refuge retain their natural interactions, population dynamics, and cycles. In that context, values shall be judged on the relative merits of populations and habitat.

Populations

The river corridor contains nationally or regionally important populations of indigenous wildlife species. Of particular significance are species considered to be unique or rare (federally listed, State-listed, or candidate threatened or endangered species). Diversity of species is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Habitat

The river corridor provides exceptionally high-quality habitat for wildlife of national or regional significance, or may provide unique habitat or a critical link in habitat conditions for rare species (federally listed, State-listed, or candidate threatened or endangered species). Contiguous habitat conditions are such that the biological needs of the species are met.

Region of Comparison

Wildlife values were evaluated in two sub-regions in the State of Alaska: the North Slope of the Brooks Range and the Yukon River Basin.

Habitat Quality

Consider the presence, extent, and carrying capacity of a variety of wildlife habitats, including winter range, summer range, transition zones, and travel corridors, and calving, denning, or nesting areas. Consider unique habitats or critical links in habitat for rare species (federally listed, State-listed, sensitive species, or candidate species). Areas with the greatest and best habitat, contiguous habitat, and habitat for rare species are of higher value.

Species Diversity

Consider the number and variety of species present and the value of these species. Rivers with the greatest diversity of species, including rare species, are of higher value.

Species Abundance

Rivers with the greatest number of wildlife in the river corridor are of higher value.

HISTORIC

The river corridor contains a site(s) or feature(s) associated with a notable event, an important person, or a cultural activity of the past that was rare; one-of-a-kind; or common but the best representative example in the ROC. Many such sites are listed on the Alaska Heritage Resources Survey or on the National Register of Historic Places. A historic site(s) and/or features(s) is 50 years old or older in most cases.

Region of Comparison

Historic values were evaluated across the State of Alaska.

Historical Importance

Consider river corridors that contain a site or feature associated with a historically important event, person, or activity of the past. Rare, unique, or unusual sites or features in the ROC are of higher value

Site Integrity

Consider the presence of exceptional examples of historic sites that are unmodified and retain their original character. River corridors that contain exceptional sites in exceptional condition are of higher value.

Listing/Eligibility

Consider sites or features that are currently listed in, or are eligible for, the National Register of Historic Places or that have been nominated for or designated as National Historic Landmarks. Rivers with such features, particularly in abundance, are of higher value.

Educational/Interpretation

Consider sites that have regional or national importance for interpreting notable historic events, sites, or people; sites that clearly and graphically reveal an interesting or unique history; and/or sites that have the ability to attract visitors. River corridors that contain the best representative examples of historic events in the ROC are of higher value.

CULTURAL

The river, or area in the river corridor, contains a site(s) where there is evidence of occupation or use by Alaska Natives. Sites must have unique or rare characteristics or exceptional human interest value(s). Sites may have national or regional importance for interpreting prehistory; may be rare and represent an area where a culture or cultural period was first identified and described; may have been used concurrently by two or more cultural groups; may have been used by cultural groups for rare or sacred purposes; and/or may have exceptional subsistence value. Sites may be listed on the Alaska Heritage Resources Survey or on the National Register of Historic Places.

Region of Comparison

Athabascan cultural values were evaluated in the Athapaskan language region in Alaska, north of the Alaska Range. Inupiat cultural values were evaluated in the Inupiaq language region in Alaska.

Notable Occupation

Consider evidence of important occupation and use by Alaska Natives or other prehistoric cultures (i.e., Inupiat or Athabascan prehistory sites, prehistoric sites, ceremonial areas, fishing areas, sacred religious sites). Consider sites that are notable in the archaeological record, are rare, or represent an area where a culture was first identified. Rare, notable, unique, or unusual sites or features in the Region are of higher value.

Cultural/Subsistence Importance

Consider areas of exceptional human interest values. River corridors with notable quality, quantity, or variety of cultural or subsistence uses; or river corridors used for rare or sacred purposes are of higher value.

Number of Cultures

River corridors that represent more than one culture or cultural period that may have been used concurrently by more than two culture groups are of higher value.

Site Integrity

Consider the presence of exceptional examples of Alaska Native or prehistoric features or remains from an important period in history; sites that are unmodified and retain their original character; and features that are in excellent condition and provide an exceptional example in the ROC. River corridors that contain exceptional sites in exceptional condition are of higher value.

Listing/Eligibility

Consider corridors that contain sites or features that are currently listed in, or are eligible for, the National Register of Historic Places of National Historic Landmarks. Rivers with such features, particularly in abundance, are of higher value.

Educational/Interpretation

Consider sites that have Regional or National importance for interpreting significant prehistoric events, sites, or people; sites that clearly and graphically reveal an interesting or unique history; and/or sites that have the ability to attract visitors. River corridors that contain the best representative examples of Alaska Native or other prehistoric culture in the ROC are of higher value.

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Appendix B - Detailed Analysis by ORV

Scenic ORV

The Scenic ORV has three components: diversity of view, special features, and seasonal variations. Data were gathered for each component, and each component was analyzed separately. For each component, north-side rivers were evaluated separately from south-side rivers to reflect the ROC for the Scenic ORV.

Diversity of View: The sub-definition for Diversity of View identifies that river corridors with the greatest diversity and variety of views have the highest value. The team gathered narrative descriptions for each river from a variety of published literature and agency reports. Institutional knowledge was solicited from staff members by interviewing those who have worked for the Refuge for more than 10 years or those who have a great deal of on-the-ground experience in the Refuge, especially on its rivers. Individual team members then ranked each river on a scale of zero (no scenic diversity) to five (outstanding scenic diversity) based on the overall sense of diversity of view from literature, staff descriptions, and the personal knowledge of team members. The final ranks were averaged across the team. If a staff member had mentioned one or more of the rivers as their choice for most scenically diverse, then those mentions were included in the final average.

Special Features: The sub-definition for Special Features states that corridors with high relief and focal points that are visually striking, particularly memorable, or rare in the region have the highest value. This component of the Scenic ORV was interpreted to be the superlative features associated with Scenic in each river corridor. Using narratives from the literature, staff descriptions, and personal knowledge, the team collectively listed each superlative scenic feature in each river corridor. Examples of features included in the component definition have been used as a guide for the type of features to include in the list.

Once the list was compiled, the number of superlative features was totaled. For north-side rivers, the number of special features ranged from one to nine. The number of features was ranked according to the following scale: five points for nine or more features; four points for seven to eight features; three points for five to six features; two points for three to four features; one point for one to two features; and zero points for zero features. For south-side rivers, the number of special features ranged from zero to 15. However, 15 was considered an outlier—it was magnitudes higher than the next highest number. The ranking used for south-side rivers was equal to the number of special features in each river corridor: rivers with five or more features received five points, rivers with four features received four points, etc.

Seasonal Variations: The component definition for Seasonal Variations explains that river corridors with the greatest seasonal variation and diversity are of higher value. The number of vegetation and habitat types provided insight as to the visual diversity afforded by seasonal changes—the more vegetation types in a corridor and the greater diversity among the plant communities, the more diverse the seasonal changes of color and pattern would likely be in the corridor. Because the number of vegetation and habitat types is highly correlated with the

length of each river, the number of types was divided by river miles to have a more reliable measure of vegetational variety.

The number of habitat or vegetation types per river mile ranged from a low of 0.07 to a high of 1.26. Rivers received five points for one or more habitat types per mile; four points for 0.75 to 0.99 habitat types per mile; three points for 0.5 to 0.74 types per mile; two points for 0.25 to 0.49 types per mile; one point for 0.1 to 0.24 types per mile; and zero points for less than 0.1 habitat or vegetation types per river mile.

Final Score: Once all three components had been ranked, the scores for the components were compiled for each river. From this point forward, the analysis encompassed all 20 rivers, rather than looking at north-side rivers separately from south-side rivers.

Total scores for the Scenic ORV ranged from 4 to 13 points. The highest possible score for the Scenic ORV was 15 points, and 70 percent of 15 is 10.5. Thus, any river with a score greater than 10.5 was considered to have the Scenic ORV. While other evaluated waters certainly have scenic value, the results of the analysis using currently available data identify the following as having the Scenic ORV.

Scenic ORV Results				
	Components			ORV Score
	Diversity of View	<i>Special Features</i>	Seasonal Variations	
Aichilik River	2.0	1	1	4.0
Atigun River	2.8	2	5	9.8
Canning River	3.4	3	1	7.4
Marsh Fork Canning River	4.6	2	2	8.6
Coleen River	3.6	1	0	4.6
East Fork Chandalar River	3.2	1	0	4.2
Middle Fork Chandalar River	4.0	1	2	7.0
Firth River	3.3	2	2	7.3
Hulahula River	4.4	2	1	7.4
Jago River	2.1	1	1	4.1
Joe Creek	2.8	1	3	6.8
Junjik River	2.6	1	1	4.6
Spring Creek	2.3	0	4	6.3
Kongakut River	5.0	5	1	11.0
Okpilak River	4.6	5	1	10.6
Sadlerochit River	2.8	2	1	5.8
Neruokpuk Lakes	5.0	3	5	13.0
Porcupine River	3.0	5	1	9.0
Sagavanirktok River	3.5	1	2	6.5
Turner River	1.3	1	4	6.3

Recreational ORV

The Recreational ORV has six components: diversity of use, experience dimensions, access, level of use, associated opportunities, and attraction. Data were gathered and analyzed for each component separately. Recreational values were evaluated across the Refuge for each component, reflecting the ROC for the Recreational ORV.

Diversity of Use: The component definition for Diversity of Use indicates that rivers allowing for the largest number and diversity of watercraft and other use types are of higher value. Two datasets were analyzed for this component: 1) type of watercraft used, and 2) an inventory of other use types occurring in each river corridor.

The types of watercraft that are currently used on the Refuge rivers are raft, motorboat, packraft, sea kayak, river kayak, and canoe. Although some of the Refuge's rivers could accommodate airboats, airboats are not allowed on Refuge lands, so they were treated like motorboats for the purposes of this evaluation. The different types of watercraft used on each river was identified and counted. Five points were assigned to rivers capable of supporting five or more watercraft types, four points were given to rivers supporting four watercraft types, etc.

The team listed the types of directly river-dependent primary uses occurring in the Refuge's river corridors: boating, hiking, general hunting, general fishing, boat-based polar bear viewing, and dog mushing. The team listed the uses occurring on individual rivers and then tallied them. Five points were assigned to rivers accommodating five or more uses, four points were given to rivers supporting four uses, etc.

The points generated for "type of watercraft used" and "other use types occurring in each river corridor" were then averaged for each river to arrive at a component score for Diversity of Use. Scores for this component ranged from 2.5 to five points.

Experience Dimensions: Many people visit the Refuge not because it has the best whitewater and the easiest river access, or can accommodate the widest variety of river-related uses; rather, people visit the rivers in this Refuge because of the holistic recreational opportunities they provide. People float the rivers or hike in the river corridors seeking a particular experience—a sense of adventure, exploration, challenge, discovery, independence, self-reliance, and risk—in conjunction with the beauty and wildlife-viewing opportunities for which the Refuge is renowned. Three datasets were identified to quantify this component: 1) the percent of visitors on the river, 2) whitewater classification, and 3) interview results from a subset of the Refuge's permittees.

The assumption was made that recreationists seeking true adventure would be attracted to rivers with the highest potential for solitude and sense of remoteness. The commercially-supported visitor use database, which is the only comprehensive dataset on visitation, was used to determine the percent of visitors in each river corridor. The data represent the average amount of use during the past nine years. On average, 24 percent of all commercially-supported visitors to Arctic Refuge in any given year use the Kongakut River corridor. By contrast, less than 0.5 percent use the Firth River. More points were given to rivers with the smallest percentage of use, which provide the opportunity for the most solitude. Fewer points were given to rivers with a high percentage of use because solitude is more difficult to

experience. The scale used to rank this dataset was five points for one percent or less of Refuge users in the river corridor; four points for two to six percent of users; three points for 7 to 12 percent; two points for 13 to 18 percent; and one point for 19 percent or more of Refuge visitors using the river corridor.

Adventure-seeking recreationists are generally attracted to challenging whitewater rather than flatwater. Therefore, each river was assigned a single whitewater classification reflecting the highest degree of difficulty in each corridor. Five points were given to rivers with Class V whitewater, four points for rivers with Class IV whitewater, etc.

To gain a sense of where visitors go when they are seeking true adventure, challenge, and independence, three of our longest-serving guides and air-taxi operators were interviewed. Each interviewee was asked two questions:

- 1) What five Arctic Refuge rivers do clients seeking solitude, remoteness, and adventure most often request?
- 2) What rivers are included in known expedition-style and/or epic-length trips? In other words, what rivers are included in the start, end, or interim points of such trips, and/or in what river corridors are requests made for the drop-off of additional food and supplies?

Five points were given to rivers mentioned three times; three points were given to rivers mentioned twice; one point was given to rivers mentioned once; and zero points were given to rivers that were not mentioned.

The points generated for percent of visitors on the river, whitewater classification, and the interview results were then averaged for each river to arrive at a component score for Experience Dimension. Scores for this component ranged from two to 3.7 points.

Access: This component definition considers ease of access to, and use of, the river corridor, which directs us to value most highly the two extremes for access. Rivers with the most difficult access have high recreation value because they tend to reduce crowding and/or provide opportunities for true adventure, and rivers with the easiest access also have high recreation value because they allow for ready recreational opportunities. Two datasets were used to evaluate this component: 1) primary means of accessing each river, and 2) the number of commercially guided trips offered.

The primary mode of access for all rivers in the Refuge is via bush plane. However, two of the rivers evaluated (Atigun and Porcupine Rivers) can be accessed by road some distance off the Refuge, and the Sadlerochit River can be accessed only by foot. There are three primary types of bush planes used in the Refuge: float planes, medium-sized single-engine planes (e.g., Cessna 185, Cessna 206, Helio Courier, etc.), and small single-engine planes (e.g., Super Cub, Husky, Scout, etc.). A bimodal ranking system was used to rank the primary means by which each river is accessed. Five points were assigned to rivers that can be accessed only by foot and for those that can be accessed from roads. Three points were assigned to waters accessed by small planes and those accessed by float planes, and one point was assigned to waters accessed by medium-sized planes.

The team equated “use of rivers” with the number of opportunities provided by commercial guides. The opportunity for a commercially guided trip is not available for all the rivers. Some users seek out commercial guides, while others do not. The assumption was made that commercial trip offerings equated with access opportunities. The dataset was the number of trip offerings commercial guides presented in their 2009 commercial permit applications. A bimodal ranking system was applied. Five points were assigned to rivers with no commercially guided trips offered and to rivers with more than 12 commercially guided trips offered. Four points were given to rivers with 1 or 11 trips; three points were assigned to rivers with 2–3 or 9–10 trips offered; two points went to rivers with 4–5 or 7–8 trips offered; and one point was given to rivers with 6 trips offered.

The points for the two access datasets were totaled to arrive at a component score for Access. Component scores ranged from 1.5 to five points.

Level of Use: This is another component for which a bimodal distribution was used. Rivers with the lowest level of visitor use were ranked high because they have limited crowding and provide opportunities for true adventure. Rivers with the most use also received a high score because they are destination points for many Refuge visitors. A single dataset was used for Level of Use: the number of people using the river corridor for river-related activities each year, averaged over a nine-year period (2001–2009). Rivers used by more than 100 people each year and those used by 10 or fewer people each year received five points. Rivers with 91–100 people and 11–20 people received four points; rivers with 81–90 people and 21–30 people received three points; rivers with 71–80 and 31–40 users were given two points; rivers with 61–70 and 41–50 users got one point; and rivers with 51–60 users received zero points.

Associated Opportunities: The team considered the types of activities recreationists engage in while in the river corridors and determined which of these associated recreation opportunities are truly superlative—specific reasons why people come to Arctic Refuge. Five superlative opportunities associated with rivers were identified: polar bear viewing, Porcupine caribou herd viewing, trophy hunting, a visit to “see the Refuge before oil development occurs,” and unique birding activities (gray-headed chickadees and Smith’s longspurs—the premier bird species associated with the Refuge). The number of opportunities was tallied and component scores were assigned: five points for five opportunities, four points for four opportunities, etc.

Attraction: This component definition considers a river’s ability to attract visitors from outside the geographic region. Rivers that attract visitors from afar and offer nationally renowned recreational opportunities are of higher value.

Two datasets were researched for use in the analysis of the Attraction component: 1) the most commonly requested rivers, and 2) the percent of users from distant locations. Detailed river-specific information about where visitors originated from was unavailable. However, through interviews with three of our longest-serving permittees, general visitation patterns are available: 1–10 percent of the Refuge’s users are international residents, 35–75 percent come from areas of the United States outside of Alaska, and 15–60 percent of Refuge users are Alaska residents. The ranges are broad because different permittees cater to different clientele. The Arctic Refuge Visitor Use Survey (Bureau of Land Management 2005) says two percent of use is international, 61 percent is from the United States outside of Alaska, and 37

percent of users are Alaska residents. Although the Refuge is an international destination, specific visitor surveys would need to be completed to determine visitor use origination patterns. Thus, Attraction was evaluated using a single dataset.

The interviews identified the five rivers visitors most commonly request. A river scored five points if it was mentioned three times, three points if it was mentioned twice, one point for a single mention, and zero points for no mentions.

Final Score: The six components were ranked, and scores were assigned for each river. Total scores for the Recreational ORV ranged from 11.3–24.8 points. The highest possible score for the Recreational ORV was 30 points, and 70 percent of 30 is 21. Thus, any river with a score greater than 21 was considered to have the Recreational ORV. Using this criteria, the only river to have the Recreational ORV is the Kongakut River (24.8 points). The next highest river scored fewer than 19 points.

The team reviewed the results using what is known about recreational use of the Refuge's rivers. Three rivers were notably absent: the Atigun River, the Hulahula River, and the Marsh Fork Canning River.

The Refuge portion of the Atigun is commonly called Atigun Gorge and flows into the Refuge from bordering State and Bureau of Land Management lands. The river can be accessed via the Dalton Highway and flows into the Refuge approximately three-fourths of a mile from the highway. Atigun Gorge is uniquely accessible, compared to other Refuge rivers with recreational attributes, and boasts some of the most challenging road-accessible whitewater in northern Alaska. Whether seeking whitewater boating adventures; riparian habitat for excellent roadside birding; a relatively rapid route to hunting grounds away from the road; spring skiing, mushing, and ice climbing opportunities in an arctic setting; or the visual drama of a scenic backdrop for a holistic wilderness hiking experience, Atigun Gorge is clearly increasingly valued by an ever broadening range of visitors as a recreational treasure.

The number of commercial operators offering day-hiking trips in Atigun Gorge has increased during the past 10 years. However, visitors using the area are not reliant upon commercial service providers for access, so the Refuge currently has no way to accurately measure the total amount of visitation this river corridor receives. We believe the unrecorded portion of the Refuge's overall visitation that originates in Atigun Gorge makes up a notable portion of the Refuge's overall visitation, possibly exceeding the amount of visitation hosted by the Kongakut River drainage annually. Atigun Gorge was identified during the scoping phase of the Revised Plan planning effort as an important resource that is being compromised by the level of visitation it is currently sustaining. Although it is hard to capture through numerical ratings the true value of Atigun Gorge relative to other Refuge rivers, our best professional judgment is that the Atigun River has a Recreational ORV.

The Hulahula River is an exciting Class III river that attracts visitors, despite its extremely remote location. The Hulahula offers visitors a variety of vast landscape views: from broad mountainous valleys in its upper reaches, to the expanse of the coastal plain, to coastal lagoons and barrier islands at its mouth. The Hulahula receives the third highest level of visitation (after the Kongakut and Sheenjok Rivers), and many commercial operators offer trips to the Hulahula. People who visit the Hulahula come for the holistic experience it offers, which is hard to capture through numerical ratings. The Hulahula River was identified during the scoping phase of the Revised Plan planning effort as an important resource. The number of

public comments combine with the team's best professional judgment to support a Recreational ORV for the Hulahula River.

The Marsh Fork of the Canning River flows through tall, precipitous mountains that stretch to the river's edge. Its striking beauty attracts photographers and painters, as well as many recreationists, from across the country and around the world—despite its extremely remote location. Hillside springs add to the beauty, supporting clusters of green vegetation in stark contrast to the grey rocks and the clear blue river water. This river holds enough interest for experienced boaters yet is also mellow enough for relatively novice boaters to navigate. Its distinct north-side character affords a holistic recreation experience hard to capture through numerical ratings. Much of the numeric visitor use data for the Marsh Fork Canning River, which was used to evaluate the Recreational ORV, is lumped with the Canning River. Thus, it is believed the numeric values generated by our analysis are inexact for this river. Further, the Marsh Fork received several mentions during the scoping phase of the Revised Plan planning effort. Our best professional judgment and public comments combine to support a Recreational ORV for the Marsh Fork Canning River.

Therefore, four rivers were determined to have a Recreational ORV. While other evaluated waters certainly have recreational value, the results of our analysis and best professional judgment indicate that the Atigun, Kongakut, Hulahula, and Marsh Fork Canning rivers have outstandingly remarkable recreational opportunities.

Recreational ORV Results							
	Components						
	Diversity of Use	Experience Dimensions	Access	Level of Use	Associated Opportunities	Attraction	ORV Score
Aichilik River	4.0	3.0	3.0	2.0	4.0	0.0	16.0
Atigun River	4.0	2.7	5.0	2.0	1.0	0.0	14.7
Canning River	5.0	2.0	1.5	1.0	4.0	0.0	13.5
Marsh Fork Canning River	2.5	1.7	1.5	4.0	2.0	3.0	14.7
Coleen River	3.5	3.0	3.0	1.0	1.0	3.0	14.5
East Fork Chandalar River	4.5	3.7	2.5	4.0	0.0	0.0	14.7
Middle Fork Chandalar River	4.5	2.7	3.0	5.0	1.0	0.0	16.2
Firth River	3.0	3.0	3.0	5.0	1.0	0.0	15.0
Hulahula River	5.0	2.3	2.5	4.0	3.0	1.0	17.8
Jago River	4.0	3.3	2.0	0.0	3.0	1.0	13.3
Joe Creek	2.5	4.0	2.0	4.0	0.0	0.0	12.5
Junjik River	3.0	2.0	4.0	4.0	0.0	0.0	13.0
Spring Creek	2.5	2.3	2.5	4.0	0.0	0.0	11.3
Kongakut River	4.5	2.3	3.0	5.0	5.0	5.0	24.8
Okpilak River	4.5	3.3	3.0	5.0	3.0	0.0	18.8
Sadlerochit River	4.5	2.3	4.5	5.0	2.0	0.0	18.3
Neruokpuk Lakes	2.5	2.3	4.0	5.0	0.0	0.0	13.8
Porcupine River	4.5	2.3	5.0	5.0	0.0	0.0	16.8
Sagavanirktok River	4.5	2.3	4.0	5.0	1.0	0.0	16.8
Turner River	3.5	2.3	3.0	4.0	3.0	0.0	15.8

Geologic ORV

The Geologic ORV has three components: feature abundance, diversity of features, and educational and/or scientific importance. Both quantitative and qualitative data were used to evaluate geology in the river corridors. Data were gathered for each component, and each component was analyzed separately. Geologic values were evaluated across the Refuge for each component, reflecting the ROC for the Geologic ORV.

Feature Abundance: The component definition considers landforms with unusual or outstanding geologic or hydrologic features and river corridors with an abundance of unusual, unique, and distinctive geologic features to be of higher value. Sufficient data is not available to analyze both the abundance and diversity of features in each river corridor. The ability to identify the types of features in or near each river (e.g., pingos, springs, etc.) but not the total number of each feature type for each river (e.g., two pingos, five springs, etc.) limits Feature Abundance to the number of feature types rather than the true abundance of these features.

Using narrative descriptions of river geology and hydrology from published literature and unpublished agency reports, along with institutional knowledge, the types of unusual, unique, and distinctive geologic and hydrologic features in each river corridor were identified. Five points were assigned for 10 or more feature types; four points for 8–9 feature types; three points for 6–7 feature types; two points for 4–5 feature types; one point for 2–3 feature types; and zero points for 0–1 feature types.

Diversity of Features: Sufficient data to analyze both the diversity and abundance of geologic and hydrologic features in each river corridor is not available, so bedrock data as depicted in the Generalized Geologic Map of the Arctic National Wildlife Refuge (Imm et al. 1993) was analyzed. The rivers evaluated originate in the Brooks Range, cutting through steep, mountainous areas with minimal vegetation. Bedrock is frequently exposed. Further, vegetation that is present is highly correlated with the underlying geology in the river corridor, including the lower reaches of rivers that extend outside the Brooks Range.

The number of different bedrock types occurring in each corridor was identified as one measure of geologic diversity. Because patchiness also provides a measure of diversity, the number of bedrock patches was also identified. However, the number of patches was divided by river miles to remove any correlation between the number of bedrock patches and the length of each river.

The number of bedrock types ranged from 1 to 12 per river. Rivers with 11 or more bedrock types were given five points; rivers with 9–10 types received four points; 7–8 types received three points; 5–6 types got two points; 3–4 bedrock types were given one point; and 0–2 types received zero points. The number of bedrock patches per mile ranged from 0.05–0.59. Rivers with 0.36 or more patches per mile received five points; rivers with 0.29–0.35 patches per mile received four points; 0.22–0.28 patches per mile received three points; 0.15–0.21 patches per mile received two points; 0.08–0.14 patches per mile received one point; and rivers with 0.07 or fewer patches per mile received zero points.

The scores for number of bedrock types and the number of bedrock patches per mile were averaged to obtain a final score for the Diversity of Features component. Scores ranged from zero to 4.5 for this component.

Educational/Scientific: The component definition considers geologic and hydrologic features that clearly and graphically reveal interesting or unique educational or scientific aspects of Earth's history. River corridors that contain rare, one-of-a-kind, or common but representative examples of a geologic feature in the region of comparison are of higher value. The team used the narrative information evaluated under the Feature Abundance component to extract superlative or exceptional geologic values. The team then collectively ranked the rivers' educational and scientific merits using best professional judgment. Those rivers with truly exceptional, rare, one-of-a-kind, or representatively common geologic or hydrologic features received a score of five points. Rivers with moderate educational or scientific values were given a score of three points; rivers with low educational or scientific geologic values were given a single point; and rivers without any superlative or exceptional geologic or hydrologic values received zero points.

Final Score: Once all three components had been ranked, the scores for the components were added up river by river. Total scores for the Geologic ORV ranged from 1–12 points. The highest possible score for the Geologic ORV was 15 points, and 70 percent of 15 is 10.5. Thus, any river with a score equal to or greater than 10.5 was considered to have the Geologic ORV.

Geologic ORV Results				
	Components			ORV Score
	Feature Abundance	Diversity	Education/Scientific	
Aichilik River	1	3.5	0	4.5
Atigun River	3	3.0	5	11.0
Canning River	3	1.5	5	9.5
Marsh Fork Canning River	1	3.0	0	4.0
Coleen River	2	2.0	1	5.0
East Fork Chandalar River	0	2.0	3	5.0
Middle Fork Chandalar River	1	1.5	3	5.5
Firth River	1	0.0	1	2.0
Hulahula River	5	3.0	1	9.0
Jago River	4	2.5	3	9.5
Joe Creek	0	2.0	0	2.0
Junjik River	0	2.0	0	2.0
Spring Creek	0	3.0	0	3.0
Kongakut River	4	4.5	3	11.5
Okpilak River	5	1.0	5	11.0
Sadlerochit River	2	2.5	3	7.5
Neruokpuk Lakes	4	3.0	5	12.0
Porcupine River	3	2.5	5	10.5
Sagavanirktok River	1	2.5	0	3.5
Turner River	0	0.0	1	1.0

Fish ORV

The definition for the Fish ORV considers fish population and habitat data for resident and anadromous fish species, including rare species. There are three components to the Fish ORV: habitat quality, diversity of species, and abundance of fish.

Fish data is limited for the Refuge. The locations of some overwintering and spawning sites are known, as are the number of fish species and the sizes of the populations for some of these species; however, limited data is available for rare or endangered species. Further, the type and reliability of data varies between rivers. The Fish ORV was rated using best professional judgment, supported by available data on the primary fish species in each drainage; abundance; and what is known about species diversity in each river corridor. Rivers that flow north from the Continental Divide were evaluated relative to other freshwater bodies on the North Slope of the Brooks Range in Alaska. Rivers that flow south from the Continental Divide were evaluated relative to other waters in interior Alaska.

Two water bodies were determined to have the Fish ORV: Neruokpuk Lakes and the Canning River. Neruokpuk Lakes support what is probably the largest, healthiest population of lake trout north of the Brooks Range. The Canning River has high species diversity relative to other waters on the North Slope, as well as a large run of Dolly Varden char.

Wildlife ORV

The definition for the Wildlife ORV considers wildlife population and habitat data, including those species that are considered to be unique, rare, State-listed, federally listed, threatened, or endangered. There are three components to the Wildlife ORV: habitat quality, diversity of species, and species abundance. Rivers that flow north from the Continental Divide were evaluated relative to other water bodies on the North Slope of the Brooks Range in Alaska. Rivers that flow south from the Continental Divide were evaluated relative to other waters in the interior Alaska.

Habitat Quality: Three datasets were used to evaluate Habitat Quality: 1) miles of potential polar bear habitat in each river corridor, 2) number of raptor nesting sites, and 3) the number of habitat types in each corridor. Because polar bear habitat is only found north of the Continental Divide, north-side rivers were evaluated for polar bear habitat, raptor nests, and the number of habitats in each corridor. For south-side rivers, only raptor nests and the number of habitat types were used to evaluate habitat quality.

The Refuge contains more than 53 percent of polar bear critical denning habitat. Polar bear critical habitat correlates with the topography, wind patterns, and soil development in river corridors. The total miles of polar bear denning habitat along the length of each river and within one-half mile of either side of ordinary high water was calculated using Geographic Information System (GIS). Rivers received five points for 61 or more miles of polar bear denning habitat in the corridor; four points for 46–60 miles; three points for 31–45 miles; two points for 16–30 miles; one point for 1–15 miles; and zero points for zero miles of polar bear denning habitat in the river corridor.

At a statewide level, the Refuge has notable nesting raptor habitat. In some locations, raptor nesting densities are among the highest in the State. Raptor nests tend to be concentrated in the river corridors of the Refuge, especially if cliffs or cliff-like geologic features are found in the corridor. The number of known nest sites was totaled for each river. A river received five points for 50 or more nest sites; four points for 25–49 nests; three points for 10–24 nests; two points for 5–9 nest sites; one point for 1–4 nests; and zero points if there are no known raptor nests in the river corridor.

The number of habitats in each river corridor was calculated using scientific procedures (Homer, et al. 2004) and GIS. A river scored five points for 19–21 habitat types; four points for 17–18 habitats; three points for 14–16 habitats; two points for 12–13 habitats; and one point for 10–11 habitat types in the river corridor.

Three datasets were averaged for north-side rivers, and two datasets were averaged for south-side rivers, to arrive at the component scores for Habitat Quality. Scores ranged from 0.3 to four points.

Diversity of Species: Two datasets were used for the Diversity of Species component score: 1) total number of species and 2) the number of rare, sensitive, threatened, or endangered species. Both datasets were generated by considering the known range and distribution of mammals and birds across the Refuge and using best professional judgment to decide whether the rivers under consideration were included in these distributions. If a species was known to use a river corridor for all or a portion of its life cycle, that species was included in the count.

North-side rivers were ranked according to the total number of species occupying each corridor using the following scale: five points for rivers with 90 or more species; four points for 80–89 species; three points for 70–79 species; two points for 60–69 species; and one point for 50–59 species. South-side rivers had very similar totals for the number of species, ranging from 122–128 species and, as a result, were all assigned a score of three points. The team assumed that these species were typical for the ROC.

Twelve of the species either listed as threatened under the Endangered Species Act (U.S. Fish and Wildlife Service 2010a), species on the Audubon Watchlist (Audubon 2010), species on the IUCN red list (International Union for Conservation of Nature 2010), or species of special concern by the State of Alaska (Alaska Department of Fish and Game 2010), are known to occur on the North Slope of the Brooks Range: red-throated loon, yellow-billed loon, arctic peregrine falcon, whimbrel, red knot, dunlin, buff-breasted sandpiper, arctic tern, Smith's longspur, spectacled eider, polar bear, and tiny shrew. North-side rivers were given five points if nine or more of these rare, sensitive, threatened, or endangered species use all or a portion of any of the evaluated rivers. Four points were awarded to rivers with seven to eight species; three points for five to six species; two points for three to four species; one point for one to two species; and zero points if no rare, sensitive, threatened, or endangered species use a river corridor.

Twelve of the species either listed as threatened under the Endangered Species Act (U.S. Fish and Wildlife Service 2010), species on the Audubon Watchlist (Audubon 2010), species on the IUCN redlist (International Union for Conservation of Nature 2010), or species of special concern by the State of Alaska (Alaska Department of Fish and Game 2010) are known to occur south of the Continental Divide in the Yukon River basin of interior Alaska: horned grebe, peregrine falcon, solitary sandpiper, lesser yellowlegs, upland sandpiper, whimbrel,

Hudsonian godwit, red knot, short-billed dowitcher, olive-sided flycatcher, Smith's longspur, and rusty blackbird. South-side rivers were given five points if seven or more of these species use all or a portion of any of the evaluated rivers. Four points were given for five to six species; three points for three to four species; two points for two species; one point for one species; and zero points if no rare, sensitive, threatened, or endangered species use a river corridor. The ranks for the two datasets were averaged for north-side rivers and for south-side rivers. Component scores for Species Diversity ranged from 0.5 to five points.

Species Abundance: This component was not evaluated. No data are available that describe species abundance in the Refuge in each river corridor.

Final Score: The results for the two evaluated components were compiled. From this point forward, the analysis combined north-side rivers with south-side rivers. Total scores for the Wildlife ORV ranged from 0.8 to nine points. The highest possible score for the Wildlife ORV was 10 points, and 70 percent of 10 is seven. Thus, any river with a score greater than seven was considered to have the Wildlife ORV.

Wildlife ORV Results			
	Components		
	Habitat Quality	Diversity of Species	ORV Score
Aichilik River	3.0	3.5	6.5
Atigun River	1.3	1.0	2.3
Canning River	4.0	5.0	9.0
Marsh Fork Canning River	1.3	0.5	1.8
Coleen River	2.5	3.5	6.0
East Fork Chandalar River	2.0	3.5	5.5
Middle Fork Chandalar River	1.5	3.5	5.0
Firth River	1.0	1.5	2.5
Hulahula River	2.3	4.5	6.8
Jago River	3.3	4.0	7.3
Joe Creek	0.3	0.5	0.8
Junjik River	1.5	3.0	4.5
Spring Creek	1.5	2.5	4.0
Kongakut River	2.7	4.0	6.7
Okpilak River	2.3	4.0	6.3
Sadlerochit River	2.3	4.0	6.3
Neruokpuk Lakes	0.3	4.0	4.3
Porcupine River	4.0	4.0	8.0
Sagavanirktok River	0.7	1.0	1.7
Turner River	1.0	2.0	3.0

Historic ORV

The definition for the Historic ORV considers historic sites or features in each river corridor that are associated with a notable event, an important person, or a cultural activity of the past. Sites or features should be rare, one-of-a-kind, or the best representative of a common site or feature. There are four component definitions: historical importance, site integrity, listing or eligibility, and educational and/or scientific importance.

There are few historic data for Arctic Refuge. This is due in part to the lack of historic use of the Refuge's lands and waters, but also from a lack of historical research completed in the area. The team relied on best professional judgment supported by qualitative information obtained from Regional Archaeologist Debbie Corbett, published literature, agency reports, and institutional knowledge to evaluate the Historic ORV. Rivers were evaluated on a high (five points), medium (three points), and low (one point) scale based on the team's assessment of how important the gathered historical information was relative to the history of the State of Alaska (the ROC for the Historic ORV).

Only the Porcupine River was determined to have a Historic ORV. The Porcupine River was (and is today) a major travel corridor that fills an important chapter in the history of Alaska and the Yukon Territory of Canada (National Park Service 1984). The Porcupine River provided Europeans a natural trade route into the Yukon River basin. The Hudson's Bay Company set up trading posts on the Porcupine River, exchanging goods such as beads and cloth for furs. Hudson's Bay Company posts also provided a means of travel for scientists and ministers to the Porcupine and Yukon River regions, and the posts represent the farthest western reach of the British monarchy. Buildings associated with the Hudson's Bay Company posts near Howling Dog Rock and the confluence of the Salmon-Trout River are still visible.

The Porcupine River was also involved in other aspects of Alaskan and arctic history, including whaling, exploration, the Klondike gold rush, and early steamboat and gas-powered river boat navigation (National Park Service 1984). The Porcupine River remains important to local people who rely on it as a means for travel and for pursuing a more traditional way of life, and it provides visitors the opportunity to experience the voyages of the explorers and fur traders of the mid-1800s. It is the most important arctic river route after the Yukon River.

Cultural ORV

The definition for the Cultural ORV considers evidence of occupation or use by Alaska Natives, with weight given to rare, unique, exceptional human interest, and/or national or regional importance for interpreting prehistory. There are six component definitions: notable occupation, cultural and/or subsistence importance, number of cultures, site integrity, listing or eligibility, and educational and/or scientific.

No systematic archaeological studies or historical research projects have been conducted across the Refuge. The information available for the eligibility analysis is derived from those studies that have been conducted and the expert knowledge of Regional Archaeologist Debbie Corbett. The data used for the Cultural ORV might not fully depict the cultural and archaeological resources in river corridors or yet-to-be-determined culturally important locations. However, it does represent the best available data. North-side rivers were evaluated separately from south-side rivers to reflect the ROC for the Cultural ORV.

Notable Occupation: The component definition considers evidence of important occupation and rates rare, unique, notable, or unusual sites higher than other sites. Regional Archaeologist Debbie Corbett provided the team with the number and type of prehistoric sites in each river corridor. The team decided to use two datasets to evaluate Notable Occupation: 1) the number of known sites, and 2) the number of different types of sites. We assumed that rivers with a large number of archaeological sites had a higher value than rivers with few or no known prehistoric sites. The other assumption made was that those sites having a variety of occupational evidence, especially those suggesting camps or housing, were of higher value than sites with fewer types of archaeological resources and no evidence of longer-term occupation.

The number of known sites in each corridor ranged from 0–67. The team decided 67 was an outlier, because the next highest number was 21. The number of sites was ranked according to the following scale: five points for 20 or more sites; four points for 15–19 sites; three points for 10–14 sites; two points for 5–9 sites; one point for 1–4 sites; and zero points for zero sites.

Types of sites ranged from flake scatters to tent rings to settlements. The number of types ranged from zero to six types, so these data were evaluated as follows: five points for six types of sites; four points for five types; three points for three to four types; two points for two types; one point for one type; and zero points if no site types have been identified.

The ranks for the two datasets were averaged for north-side rivers and for south-side rivers. Component scores for Notable Occupation ranged from zero to five points.

Cultural/Subsistence Importance: The component definition states that river corridors with notable Alaska Native quality, quantity, or variety of cultural or subsistence uses; or river corridors used for rare or sacred purposes are of higher value. The team interpreted this component to be the contemporary cultural value associated with each river corridor.

Three datasets were used to evaluate contemporary cultural values: 1) the number of subsistence uses, 2) the number of sites with current or recent historical value (e.g., cemetery sites), and 3) the presence or absence of rare, sacred, or other sites of important contemporary cultural value.

Data on the subsistence use of south-side rivers were obtained from the Yukon Flats Land Exchange Environmental Impact Statement (U.S. Fish and Wildlife Service 2010b). Rivers on the south side of the Refuge are used by residents of four villages (Arctic Village, Venetie, Fort Yukon, and Chalkyitsik) for 10 types of subsistence resources: caribou, moose, sheep, bear, wildfowl (e.g., waterfowl), small mammals, furbearers, fish, vegetation (e.g., berry picking), and woodcutting. The numbers of subsistence types were counted for each river. Five points were given to rivers with nine or more identified subsistence use types; four points for seven to eight types; three points for five to six types; two points for three to four types; one point for one to two types; and zero points if a river corridor is not used for any identified subsistence type.

Subsistence data for north-side rivers were extracted from the Draft Point Thomson EIS (Exxon Mobil Corporation 2009). North-side rivers are used by the residents of Kaktovik for caribou, fish, sheep, and furbearers. Exxon Mobil Corporation (2009) also indicates if an area is used intensively for any of the subsistence uses, and it provides the specific locations for important subsistence sites. The north-side rivers were scored using all three types of data: a point for any of the four subsistence species, a point for any specific location in a corridor, and a point if all or a portion of any river corridor is intensively used. Rivers were then ranked according to the following scale: a score of five for rivers with nine or more subsistence points; a score of four for seven to eight subsistence points; a score of three for five to six subsistence types; a score of two for three to four subsistence points; a score of one for one to two subsistence points; and a score of zero if a river corridor is not used for any identified subsistence type.

Another measure of contemporary cultural values is to look at known sites with important cultural values. These sites include cemetery sites; 14(h)(1) sites—those that Native village corporations have purchased from the Federal government because they contain important cultural values; historic sites (sites from the last 150 to 100 years) that are associated with Native culture; and the number of Native allotments in each river corridor. A point was given to each site in a river corridor. Points ranged from 0–15. Rivers were ranked according to the following scale: a score of five for rivers with nine or more sites; a score of four for seven to eight sites; a score of three for five to six sites; two points for three to four sites; one point for one to two sites; and zero points if no cemetery, 14(h)(1) sites, historic sites, or Native allotments are located in the river corridor.

A final measure of contemporary cultural value is the presence of any rare, sacred, or other highly valued cultural site in the river corridor. Refuge staff interviewed nine tribal members and elders in Arctic Village and four in Kaktovik about whether any of the Refuge's river corridors contain important contemporary cultural values. If a site or river was mentioned, we assigned the river a yes or no, which was scored as five or zero points, respectively.

The ranks for the three datasets were averaged for north-side rivers and for south-side rivers. Component scores for Cultural/Subsistence Importance ranged from zero to five points.

Number of Cultures: The regional archaeologist provided a list of the cultures known to have used, or believed to have used, each river corridor. To evaluate Number of Cultures, the cultures identified in each corridor were counted. In some cases, both “modern” and “historic” Iñupiat or Gwich'in cultures were listed. For the purpose of this evaluation, “modern” and “historic” are being considered as one culture. For example, modern and historic Iñupiat received a single point—not two. For some of the rivers, the data identified “possible”

cultures. These possible cultures were given one-half point because the available archaeological data is inconclusive. Rivers received five points for five cultures, four points for four cultures, etc.

Listing/Eligibility: According to the regional archaeologist, all known sites are eligible for listing in the National Register of Historic Places. This component does not allow comparisons of the rivers, so it was not included in the evaluation.

Site Integrity: The regional archaeologist identified all cultural sites in the Refuge as having high site integrity. Relatively few visitors or developments in the Refuge leave most sites undisturbed. Further, arctic conditions tend to preserve archaeological remains. Some sites have been lost along the coast because of erosion, and additional sites could be lost in the future. The water column in highly braided rivers meanders back and forth and can scour and erode cultural sites. The Site Integrity component does not allow comparisons of the rivers, so it was not included in our evaluation.

Educational/Interpretation: According to the regional archaeologist, the Refuge has two types of cultural resource sites that have national, if not global, significance: caribou fences and thousands of years of intercultural exchange.

The Refuge has the biggest known concentration of caribou fences in the United States. They are known from as far south as Eagle, Alaska, and they extend east into Canada. Archaeologists do not know how far west they extend, but some caribou fences are known to exist in Kanuti National Wildlife Refuge. These fences were very central to the cultures that used them. They appeared about 1,000 years ago and are likely Athabascan. The Refuge caribou fence complex is of national significance according to the regional archaeologist, and the complex of fences would be eligible as a National Historic Landmark. A river received five points if one or more caribou fences are located in its corridor and zero points if there are no caribou fences.

The Refuge is not considered to be a center of prehistoric Eskimo culture or innovation. However, it was a site from which Eskimo culture expanded from Alaska into Canada and Greenland to the east. The other aspect of prehistory that is notable in the area of the Refuge is 10,000 years of Eskimo and Athabascan interaction. Thus, the Refuge represents a cultural crossroads: north to south and back again, as well as west to east. The cultural exchange in both directions has national, if not global, significance. A river received five points if there are one or more sites in the corridor where it has been documented that Iñupiat, Eskimo, and/or Denbigh cultures used the site, as well as Gwich'in, Athabascan, and/or Paleoindian cultures. These sites are artifacts of the cultural crossroads for which the Refuge is known. A river received zero points if there were no documented sites of intercultural use.

The two datasets were totaled, rather than averaged, because there were no rivers that had both caribou fences and sites of cultural interchange. Thus, the component total represents a yes or no dataset, with five points for yes and zero points for no.

Final Score: The results for the four evaluated components were totaled by river. From this point forward, the analysis combined the north-side and-south side rivers.

Total scores for the Cultural ORV ranged from 0–15 points. The highest possible score for the Cultural ORV was 20 points, and 70 percent of 20 is 14. Thus, any river with a score greater than 14 was considered to have the Cultural ORV.

It was striking to the team that two communities and two cultures brought up the cultural importance of the Hulahula River, yet the river was not identified as having a Cultural ORV based on points alone. We provided the regional archaeologist with the interview information we obtained, and she told us that few archaeological surveys have been conducted on the Hulahula River. It is clear from the data we provided that the river has been used for multi-cultural exchange and barter for several generations, and there are likely many archaeological sites along the river's extent. In the regional archaeologist's professional judgment, the Hulahula has cultural importance in our regions of comparison, and it does have the Cultural ORV (D. Corbett, Regional Archaeologist, pers. comm., Jan. 11, 2011).

Cultural ORV Results					
	Components				
	Notable Occupation	Cultural/Subsistence Importance	Number of Cultures	Educational/Scientific	ORV Score
Aichilik River	2.5	2.7	1.0	0	6.2
Atigun River	4.5	0.0	2.0	5	11.5
Canning River	2.0	2.7	5.0	5	14.7
Marsh Fork Canning River	0.0	0.0	0.0	0	0.0
Coleen River	2.0	1.3	1.0	0	4.3
East Fork Chandalar River	4.0	5.0	1.0	5	15.0
Middle Fork Chandalar River	2.0	0.7	1.5	0	4.2
Firth River	0.0	0.0	0.0	0	0.0
Hulahula River	2.0	4.7	2.0	5	13.7
Jago River	1.0	1.3	1.0	0	3.3
Joe Creek	2.5	0.0	1.0	5	8.5
Junjik River	2.5	4.0	2.0	5	13.5
Spring Creek	1.0	1.0	1.0	5	8.0
Kongakut River	1.0	0.7	1.0	0	2.7
Okpilak River	1.0	0.7	2.0	0	3.7
Sadlerochit River	3.0	1.7	4.0	5	13.7
Neruokpuk Lakes	2.5	3.7	3.0	0	9.2
Porcupine River	5.0	2.3	3.5	5	15.8
Sagavanirktok River	3.5	0.0	1.0	0	4.5
Turner River	1.0	0.0	1.0	0	2.0

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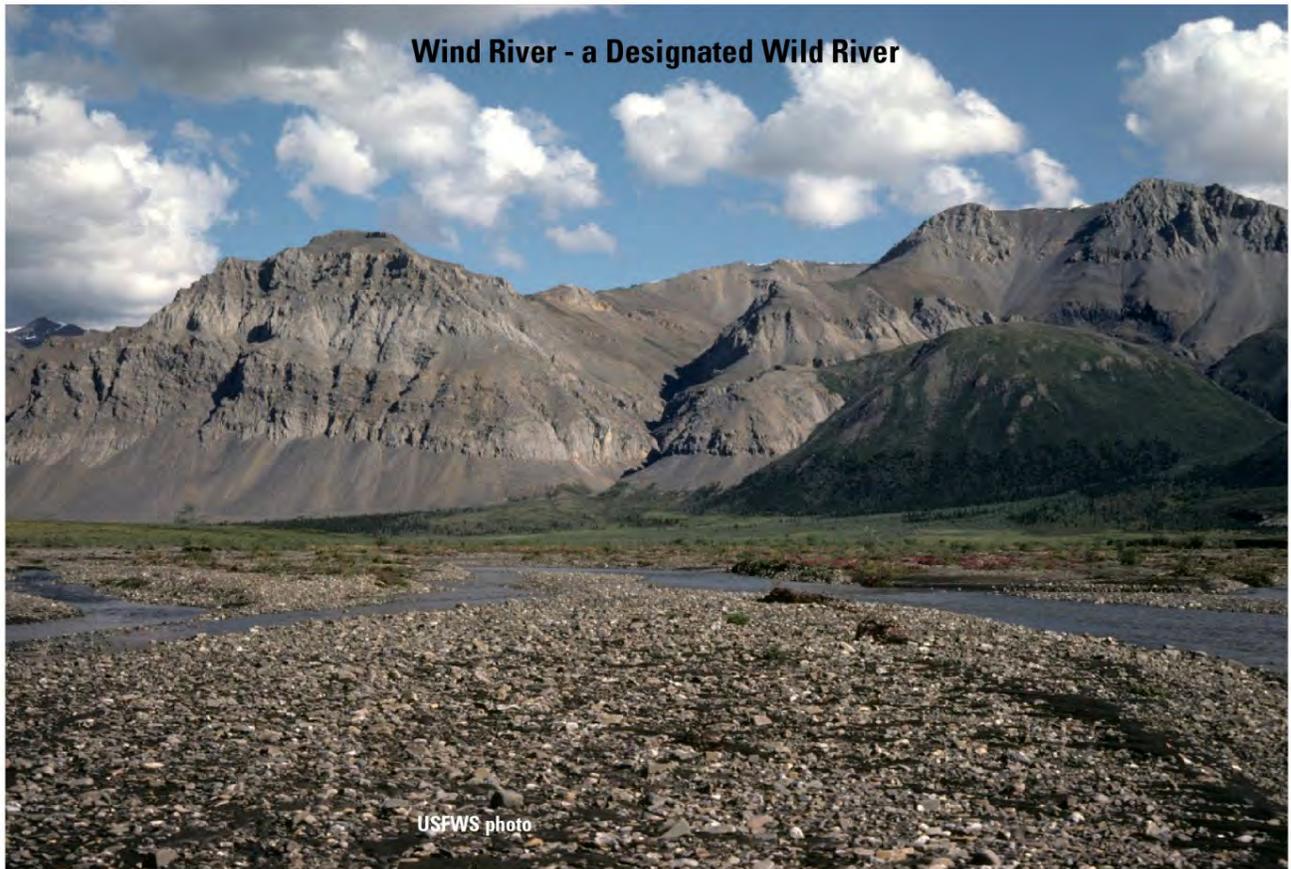
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U.S. Fish & Wildlife Service

Wild and Scenic River Suitability Report

Arctic National Wildlife Refuge



Wind River - a Designated Wild River

USFWS photo

February 2011

U.S. Department of the Interior
U.S. Fish and Wildlife Service
Arctic National Wildlife Refuge
Fairbanks, Alaska

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1. Introduction

An inventory and analysis of rivers in the planning area is being conducted as part of the Comprehensive Conservation Plan (Plan, Revised Plan) revision being conducted by the U.S. Fish and Wildlife Service (Service), Arctic National Wildlife Refuge (Refuge, Arctic Refuge). The inventory and analysis is to determine whether rivers or segments of rivers are “eligible” and “suitable” for consideration in the National Wild and Scenic River System (NWSRS). Wild and scenic river considerations are a required element of comprehensive conservation plans and are conducted in accordance with the planning process outlined in 602 FW 3 3.4 C (1) (c) and (d) (Service 2000) including public involvement and National Environmental Policy Act compliance.

The Wild and Scenic Rivers Act of 1968 (act) establishes a method for providing federal protection for certain free-flowing rivers and preserving them and their immediate environments for the use and enjoyment of present and future generations. The function of the Wild and Scenic River Review is to inventory and study the rivers and water bodies within the boundary of the Refuge to determine whether they merit inclusion in the NWSRS.

The act was enacted by Congress with the realization that, *“the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.”* Rivers that fall under this designation have to meet criteria of being free-flowing (the act, Section 16(b) *“existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway”*) and possess at least one outstandingly remarkable value (ORV): scenic, recreational, geologic, fish, wildlife, historic, cultural, or other. The act provides protection for designated river segments so they are *“preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.”*

Rivers and river segments designated under the act are protected and managed to maintain their free-flowing character and ORVs that led to designation. Section 10 of the act mandates, *“each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values.”* Protections put in place for designated rivers are intended to protect and/or enhance the river at its current state. If a river or segment is added to the NWSRS, a specific plan based on the characteristics of the river or segment corridor would be created.

Section 3(a) of the act has been amended to add rivers to the NWSRS and Section 5(a) has been amended to require additional rivers and river segments to be studied for potential inclusion in the system. The Alaska National Interest Lands Conservation Act (ANILCA) amended Sections 3(a) and Section 5(a) of the act to designate numerous rivers throughout Alaska as wild rivers, including the Ivishak, Sheenjek, and Wind Rivers (within the Refuge boundary); and a number of rivers for study, including the Porcupine River. In 1985, the National Park Service (NPS) completed an eligibility and suitability report for the Porcupine River and found the Porcupine River eligible but not suitable for inclusion in the NWSRS.

In September 2010, the Refuge completed the eligibility phase of a Wild and Scenic River Review as part of the Revised Plan. The review identified 10 of the Refuge's rivers as eligible for inclusion in the NWSRS. For a complete description of the eligibility process, including the rivers analyzed and methodology used, see the Wild and Scenic River Eligibility Report for Arctic National Wildlife Refuge, Alaska (Service 2011).

The current report includes a suitability study of the 10 eligible rivers, including 11 suitability factors considered for each eligible water body. See Map 1-1 for the waters studied as part of this suitability analysis.

1.1 Suitability Analysis Process

The purpose of the suitability phase is to determine whether eligible segments would be appropriate additions to the NWSRS by considering tradeoffs between development and protection. Suitability factors include the physical, social and political environments; the economic consequences; and the manageability of rivers if they were to be designated. Guidance for analyzing the suitability of eligible rivers was derived from The Wild and Scenic River Study Process Technical Report (Diedrich and Thomas 1999) and the Wild and Scenic Rivers Act of 1968.

Only Congress can designate a wild and scenic river. The Service cannot administratively designate a river into the NWSRS through a planning decision or other agency decision; therefore, no segment studied is designated or will automatically be designated as part of the NWSRS. The Wild and Scenic Rivers Act suitability evaluation process does not result in actual designation—it only determines suitability for designation.

The act requires that rivers and/or segments determined suitable be managed to maintain their free-flowing character and ORVs, and that interim management prescriptions be developed and followed to protect these qualities until congressional action regarding designation is taken. River segments determined to be not suitable return to the underlying management prescribed in the effective Plan. Regardless of recommendation, the Refuge rivers found suitable but not recommended would receive additional management protection. In other words, the effect of not recommending rivers for designation would be that eligible and suitable rivers will continue to be protected by interim management prescriptions and other protections afforded by Refuge status to ensure their continued eligible status.

1.2 Methodology

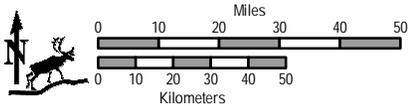
A suitability study must answer the following questions:

1. Should the river's free-flowing character, water quality, and ORVs be protected, or are one or more other uses important enough to warrant doing otherwise?
2. Will the river's free-flowing character, water quality, and ORVs be protected through designation? Is designation the best method for protecting the river corridor? In answering these questions, the benefits and impacts of the designation must be evaluated and alternative protection methods considered.
3. Is there a demonstrated commitment to protect the river by any non-Federal entities that may be partially responsible for implementing protective management?

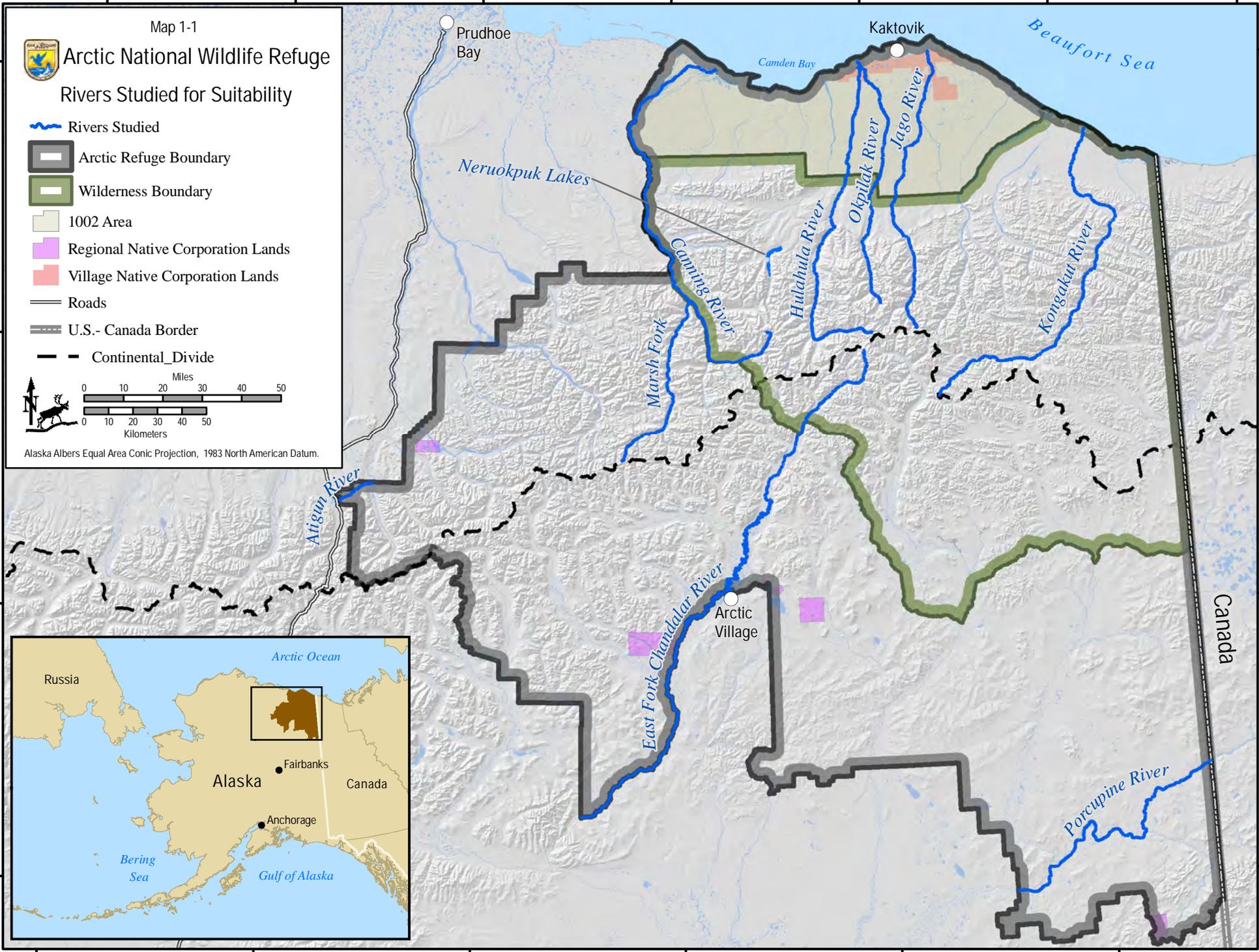
Map 1-1
Arctic National Wildlife Refuge
 Rivers Studied for Suitability



-  Rivers Studied
-  Arctic Refuge Boundary
-  Wilderness Boundary
-  1002 Area
-  Regional Native Corporation Lands
-  Village Native Corporation Lands
-  Roads
-  U.S.- Canada Border
-  Continental Divide



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



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

70° N
69° N
68° N
67° N

70° N
69° N
68° N
67° N

Canada

In Sections 4(a), 5(c) and 6(c) of the act, Congress identified the factors to be considered and documented as a basis for determining the suitability of a river, and in 1999, the Interagency Wild and Scenic Rivers Coordinating Council produced a concise document outlining these factors (Diedrich and Thomas, 1999). Today, the following criteria are used by Federal land managers to consistently evaluate the suitability of waters under their jurisdiction and to answer the three questions:

1. Characteristics which do or do not make the area a worthy addition to the NWSRS.
2. Status of land ownership, minerals (surface and subsurface), use in the area, including the amount of private land involved, and associated or incompatible uses.
3. Reasonably foreseeable potential uses of the land and related waters which would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and the values which could be foreclosed or diminished if the area is not protected as part of the NWSRS.
4. Federal, public, State, tribal, local, or other interests in designation or non-designation of the river, including the extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals. Also, the Federal agency that will administer the area should it be added to the national system.
5. Estimated cost, if necessary, of acquiring lands, interests in lands, and administering the area if it is added to the NWSRS.
6. Ability of the agency to manage and/or protect the river area or segment as a wild and scenic river, or other mechanisms (existing and potential) to protect identified values other than wild and scenic river designation.
7. Historical or existing rights which could be adversely affected.
8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.
9. Support or opposition of local and State governments and stakeholders for designation.
10. Consistency of designation with other agency plans, programs, or policies.
11. Contribution to a river system watershed or basin integrity.
12. Other issues and concerns, if any.

1.3 Data Sources

To evaluate the suitability criteria, the Service relied on various sources including geographic information systems (GIS) data, unpublished agency literature, miscellaneous trip reports, environmental analyses for nearby development projects, Refuge resource specialists, other agencies, Native corporations, tribal governments, landowners, land status maps, published books, commercial service providers and guides, and public and stakeholder input.

1.4 Public Input

1.4.1 Eligibility Phase

The Refuge held a formal public comment period for the Revised Plan from April 7 through June 7, 2010. The Refuge received responses from 94,061 individuals and organizations consisting of 1,480 substantive original responses and 92,581 form letters. Of these, 54 mentioned wild and scenic rivers or the Wild and Scenic River Review. A majority of comments regarding wild and scenic rivers expressed either support or opposition for the study of specific rivers. Multiple comments referred to specific rivers regarding their increased use, watershed and resource protection, physical impacts, experiential dimensions, development, and wilderness character.

1.4.2 Suitability Phase

The Refuge held a 30-day comment period (October 10–November 12, 2010) focused on stakeholder input regarding the suitability criteria. For this purpose, a stakeholder was defined as:

“A person, group, or organization that has a direct or indirect stake in the results of the Arctic Refuge Wild and Scenic River review process because the stakeholder could affect or be affected by the actions, objectives, or management provisions associated with the findings of eligibility (including Outstandingly Remarkable Values and tentative classification), suitability and/or designation of wild rivers within Arctic Refuge.”

Key stakeholders in this process included the Environmental Protection Agency; Alaska Department of Fish and Game (ADFG); Alaska Department of Natural Resources; Federal agencies that border eligible rivers in the Refuge (Bureau of Land Management [BLM], National Park Service); air operators, guides, and outfitters; Federal Subsistence Board; tribal governments and Native Corporations; Native allottees and private landowners in the Refuge; city and/or village governments (Arctic Village, Venetie, Fort Yukon, Chalkyitsik, Kaktovik); and borough officials (North Slope and Fairbanks North Star). For more information regarding consultation and coordination with stakeholders, see Appendix A of this wild and scenic river suitability report.

These stakeholders were sent a letter outlining the wild and scenic river process, summarizing the eligibility report, and a comment form regarding suitability criteria (Appendix B of this wild and scenic river suitability report). The responses from that inquiry have been incorporated into the suitability analysis and summarized below. A summary of comments received on non-eligible rivers are included in Appendix C of this wild and scenic river suitability report.

1.5 Interim Management of Candidate Rivers

Identifying a river as a candidate for wild and scenic river study under Section 5(d)(1) reflects the agency’s determination that the river has the potential to be included in the NWSRS, but it does not trigger specific protection under the act.

Interim management to adequately protect a candidate river’s free flow, water quality, ORVs, and preliminary or recommended classification is derived from an agency’s existing

authorities and subject to existing private rights (Table 1-1). The intent of interim protective management is to assure that a river maintains its eligibility status while Congress reviews and considers a river for designation.

Pending release of the Final Revised Plan and associated record of decision, the potential effects of proposed projects or Refuge uses on an eligible river's free flow, water quality, and ORVs will be evaluated on a site-specific basis, and adverse effects will be prevented to the extent of existing Service authorities. The goal is to manage eligible rivers to protect their preliminary (inventoried) classification. For rivers identified as not suitable in the Final Revised Plan, protection of river values reverts to the direction prescribed by the applied management category.

The Final Revised Plan will identify rivers determined suitable and recommended for congressional designation. Appendix D of this wild and scenic river suitability report identifies the interim management prescriptions that will be applied to suitable and recommended rivers to protect their recommended classification and the specific values that qualify them for inclusion in the NWSRS. If more detailed interim guidance is required, it can be developed in a step-down interim management plan or integrated into step-down plans for other program areas such as the Wilderness Stewardship Plan or Visitor Use Management Plan. As provided in the policy guidance on step-down management planning (602 FW 4), this decision rests with the Refuge manager and is based on strategies defined in the Plan, the relationship between program areas, and the complexity of the programs under consideration.



Photo by Dave Prestipino

Table 1-1. Interim Protection for Suitable and Recommended Wild and Scenic Rivers

Issue	Management Prescription/Action
Study Boundary	Minimum of one-half mile from ordinary high water mark Boundary may include adjacent areas needed to protect identified values
(Section 2(b) of Wild and Scenic Rivers Act)	3 classes: wild, scenic, recreational (defined by statute) Criteria for classification described in Interagency Wild and Scenic Rivers Coordinating Council guidelines Manage suitable rivers according to recommended classification
Study Report Review Procedures	Notice of study report and Draft Environmental Impact Statement published in Federal Register Comments and response from Federal, State, and local agencies, and the public included in the study report/Final Environmental Impact Statement transmitted to the President and Congress
Private Land: ▪ Administration ▪ Acquisition	<ul style="list-style-type: none"> ▪ Private land uses may be affected through voluntary partnership with State and/or local governments and landowners ▪ No regulatory authority ▪ Typically an evaluation of the adequacy of local zoning and land use controls is a component of suitability determination¹ ▪ No ability to acquire interest in land under the Wild and Scenic Rivers Act's authority prior to designation
Water Resources Project	River's free-flowing condition protected to the extent of other agency authorities; not protected under the Wild and Scenic Rivers Act
Land Disposition	Agency discretion to retain lands in river corridor in Federal ownership
Mining and Mineral Leasing	Protect free flow, water quality, and ORVs through other agency authorities
Actions of Other Agencies	Actions of other agencies may be affected through voluntary partnership
Protect Outstandingly Remarkable Values	Prior to congressional designation, no regulatory authority conferred by the Wild and Scenic Rivers Act; agency protects through other authorities Section 11(b)1: Limited financial or other assistance to encourage participation in the acquisition, protection, and management of river resources ²

¹ For an agency identified study river that includes private lands, there is often the need to evaluate existing State and local land use controls and, if necessary, assess the willingness of State and local government to protect river values.

² Section 11(b)1 authorizes the Secretary of the Interior and Secretary of Agriculture, or the head of any other Federal agency, to provide for "limited financial or other assistance to encourage participation in the acquisition, protection, and management of river resources." This authority "applies within or outside a federally administered area and applies to rivers which are components of the National system and to other rivers." The recipients of Federal assistance include states or their political subdivisions, landowners, private organizations, or individuals. Examples of assistance under this section include but are not limited to riparian restoration; riparian fencing to protect water quality and riparian vegetation; and vegetative screening to enhance scenic/recreational experiences.

Source: Diedrich and Thomas 1999

1.6 Designated Wild and Scenic Rivers

Legislation that adds rivers to the NWSRS may specify the area to be included in the river corridor and/or provide guidance for developing corridor boundaries. If the classification(s) determined in the management plan differ from those stated in the study report, the management plan will describe the changes in the existing conditions of the river area or other considerations that require the change in classification. In general, the act requires (Interagency Wild and Scenic Rivers Coordinating Council 2010) the administering agency to:

- Establish a detailed river corridor boundary of an average of not more than 640 acres per river mile within one year from date of designation.
- Prepare a Comprehensive River Management Plan (CRMP) within three full fiscal years after the date of designation. This CRMP must:
 - Describe the existing resource conditions, including a detailed description of the ORVs;
 - Define the goals and desired conditions for protecting river values;
 - Address development of lands and facilities;
 - Address user capacities;
 - Address water quality issues and instream flow requirements;
 - Reflect a collaborative approach with all stakeholders;
 - Identify regulatory authorities of other governmental agencies that assist in protecting river values; and
 - Include a monitoring strategy to maintain desired conditions.

1.7 Suitability Factors

The information provided in this section provides a synopsis of some aspects of the suitability criteria that are common to most or all eligible rivers (refer to the list of suitability criteria on page I-63). In addition to the following aspects, if more river-specific data is available and relevant, it has been summarized under each river.

Criteria 2:

- **Status of land ownership:** Arctic Refuge was originally established as the Arctic National Wildlife Range by PLO 2214 in 1960. All lands within the boundaries of the original Range were withdrawn in 1957 pending a final Secretarial decision on the proposed reservation. Consequently, the submerged lands beneath navigable waters were retained in Federal ownership at statehood. With the passage of ANILCA in 1980, the Range was expanded by approximately nine million acres and rededicated as Arctic National Wildlife Refuge (see maps 1-3 and 1-4 in Chapter 1). In those portions of the Refuge added by ANILCA, the submerged lands beneath any navigable waters are owned by the State of Alaska. All of the Atigun, Marsh Fork Canning, and Porcupine Rivers are located outside the boundary of PLO 2214. The portion of the East Fork Chandalar River that is in designated wilderness is within the boundary of PLO 2214; the non-designated portion is outside the PLO 2214 boundary. In 2005, the Department

of the Interior disclaimed all Federal interest in the submerged lands beneath the Porcupine River. The status of the other three rivers is undetermined at this time.

- **Minerals:** On national wildlife refuges, Section 16 of the Federal Coal Leasing Amendment Act of 1975 (Public Law 94-377) prohibits coal mining, and Section 1014 (c) of the Geothermal Steam Act of 1970 prohibits geothermal leasing.
- **Classification:** All eligible rivers have a tentative wild river classification because they don't have road or trail access in the study corridor. Federal lands within one-half mile of the banks of designated wild rivers are withdrawn from appropriation under the mining and mineral leasing laws pursuant to Sections 9(a) and 15(2) of the Wild and Scenic Rivers Act. No new mining claims or mineral leases can be granted in the corridor; however, existing valid claims or leases within the river boundary remain in effect, and activities may be allowed subject to regulations that minimize surface disturbance, water sedimentation, pollution, and visual impairment.

Criteria 4:

- **Administration (management and cost):** In all cases, the Service would administer the area should it be added to the NWSRS. Where private, State, or tribal landowners are identified, the Service would work and coordinate with those landowners to ensure continued protection of river resources, either through interim management prescriptions or through a CRMP.

Criteria 6:

- **Water rights, water quality and instream flow regimes:** The Service holds unquantified Federal reserved water rights sufficient to achieve the purposes for which the Refuge was established. For the lands in the original Arctic National Wildlife Range, there are implied Federal reserved water rights with a priority date of December 6, 1960. ANILCA expanded and rededicated the Refuge, and made the reservation of water explicit in the fourth purpose:

“to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge.”

These explicit Federal reserved water rights have a priority date of December 2, 1980. While the Refuge retains Federal reserved water rights, Service policy is to “comply with State laws, regulations, and procedures in obtaining and protecting water rights ... except where application of State statutes and regulations does not permit Federal purposes to be achieved.” Currently the Service does not hold perfected State water rights for any of the rivers being studied for wild and scenic river designation.

Numerous laws and court cases provide the authorities under which the Service acquires, manages, and protects its waters and water rights, among them the National

Wildlife Refuge System Improvement Act of 1997, the Fish and Wildlife Act of 1956, the Fish and Wildlife Coordination Act of 1934, the McCarran Amendment of 1952, and the Clean Water Act of 2002.

- **Recreation:** The 1988 Comprehensive Conservation Plan (U.S. Fish and Wildlife Service 1988) states that “the service will manage for recreational use to avoid overcrowding conditions and minimize adverse impacts to historical and/or cultural, fish and wildlife, wilderness, and other special values.” Management of the following issues is subject to Section 1110 (a) of ANILCA: regulating access, limiting the size and number of recreational group visits, limiting commercial guiding and outfitting activity, and educating users. The Revised Plan will provide a comprehensive framework for working with local villages, State agencies, and other Federal government agencies to protect against proposed activities that would be incompatible with protecting an ORV.

In response to complaints made by private parties and recreational guides regarding the effect of encountering large groups, the Refuge decided to implement group size limits of 7 hikers or 10 floaters for commercial groups Refuge-wide. These same group size limits are recommended for private parties as well.

- **Recreation in designated wilderness:** The Wilderness Act, Refuge establishing purposes, and ANILCA require the Service to manage the area to maintain wilderness resources and values; preserve the wilderness character of the biological and physical features; and provide opportunities for research, subsistence, and wildlife-oriented recreation. Access by foot, aircraft, motorboat, and snowmachine will be permitted for traditional subsistence use. Traditional commercial recreational activities (guiding and outfitting services) will continue. The Revised Plan will provide a comprehensive framework for working with local villages, State agencies, and other Federal government agencies to protect against proposed activities in designated wilderness that would be incompatible with protecting an ORV.
- **Existing protections:** See Appendix E of the wild and scenic river suitability report for existing applicable laws, regulations, acts and other protections that apply to rivers in Arctic Refuge. This appendix has information about how Wilderness and Minimal Management categories differ.

Criteria 9:

- **Support by State governments:** Although the Alaska Statewide Comprehensive Outdoor Recreation Plan of 2009–2014 (Alaska Department of Natural Resources 2009a) states that designated wild and scenic rivers provide opportunities for outdoor recreation unsurpassed anywhere, and the State of Alaska has designated State recreation rivers, the State of Alaska does not support new designations.
- **Stakeholder comments:** During the 2010 stakeholder comment period, the Service received 55 comments regarding suitability criteria. Comments pertaining to a specific river are documented under that river. The following comments apply to all eligible rivers:

Comments supporting designation:

- All rivers in the Refuge are free-flowing, have pure, high quality water, contain one or more Outstanding Remarkable Value, and provide diverse habitat in the arctic and subarctic.
- The list of eligible rivers was too short. All 160 rivers in the Refuge, rather than a subset, should have been evaluated for eligibility. The method in which rivers were excluded from eligibility was highly flawed as it lacked necessary and pertinent information and showed a bias toward those rivers with a history of commercial use.
- The inventory, study and recommendation of rivers for WSR designation would provide further protection of the rivers, their watersheds and the integrity of their basins including the adjacent coastal ecosystem.
- The rivers should be considered in their entirety and not fragmented into management units as they are essential and intact ecological parts the arctic and subarctic.
- The rivers' close proximity to mountain ranges, boreal forest and the Beaufort Sea provides for dramatic scenery.
- Other relevant studies and contemporary writings about Refuge river values should be included in the WSR review.
- The Draft CCP should include a number of alternatives that would recommend designating high priority eligible rivers.
- Each of the eligible rivers contains more ORVs than those identified.
- Comparing Refuge rivers to each other discounts their overall Refuge value.

Comments opposing designation:

- The State of Alaska and the Citizens' Advisory Commission question the Refuge's authority to conduct a WSR review. They assert that the Refuge does not have authority under ANILCA to consider designating any more rivers. They also state that the rivers are already adequately protected, especially those that flow through designated wilderness.
- The State of Alaska commented that designation could interfere with the State's ability to allocate water resources for on-shore development, which is a matter of national concern.
- The Refuge's rivers are protected; change is not necessary and rivers should be protected through the Refuge's comprehensive management plan.
- There is a lack of stewardship for currently designated Arctic Refuge Wild Rivers, and unless those stewardship deficiencies are repaired, there is little to be gained by further designation of Wild Rivers.

Other concerns:

- What are the possible implications (positives and negatives) of wild and scenic river designation? Do the benefits outweigh the drawbacks?
- Would designation affect commercial industries, subsistence, hunting, fishing, and/or other visitor uses?
- Wild river designation is important, but is it the best thing for the Refuge considering reduced budgets, and—more so, would designation detract from other more pressing Refuge priorities?
- Will designation attract more visitors?
- The Northern Alaska Environmental Center, Natural Resources Defense Council, Wilderness Society, Defenders of Wildlife, Friends of Alaska National Wildlife Refuges, Sierra Club, and Trustees for Alaska are concerned that conservation, environmental, and outdoor recreational non-profit organizations were not defined as stakeholders for the Wild and Scenic River Review.
- Stakeholder comments reflect concerns regarding large rafting groups; hunters with poor etiquette; motorized hunting access that could negatively affect wildlife populations in non-protected areas; the lack of protection for river resources; and the potential for development, including oil and gas activities and infrastructure.
- Comments suggest the following protective mechanisms: maintain current restrictions on commercial operators; include private parties in group size limits; develop and implement an allocation system to regulate departure dates; require floaters to register with the Refuge before embarking on a trip; require Leave No Trace practices; and prohibit oil and gas activities and infrastructure.

Criteria 10:

- **Consistency of designation:** The Refuge is required to consult with other divisions of the Service on actions they carry out, fund, or authorize that might affect species listed as threatened or endangered under Section 7 of the Endangered Species Act. Activities in areas designated as critical habitat under the Endangered Species Act are also reviewed to ensure they are not likely to result in the adverse modification of critical habitat. For activities that may affect polar bears, other listed species, or designated critical habitat, the Refuge complies with both the Marine Mammal Protection Act and the requirement for consultation under Section 7 of the Endangered Species Act. Map 1-2 shows polar bear critical habitat areas in relationship to studied rivers.

Criteria 12:

- **Subsistence issues:** Although subsistence users have concerns about how their traditional uses would be affected by wild and scenic river designation, ANILCA protects these uses. Therefore, designation would have no impact to federally qualified subsistence users. Increased education about the benefits of wild and scenic river designation and the protection of subsistence uses could diminish these concerns.

General Information:

- ANILCA (Public Law 96-487) Section 1002 provides for a comprehensive and continuing inventory and assessment of the fish and wildlife resources of the Coastal Plain of the Refuge and an analysis of the impacts of oil and gas exploration, development, and production; it authorizes exploratory activity in the Coastal Plain in a manner that avoids significant adverse effects on fish, wildlife, and other resources. Section 1002 applies to the segments of the Okpilak, Canning, Jago, and Hulahula Rivers that flow through the 1002 Area.

- ANILCA (Public Law 96-487) Section 1003 prohibits production of oil and gas, and other developments leading to the production of oil and gas, from Arctic Refuge unless authorized by Congress. Section 1003 applies to Refuge portions of the Atigun, Kongakut, Porcupine, Marsh Fork Canning, and East Fork Chandalar Rivers, and Neruokpuk Lakes. Section 1003 also applies to the segments of the Okpilak, Canning, Jago, and Hulahula Rivers that are upstream of the 1002 Area.

- ANILCA set forth the purposes of the Refuge; defined objectives and provisions for planning and management; and authorized studies and programs related to wildlife and wildland resources, commodity resources, and recreational and economic uses.

- Refuge staff have worked in concert with the Marine Mammals Management office polar bear biologists, the Fairbanks Fish and Wildlife Field office endangered species biologists, the North Slope Borough Wildlife Department, and a wide array of Kaktovik community partners to optimize human safety and reduce disturbance to polar bears. Polar bear interaction guidelines for incidental encounters, as well as polar bear viewing guidelines for recreational polar bear viewing, have been developed to minimize the occurrence of human-polar bear conflicts.

Wild river designation would not adversely affect current management efforts, plans, or policies regarding polar bears. Designation could increase the protections for polar bear critical habitat by foreclosing on oil and gas development and their associated infrastructure support mechanisms in the designated corridor.

148° W 146° W 144° W 142° W

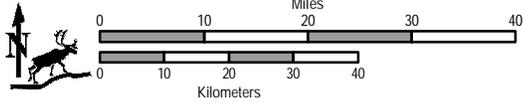
Map 1-2



Arctic National Wildlife Refuge

Polar Bear Critical Habitat and Eligible Rivers

-  Polar Bear Critical Habitat *
-  Eligible Rivers
-  U.S.- Canada Border
-  Arctic Refuge Boundary
-  Wilderness Boundary
-  Village Native Corporation Lands



Alaska Albers Equal Area Conic Projection, 1983 North American Datum.
*Designated under the Endangered Species Act, U.S. Fish & Wildlife Service, Marine Mammals Management Office, Anchorage, AK.



70° N

68° N

146° W

144° W

142° W

70° N

68° N

Kaktovik

Camden Bay

Beaufort Sea

Neruokpuk Lakes

Canning River

Hulahula River

Okpilak River

Jago River

Kongakut River

Canada

2. River Specific Suitability Analysis

2.1 Atigun River

Reach: The Atigun River, which is a tributary of the Sagavanirktok River, flows into the Refuge from bordering lands with the State and BLM and can be accessed by the Dalton Highway. The Refuge's portion is often referred to as Atigun River Gorge.

Total River Length:	43 miles	Primary Classification:	Wild
Length on Refuge:	11.4 miles	ORVs:	Geologic, Recreational
Length in Wilderness:	0 miles		

2.1.1 Description/Overview

The portion of the Atigun River being considered for designation (downstream of the Refuge boundary) begins approximately 28 miles from its headwaters and is within three-quarters of a mile from the James Dalton Highway and the Trans-Alaska Pipeline System (Map 2-1). Road access, rather than aircraft access, makes the Atigun unique from other rivers in the Refuge. The river flows north-northeast through a one-mile-wide valley until it joins with the Sagavanirktok River. Combined with the Sagavanirktok, this waterway is the longest river access between the Brooks Range and the Beaufort Sea.

2.1.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

The Atigun River has outstandingly remarkable geologic and recreational values. The headwaters of the Atigun are located in the glaciers of the Endicott Mountains and drop into Atigun Gorge, a chasm that is an eight-mile slice through the mountains, exposing about one hundred million years of the Earth's history. The many layers of limestone, chert, sandstone, shale, and conglomerate were deposited while this area was under the sea during the late Paleozoic and early Mesozoic. Abundant sea life fossils can be found throughout the layers. The gorge also displays the tremendous force exerted on these rocks as they were lifted up from the sea. The layers of rock bed were folded and faulted into many structures. Pleistocene glaciers and finally the draining of a glacial lake all helped form this 1,500 to 2,000 foot deep gorge (Detterman et al. 1975).

In addition to its geologic values, compared to other Brooks Range rivers, the Atigun is a heavily used recreational river. Recreational values that affect the suitability of this segment are described here. Atigun Gorge boasts some of the most challenging road-accessible whitewater in the northern portion of Alaska. Whether seeking whitewater boating adventures; riparian habitat for excellent roadside birding; a relatively rapid route to hunting grounds and crowds away from the road; access to more distant valleys during long expeditions; spring skiing, mushing, and ice climbing opportunities in an arctic setting; or the visual drama of a scenic backdrop for a holistic wilderness backpacking or

hiking experience—Atigun Gorge is clearly increasingly valued by an ever broadening range of visitors as a recreational treasure.

There are characteristics of the Atigun River, unrelated to geology and recreation that affect the suitability of this segment. The Atigun River's cultural, archaeological, and scientific resources are uniquely placed for easily accessible education and interpretation opportunities. Atigun Gorge has also been recognized as a location for educational studies, exploration of geologic features, and archaeological surveys.

Atigun Gorge is in the Wiseman subsistence use area and is important for subsistence sheep hunting.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

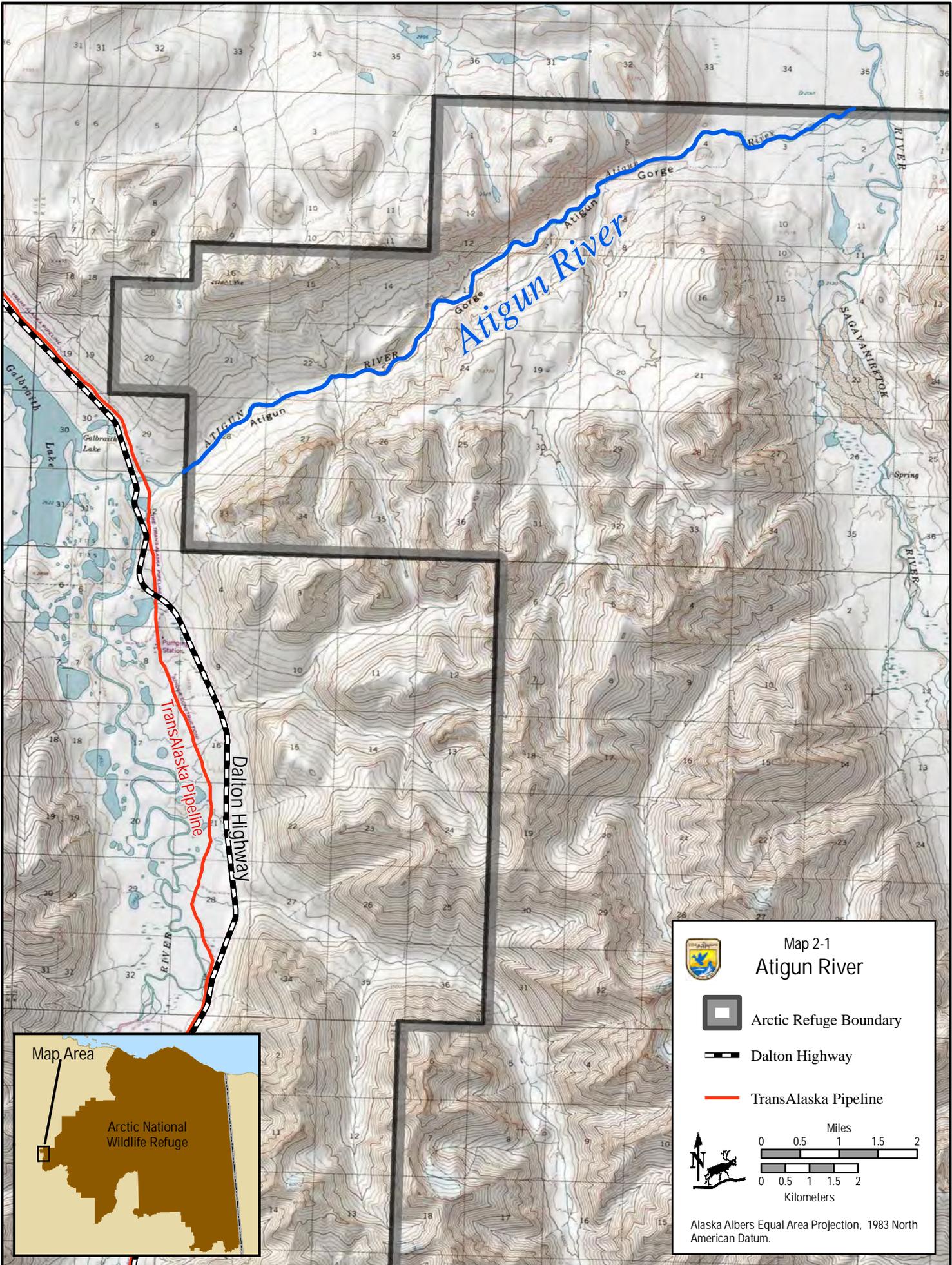
The Atigun River is located outside the boundary of PLO 2214 (the original Arctic Range). The ownership of the submerged lands beneath this river depends on its navigability for purposes of title. If determined navigable, the State would own the submerged lands beneath the river to the ordinary high water mark. If determined non-navigable, the submerged lands belong to the owners of the adjacent uplands. The navigability status of the Atigun River is undetermined at this time.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Recreational use and oil and gas exploration and development have the highest potential to be enhanced, foreclosed, or curtailed if the Atigun River were included in the NWSRS.

The 1988 Plan identified the Atigun Gorge as an area that was experiencing minor adverse impacts on recreation due to increased visitor use. In 1995, the Dalton Highway was opened to the public, and since that time, the Atigun River corridor has experienced steady increases in visitation (BLM 2005). The highway serves as an access corridor to the Refuge, which is located less than three-quarters of a mile away and easily accessible from the highway. Approximately seven percent of all Dalton Highway survey respondents named either the area between Atigun Pass and Toolik Field Station, or the Galbraith Lake area specifically, as primary destinations (BLM 2007). The Refuge's Visitor Study found that the Atigun River was one of the top five most common entry (seven percent) and exit (eight percent) points.

Wild river designation would require the Refuge to address user capacity as part of the CRMP. Management prescriptions and protection of the social and physical experiential dimensions could have a positive and negative impact on recreational use in the Atigun River Gorge. The quality of recreational experiences could be enhanced by limiting or restructuring use. Simultaneously, management structure and perceived controls could detract from the overall experience.



Map 2-1
Atigun River

-  Arctic Refuge Boundary
-  Dalton Highway
-  TransAlaska Pipeline

Miles
 0 0.5 1 1.5 2

Kilometers
 0 0.5 1 1.5 2

Alaska Albers Equal Area Projection, 1983 North American Datum.



The second potential use is oil and gas exploration, associated infrastructure development, and monitoring and maintenance of the Trans-Alaska Pipeline System. Currently, Alyeska flies over the Atigun River Valley from the westerly Refuge boundary to the river's confluence with the Sagavanirktok River as an alternate weather route for aviation surveillance trips. Also, Alyeska maintains a contingency spill containment site, as approved in the Trans-Alaska Pipeline System Oil Discharge Prevention and Contingency Plan, on BLM land just north of the Refuge boundary, approximately one mile from its confluence with the Sagavanirktok. Alyeska operations include conducting spill response training and exercises in the vicinity of the spill containment site on a one- to three-year cycle. However, these uses occur outside the study corridor, and the Service does not have jurisdiction over airspace.

A proposal exists to build a new natural gas pipeline in the BLM Utility and Trans-Alaska Pipeline System corridors. Noise, dust, and other disturbances associated with construction activities in close proximity of the gorge would likely impact recreational use inside the gorge. Although recreational experiences are not encompassed in the geologic ORV, use and enjoyment of the area's geology would be directly impacted.

Alaska Statute 19.40.210 prohibits the use of off-road vehicles on land within five miles of the right-of-way of the Dalton Highway north of the Yukon River. Legislation that would remove current restrictions on the use of snow machines in the Dalton Highway Corridor Management Area was recently introduced in the Alaska Legislature. Also introduced was similar legislation that would remove the restriction on the use of all-terrain vehicles in the Dalton Highway Corridor Management Area. If the State restriction is removed, motorized activity would increase on the lands adjacent to the Refuge. Illegal use of off-road vehicles on Refuge lands would likely occur, too, which could result in increased hunter harvest of Refuge wildlife and disturbance to sensitive wildlife populations; increased impacts to vegetation and soils; increased impacts to local subsistence opportunities; and increased fossil collection.



4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

All the land in the Atigun River corridor is owned by the Service; therefore, the Service would be responsible for administering the Atigun River corridor.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

The ownership of the submerged lands is undetermined at this time. The State has not filed a quiet title action or an application for a recordable disclaimer of interest. Additionally, since the headwaters of the Atigun are located outside the Refuge, it is possible that other entities could file water rights applications for water diversions, which could affect water quantity.

The cost of CRMP development, related data needs, and any management actions resulting from the CRMP planning effort may be offset by increased funding and staffing.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The Arctic Refuge segment of the Atigun River (11.4 miles) flows through lands administered under Minimal Management provisions.

7. Historical or existing rights that could be adversely affected with designation.

There are no historical or existing rights in the river corridor.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

There are no local zoning or other land use controls in the proposed corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 Revised Plan scoping period, the Service received one comment supporting designation for Atigun River and four comments suggesting the need for increased protection of the resource.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 12 comments for the Atigun River from commercial guides, recreational visitors, conservation organizations, the wild and scenic river coordinator for BLM in Fairbanks, and other unidentified commenters. Six comments support designation of the Atigun River, and six comments did not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial

recreation, hunting, and fishing. In their comments, stakeholders identify the following values with the corresponding frequencies: wildlife (11), recreational (8), scenic (10), geologic (8), cultural (3), fish (3), and historic (1). Additionally, stakeholders identify intact wilderness, intact ecological systems, and subsistence as other Atigun River values. Specifically, comments note that the Atigun River Valley provides habitat for Dall's sheep and easy road access to whitewater, making it an important recreational river. Comments also note that the river valley is a cultural site containing multiple prehistoric hearths. Stakeholder concerns for the Atigun River include oil spills and excessive sport hunting.

10. Consistency of designation with other agency plans, programs, or policies.

Wild river designation of the Atigun would provide a complimentary set of protections to other Refuge and Service policies and programs.

11. Contribution to a river system watershed or basin integrity.

The Atigun River is a tributary of the Sagavanirktok River. These two rivers combined create the longest river access between the Brooks Range and the Beaufort Sea. Designation could help protect this watershed.

12. Other issues and concerns, if any.

There are no additional issues or concerns pertaining to the Atigun River.

2.1.3 Preliminary Suitability Determination

The Atigun River is preliminarily determined to be suitable with a wild river classification. The Wild and Scenic Rivers Act provides useful tools for managing and protecting the values in this river corridor. The Atigun River is the Refuge's only front country river due to its proximity to and accessibility via the Dalton Highway. Because of this, the Atigun has unique management needs, and these needs can be addressed in a legally binding manner through the act. The river valley is approximately one mile wide, allowing the provisions of the CRMP to apply to the entire valley, thereby avoiding potential displacement issues in the corridor. The act provides useful, meaningful, and additional management tools to protect the geologic and recreational ORVs, the wildlife, and the scenic values of the Atigun River. The intent of the act was to protect rivers whose waters are fragmented between different management agencies and/or private landowners and whose values are threatened by potential development. The Atigun River falls under this category, and the Service has the ability to protect the river corridor.

2.2 Canning River

Reach: The Canning River is the longest north-flowing river in the Refuge. It forms the western boundary of the Refuge and flows through mountains, foothills, Coastal Plain, and empties into the Beaufort Sea.

Total River Length:	125.5 miles	Primary Classification:	Wild
Length on Refuge:	125.5 miles	ORVs:	Wildlife, Fish, Cultural
Length in Wilderness:	83.6 miles		

2.2.1 Description/Overview

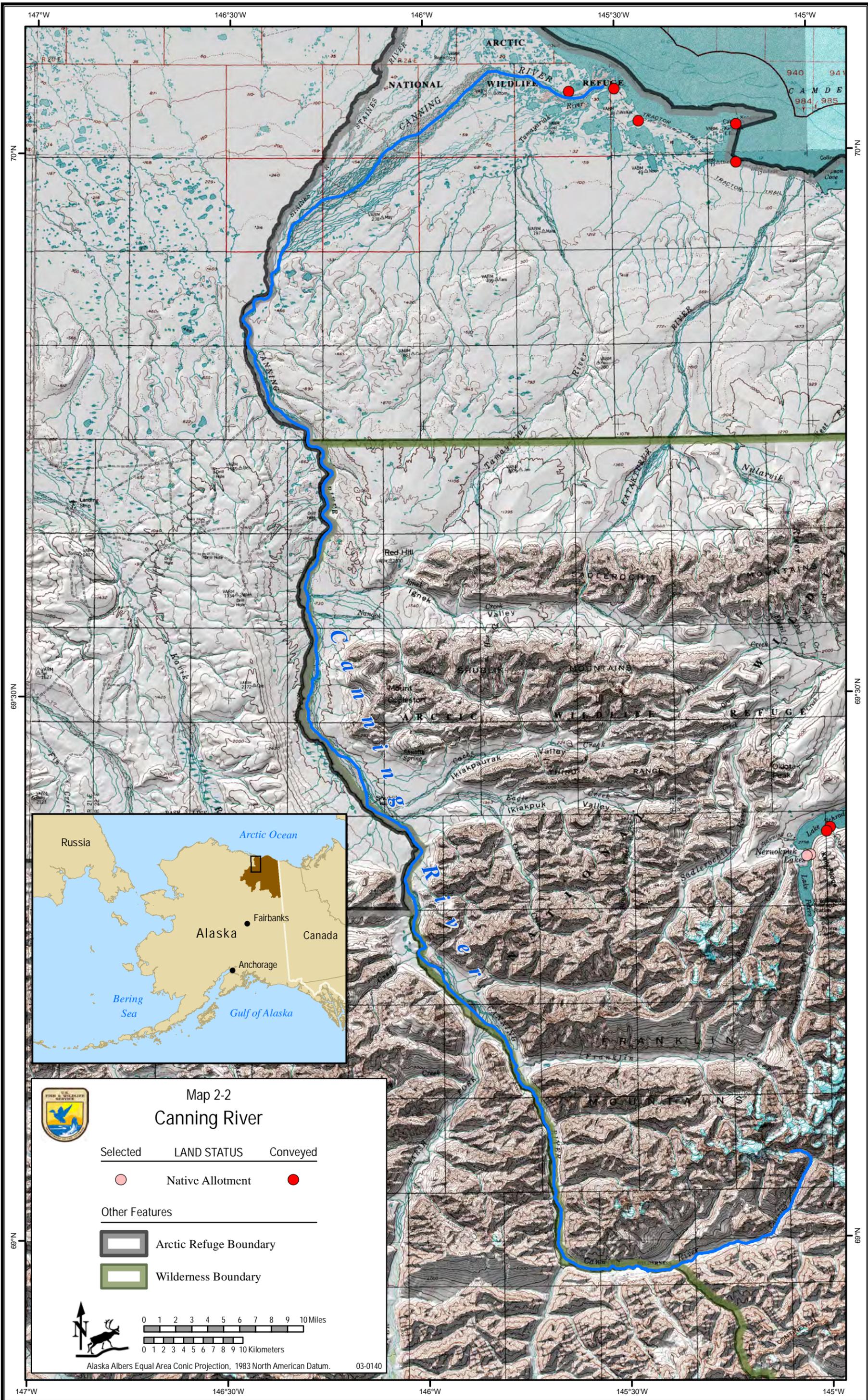
The Canning River forms the western boundary of the Refuge north of the Brooks Range. The entire length of Canning River and its headwaters, including the Marsh Fork (see Section 2.3), is being considered for designation. The Canning River starts in the Romanzof Mountains and flows in an arc to the south, west, and finally north through scenic, glaciated valleys near the Continental Divide. Within about 15 miles of the Beaufort Sea, the Canning becomes a three-mile-wide, heavily braided, shallow waterway. The river then creates a wide delta as it empties into the Beaufort Sea.

2.2.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

The Canning River has been used by multiple cultures for thousands of years. Numerous archaeological sites, including tent rings and open-air camps, have been located in the river corridor. The archaeological evidence suggests use by Paleoindian, Paleoartic, Denbigh, Northern Archaic, ancestral Iñupiat, Athabaskan groups, and historic and modern Iñupiat and Gwich'in. In general, Arctic Refuge is known as a cultural crossroads where Eskimo and pre-Eskimo coastal cultures interacted and traded with Indian and pre-Indian cultures from the interior, north, and south. Additionally, multiple Eskimo and pre-Eskimo cultures from Alaska and Canada traded with one another, west and east. The cultural exchange in both directions has national, if not global, importance (D. Corbett, Regional Archaeologist, pers. comm., June 9, 2010). The archaeological record from the Canning River indicates the river was used for these cross-cultural exchanges. Additionally, modern Iñupiat intensively use the river for subsistence purposes (Exxon Mobil Corporation 2009), and tribal members identified the Canning River as having important contemporary cultural value. A multi-cultural archaeological record combined with contemporary cultural values and uses give the Canning River outstandingly remarkable cultural values that are unique from other rivers in Alaska and those in the NWSRS.

The Canning has outstandingly remarkable wildlife values. The vegetation diversity in the river corridor provides habitat for nesting migratory birds and waterfowl. Shorebirds, including plovers, sandpipers, and phalaropes, concentrate around the Canning River delta between mid-July and August in preparation for their fall migration. High densities of nesting tundra swans and molting small geese, as well as the only known nesting sites of



Map 2-2
Canning River

Selected LAND STATUS Conveyed

Native Allotment

Other Features

- Arctic Refuge Boundary
- Wilderness Boundary

0 1 2 3 4 5 6 7 8 9 10 Miles
0 1 2 3 4 5 6 7 8 9 10 Kilometers

Alaska Albers Equal Area Conic Projection, 1983 North American Datum. 03-0140

Sabine's gulls in the Refuge, are found on the Canning River delta (Revised Plan Chapter 4, Section 4.3.6.7).

Because polar bears are listed as a threatened species under the Endangered Species Act, special attention is paid to their habitat protection. Polar bear critical habitat is generally found within about 25 miles of the Beaufort Sea coast. The eligibility phase included evaluative criteria for polar bear critical habitat on all inventoried North Slope rivers. The Canning River was found to have over 50 miles of critical polar bear habitat and four confirmed polar bear den sites.

Muskoxen often concentrate along the Coastal Plain of the Canning River during the summer. As the only large mammal present year-round in the 1002 Area, muskoxen provide continuous food for scavengers and predators. Muskoxen have relatively small home ranges with limited seasonal movements and a relatively low reproduction rate.

Moose congregate at Shublik Springs in large numbers during the spring to browse on the poplars and willows. They continue to inhabit the area around the springs in the summer, and then they move to higher elevations in the surrounding hills for winter. This population of moose is considered one of the five major concentrations of moose on the North Slope and is protected in the Canning River drainage from hunting. Grizzly bears frequent the area to prey on moose calves. Wolverine and wolves are also abundant in the area.

The Central Arctic caribou herd's calving activity usually is concentrated in two areas, one of which is the lower Canning River delta. Most years, as many as 1,000 cows calve on the river delta (U.S. Fish and Wildlife Service 1988). The majority of the herd moves east of the Canning to feed and seek insect relief from June through August, and about 20–30 percent of the herd winters along the river near the southern boundary of the 1002 Area. This herd provides important opportunities for subsistence and general hunting. The exceptional combination of pristine habitat and wildlife contribute substantially to the functioning and productivity of the river ecosystem.

The Canning also has outstandingly remarkable fish values. The entire length of the Canning River supports spawning and rearing populations of Arctic grayling, Dolly Varden, Arctic char, and a small population of burbot. ADFG identified the Canning River as important habitat for anadromous fish (Alaska Statute 16.05.871). There are also populations of whitefish, chum, and pink salmon. Round whitefish have been observed in the main stream of the Canning and in lakes near that river's mouth (Craig 1977; Smith and Glesne 1983). There are at least nine wintering locations identified for Dolly Varden, and populations of resident Arctic char have been found in Shublik Springs. These populations remain in their respective streams, lakes, or springs for all stages of their life history. An aerial survey accomplished in fall of 1986 indicated a population of at least 7,300 Dolly Varden char in the Canning River (Frugé 1987).

As the only river with round whitefish and burbot populations, the Canning River has particular importance to Kaktovik subsistence users. The open water areas associated with springs in the drainage are the most important winter subsistence fishing areas. Arctic cisco is one of the primary species harvested from the Canning River by Kaktovik subsistence users (Griffiths et al. 1977; Pedersen and Linn 2005), but they also harvest grayling, burbot, and round whitefish up to the junction with the Marsh Fork, specifically between Ignek and Nannok Creeks and around Shublik Island.

Characteristics unrelated to the fish and wildlife ORVs also make the Canning River a worthy addition to the NWSRS. The river provides opportunities for solitude and enjoyment of natural river sounds; primitive and unconfined recreation in a natural, undisturbed environment; and opportunities for wildlife viewing, fishing, hunting, trapping, hiking, and photography. Multiple cultural and paleontological sites are located in the proposed wild and scenic river corridor.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The entire Canning River is located within the boundaries of PLO 2214 (the original Arctic Range). The western boundary of PLO 2214 follows the ordinary high water mark along the western bank of the Canning River for nearly its entire length. Except for two Native allotments totaling 79.98 acres and bordering the river, the Service owns all lands, including submerged lands, within the boundary of PLO 2214.

The Service has explicit but unquantified Federal reserved water rights for water quality and necessary water quantity to achieve the purposes of Arctic Refuge established by ANILCA (Public Law 96-487). The Service has not obtained any State-based water rights for the Canning River. Other entities could file water rights applications for water diversions that could affect water quantity.

State lands adjacent to the Refuge boundary have been leased for oil and gas development, providing an opportunity for incompatible uses to occur in a potential wild and scenic river corridor.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Two foreseeable uses of lands in the Canning River corridor that could cause negative impacts are visitor use and oil and gas exploration and development. Recreational uses in the Canning River corridor include hiking, backpacking, floating, hunting, fishing, dog mushing, caribou viewing, and bird watching. General hunting, especially for non-Alaska residents, has become more popular since the opening of the Dalton Highway to the public. The Canning and its Marsh Fork define the boundary between Game Management Units 26B on the west side of the river and 26C on the east side of the river.

An inventory of water resources completed in 1985 (Tweten 1985) identified the top five rivers in the 1002 Area whose watersheds were threatened by potential water and mineral resource development and non-consumptive uses. There are two forms of non-consumptive use: 1) those related to socioeconomics, such as general and subsistence hunting and fishing, river floating, recreational uses, aircraft landings, and historical and present travel route use; and 2) those related to construction or maintenance, such as removal of gravel from streambeds to build roads and oil platforms, some forms of dredge mining, and hydroelectric power plants. The Canning River was rated second in this study and was identified 1) for potential mineral or oil and gas development; 2) as a navigable transportation route; and 3) as having significant resource values, including habitat for threatened species; habitat for overwintering, spawning and smolting fish; wetlands

dependent on water flow; historical and cultural values; and subsistence and general fishing values.

Potential threats to the Canning River Valley from oil and gas development include the expansion of the Point Thomson Project to within two miles of the river corridor; the 2007 lease of National Petroleum Reserve Alaska lands directly adjacent to the Canning River; and the “Proposed Consistency Determination – Beaufort Sea Area-wide Oil and Gas Lease Sales, 2009–2018” (Alaska Department of Natural Resources 2009b). This determination includes waters north of and adjacent to the northern boundary of the Refuge. It requires gravel mining sites for exploration and development activities. According to the lease agreement, activities will be restricted to the minimum necessary to develop the field efficiently and with minimal environmental damage. Where practicable, gravel sites would be designed and constructed to function as water reservoirs for future use. Gravel mine sites required for exploration activities would not be located in an active floodplain of a water course unless the ADNDR Division of Mining, Land and Water, after consultation with ADFG, determines that there is no practicable alternative or that a floodplain site would enhance fish and wildlife habitat after mining operations are completed and the site is closed.

Wild and scenic river designation would require the Refuge to address user capacity as part of a CRMP. Management prescriptions and protection of the social and physical experiential dimensions could have a positive and negative impact on recreational use in the Canning River corridor. The quality of recreational experiences could be enhanced by limiting or restructuring use. Simultaneously, management structure and perceived controls could detract from the overall experience.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

The Service would work with the two private landowners and the State to administer the Canning River corridor.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

Excluding the two Native allotments, the entire length of the Canning is in Federal ownership and is managed by the Refuge. Therefore, acquiring lands and interest in lands would not be necessary.

The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The upper 83.5 miles of the Canning River flow through lands administered under Wilderness Management provisions. The lower 42 miles of the Canning River flow through lands administered under Minimal Management provisions.

Designation of the polar bear as a threatened species under the Endangered Species Act affords additional Federal protections to any lands and waters identified as critical habitat. Approximately 29 miles of the lower Canning River is in polar bear critical habitat. Likely, these protections would benefit other wildlife and fish species in the area.

7. Historical or existing rights that could be adversely affected with designation.

There are no historical or existing rights in the river corridor.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

From the Beaufort Sea to the junction with the Marsh Fork, the Canning River is in the coastal zone of the North Slope Borough. Under Section 307 (c) of the Coastal Zone Management Act of 1972, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. There are no other local zoning or other land use controls protecting the river's ORVs to prevent incompatible development in the river corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 Refuge Revised Plan scoping period, the Service received 13 comments supporting designation for the Canning, 5 comments requesting increased resource protection, 3 comments relating personal travel experiences on the Canning River to the coast and the abrupt interruption of their overall experience due to the number of oil drums and oil derricks seen from the river, and 1 comment stating that further designations of the Canning River would hinder oil and gas development and therefore threaten the country's ability to produce its own oil.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 20 comments for the Canning River from commercial guides, recreational visitors, conservation organizations, an air-taxi operator, the Native Village of Kaktovik tribal president, and other unidentified commenters. Eight comments support WSR designation of the Canning River, and 12 comments do not clearly mention support or opposition to the designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, hunting, fishing, rafting, and subsistence. One comment mentions that the stakeholder's family historically used the river for herding reindeer. In their comments, stakeholders identify the following values with the corresponding frequencies: wildlife (16), recreational (17), scenic (16), geologic (17), cultural (5), fish (11), and historic (7). Additionally, stakeholders identify intact wilderness and subsistence as other Canning River values. Specifically, comments note that the Canning River is important for fish, birds, muskoxen, land-denning polar bears, and caribou from both the Porcupine and Central Arctic herds. Comments also note that

Federal ownership of most of the river, its beds, and banks makes it feasible to consider the Canning River for designation and that all its tributaries should be considered for review. Comments emphasize how lakes in the Canning's delta are vital to providing adequate and clean water for bird and fish habitats. Stakeholders also comment that the Canning flows through scenic glaciated valleys; has rich historical significance from early explorers such as Leffingwell; and is one of the most floated and hiked rivers on the Refuge. Stakeholder concerns include high visitor use and part of the river's location in the 1002 Area. One comment notes that because the Canning River marks the western boundary of the Refuge's Coastal Plain, it is among the most threatened rivers due to active oil and gas leasing on adjacent State lands.

10. Consistency of designation with other agency plans, programs, or policies.

Wild river designation of the Canning River would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, the Endangered Species Act, ANILCA, and the Coastal Zone Management Program.

11. Contribution to a river system watershed or basin integrity.

Designating the entire length of the Canning River would aid in protecting the integrity of the Canning River watershed, which drains approximately 2,900 square miles.

Designation would protect the river and its delta while maintaining the uniqueness of the river corridor by providing visitors exposure to extraordinary wilderness, abandoned oil field derricks, historic structures, paleontological resources, and uncontaminated streams and springs.

12. Other issues and concerns, if any.

There are no additional issues or concerns pertaining to the Canning River.

2.2.3 Preliminary Suitability Determination

The Canning River is preliminarily determined to be not suitable. It would be extremely difficult for the Service to manage the Canning River as part of the NWSRS because of its boundary with State land that has high potential for oil and gas exploration and development. The fish, wildlife, and cultural ORVs of the Canning River primarily exist in the lower river where it borders State land. Therefore, it would not be possible to segment the river above its border with State land and determine it suitable. Additionally, the Refuge's natural resource management strategies are applied at a Refuge-wide or ecosystem level; fragmenting fish and wildlife management along a river corridor is not the most appropriate management strategy. Refuge-wide protections that encompass the Canning River already exist. The entire Canning River flows in the original Arctic Range, and most of it flows through designated wilderness. Therefore, the Canning River is already afforded a high level of protection, and its visitor use could be managed through a Refuge-wide Visitor Use Management Plan, which is one of the step-down plans identified in the Revised Comprehensive Conservation Plan.

2.3 Marsh Fork Canning River

Reach: The Marsh Fork is the Canning River's main tributary, and it flows in from the west as it cuts through the rugged, striking landscape of the Phillip Smith Mountains.

Total River Length:	54.3 miles	Primary Classification:	Wild
Length on Refuge:	54.3 miles	ORVs:	Geologic, Recreational
Length in Wilderness:	0 miles		

2.3.1 Description/Overview

The Marsh Fork is the largest tributary of the Canning River, and it cuts a narrow valley through the Philip Smith Mountains (Map 2-3). From its origin in the Philip Smith Mountains, the river flows 53 miles through steep-sided valleys with mountains exceeding 6,500 feet (Alaska Division of Geological and Geophysical Surveys 1987). Where the Marsh Fork meets the main Canning River, it abruptly exits the mountains as the adjoining waters continue to flow north through the Coastal Plain.

2.3.2 Suitability Factor

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

The Marsh Fork Canning River has outstandingly remarkable recreational values that are unique from other rivers in Alaska and those in the NWSRS. The Marsh Fork provides an opportunity to float or hike through a primitive, essentially untouched portion of the Brooks Range with some of the highest, most precipitous arctic mountains. This relatively short stretch of crystal clear river offers a phenomenal holistic recreational experience, including impressive mountain scenery, an abundance of wildflower and other plant species, waterfalls and springs that pour down steep slopes into the river, productive fishing holes, and relatively dry uplands that provide a fairly easy substrate for hiking. Wildlife-viewing opportunities also abound. The Marsh Fork has a seasonally high concentration of various wildlife species, including muskoxen, caribou, brown bear, Dall's sheep, wolves, moose, and golden eagles. The Marsh Fork is located in the Central Arctic caribou herd's winter and summer ranges and is the western edge of the Porcupine caribou herd's range. Carter Pass, which is the continental divide between Spring Creek on the south side and the Marsh Fork on the north side, is an important migration route for caribou and occasionally provides opportunities to view unusual species in north-side rivers, such as otters, lynx and porcupine.

Recreationists also come to fish and bird watch. There are several large grayling and Arctic char spawning areas, and a miniature subspecies of char that reaches about eight inches in maturity occurs in this river. Birders come for the opportunity to view gray-headed chickadees and Smith's longspurs, and lucky birders may even catch a glimpse of a bluethroat (Steve Kendall, U.S. Fish and Wildlife Service, pers. comm. 2010). Other birds that are commonly viewed include golden eagles, gyrfalcons, peregrine falcons, long-tailed and parasitic jaegers, yellow wagtails, Arctic warblers, Say's phoebes, and horned larks.

146°30'W

146°W

145°30'W



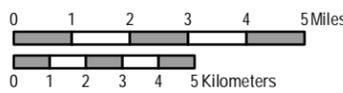
68°N

68°N



Map 2-3
Marsh Fork Canning River

 Wilderness Boundary



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

03-0141

146°30'W

146°W

145°30'W

With normal water levels, the Marsh Fork travels at about 5–6 miles per hour and can be floated in 4–5 days, although the average trip length is 8.6 days, which usually includes boating down to the lower reaches of the Canning River near Shublik Springs. This trip could be extended to 12–14 days by floating to the ocean. At average flow rates, the waters are generally class I and II.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The Marsh Fork Canning River is located outside the boundary of PLO 2214 (the original Arctic Range). The ownership of the submerged lands beneath this river depends on its navigability for purposes of title. If determined navigable, the State would own the submerged lands beneath the river to the ordinary high water mark; if non-navigable, the submerged lands belong to the owners of the adjacent uplands. The navigability status of the Marsh Fork Canning River is undetermined at this time.

The Service has not obtained any State-based water rights for the Marsh Fork. However, since the headwaters of the Marsh Fork are located in the Refuge, it is unlikely that other entities would file for diversionary water rights on this river.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Wild and scenic river designation would require the Refuge to address user capacity as part of a CRMP. Management prescriptions and protection of the social and physical experiential dimensions could have a positive and negative impact on recreational use in the Marsh Fork Canning River corridor. The quality of recreational experiences could be enhanced by limiting or restructuring use. Simultaneously, management structure and perceived controls could detract from the overall experience.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

All the land in the Marsh Fork Canning River corridor is owned by the Service; therefore, the Service would be responsible for administering the Marsh Fork Canning River corridor.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

The ownership of the submerged lands is undetermined at this time. The State has not filed a quiet title action or an application for a recordable disclaimer of interest.

The cost of CRMP development, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The entire length of the Marsh Fork Canning River flows through lands administered under Minimal Management provisions.

7. Historical or existing rights that could be adversely affected with designation.

There are no historical or existing rights in the river corridor.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

The Marsh Fork is in the Coastal Zone of the North Slope Borough. Under Section 307 (c) of the Coastal Zone Management Act, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. There are no other local zoning or other land use controls protecting the river's ORVs by preventing incompatible development in the river corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designate under the Wild and Scenic Rivers Act.

During the 2010 Refuge Revised Plan scoping period, the Service received six comments supporting the designation of the Marsh Fork of the Canning River and two requesting increased resource protection.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 18 comments for the Marsh Fork Canning River from commercial guides, recreational visitors, conservation organizations, an air-taxi operator, and other unidentified commenters. Eight comments support designation of the Marsh Fork Canning, and 10 comments do not clearly mention support for or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, hunting, fishing, and rafting. In their comments, stakeholders identified the following values with the corresponding frequencies: wildlife (15), recreational (15), scenic (17), geologic (14), cultural (4), fish (7), and historic (2). Additionally, stakeholders identify intact wilderness, intact ecological systems, and hunting as other Marsh Fork Canning River values. Specifically, comments note that the open, shale-dominated basin of the upper Marsh Fork allows for unusual scenic views, and the nutrient rich soils and resulting plant life provide forage for Dall's sheep. Comments further note that the river provides fun and challenging whitewater through a scenic canyon of geological interest and that there are rugged peaks, erratic boulders, and fossilized marine rock along the river. Gray-headed chickadees are also known to nest in the area.

10. Consistency of designation with other agency plans, programs, or policies.

Wild and scenic river designation of the Marsh Fork would provide a complimentary set of protections to other Refuge and Service policies and programs and ANILCA.

11. Contribution to a river system watershed or basin integrity.

The Marsh Fork is the largest tributary of the Canning River. This watershed drains approximately 2,900 square miles. Designating the Marsh Fork would afford continued protection of this important river system and would help maintain the integrity and the uniqueness of Carter Pass by providing easy access for people and wildlife over the Continental Divide.

12. Other issues and concerns, if any.

There are no additional issues or concerns pertaining to the Marsh Fork Canning River.

2.3.3 Preliminary Suitability Determination

The Marsh Fork Canning River is preliminarily determined to be suitable with a wild river classification. The rivers in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. To determine a river suitable, Refuge staff believed it was imperative to 1) gain additional management tools through potential designation, and 2) avoid creating new management issues by displacing visitor use to other highly desirable and visited river corridors. Determining the Marsh Fork Canning River as suitable, along with the Kongakut and Hulahula Rivers, achieves these goals. The intent driving this determination is to avoid displacing visitor use to similarly desirable river corridors and to promote holistic, ecosystem-wide, effective management strategies. The Marsh Fork Canning River is the third most visited river on the Refuge's North Slope, and its popularity has been increasing steadily. Visitor use data reflects that recreational use of the Kongakut River is being displaced to the Marsh Fork. The Wild and Scenic Rivers Act provides useful management tools to protect the recreational outstandingly remarkable value and the scenic, geologic, and wildlife values of the Marsh Fork. Most of the Marsh Fork flows through a narrow river valley, allowing the provisions of the CRMP to apply to most of the valley, thereby avoiding potential displacement issues in the corridor. The entire length of the Marsh Fork Canning River flows outside of the original Arctic Range and outside designated wilderness. Wild river designation would increase the protection and Service's manageability of the Marsh Fork Canning River.

2.4 East Fork Chandalar River

Reach: The East Fork Chandalar River is a major tributary of the Chandalar River and serves as a highway to subsistence hunting, fishing and trapping areas. From approximately Arctic Village south, the eastern half of the river, including the eastern stream bed, is not in the Refuge boundary.

Total River Length:	223.3 miles	Primary Classification:	Wild
Length on Refuge:	203.7 miles	ORVs:	Cultural
Length in Wilderness:	32.9 miles		

2.4.1 Description/Overview

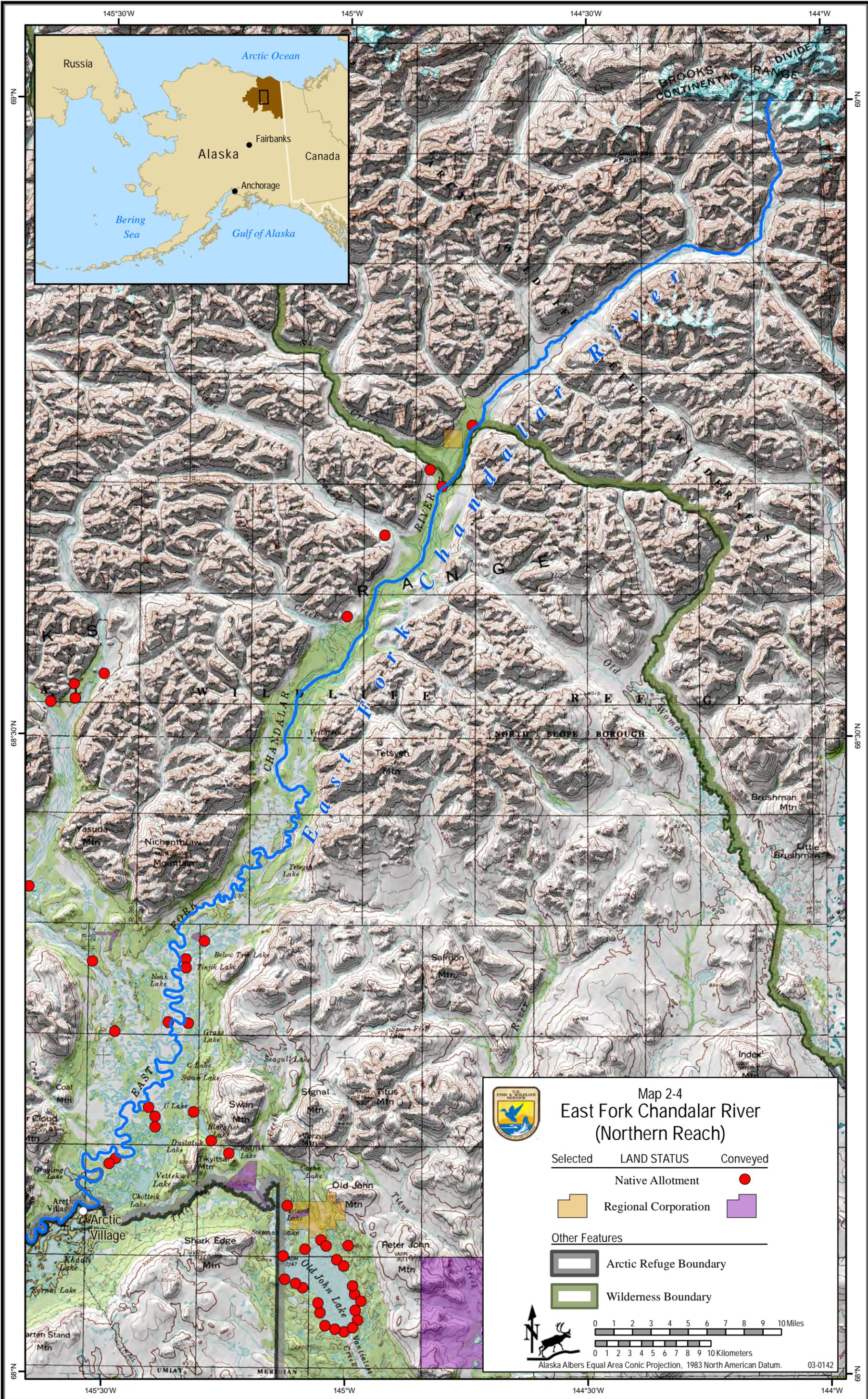
The Chandalar River is a major tributary of the Yukon River. The East Fork Chandalar River flows swiftly south nearly 60 miles from its high mountainous headwaters through a wide, mountain-rimmed valley, and then it meanders slowly through a forested, lake-dotted valley as it passes Arctic Village (Maps 2-4 and 2-5). The East Fork serves as a highway to access subsistence hunting, fishing, and trapping areas around Arctic Village. Many villages have economies that revolve around subsistence uses and opportunities.

2.4.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

The East Fork Chandalar River has outstandingly remarkable cultural values that are unique from other rivers in Alaska and those in the NWSRS. The East Fork provides an opportunity to experience a community whose economic basis is subsistence use of diverse wildlife and plant populations on the south side of the Brooks Range. The East Fork travels from the mountain-rimmed headwaters in the Romanzof Mountains past Arctic Village, along the Refuge boundary, and further on to its confluence with the mainstem Chandalar River. This drainage then continues past the village of Venetie for 100 miles before it enters the Yukon River. The Chandalar drainage's large expanse and relatively predictable water flow allow it to serve as a highway to subsistence hunting, fishing, and trapping areas, primarily for the villages of Arctic Village and Venetie, but also for other villages along the Yukon River. The only year-round access to Venetie and Arctic Village is via airplane.

Until the 1950s, the Neets'aii Gwich'in ("those who dwell to the north") lived a highly nomadic life. They traditionally used seasonal camps and semi-permanent settlements, such as Arctic Village, Christian, Venetie, and Sheenjek, in pursuit of fish and game. They traded with Iñupiat Eskimos on the Arctic coast. There is archaeological evidence that the Arctic Village area was populated as early as 4,500 BC. Evidence of human use of caribou in the region of Arctic Refuge has been found dating back some 27,000 years (Irving 1968). Remnants of caribou fences and corral structures used by the Kutchin people can be found throughout much of the current southern range of the Porcupine caribou herd (Warbelow et al. 1975). In the proposed East Fork Chandalar Wild River corridor, there are multiple caribou fences, cemeteries, and other examples of subsistence use.



Map 2-4
East Fork Chandalar River
(Northern Reach)

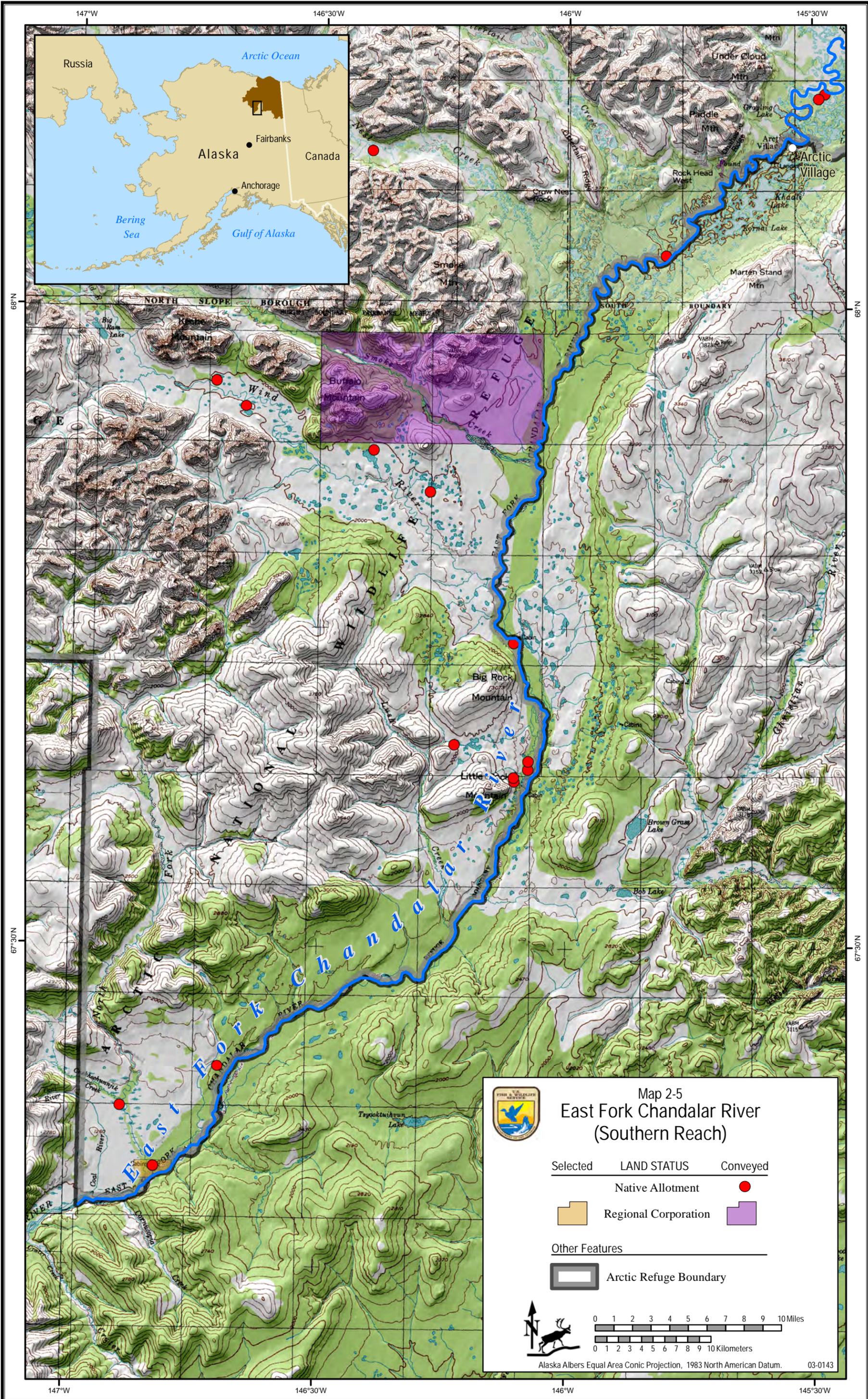
Selected	LAND STATUS	Conveyed
	Native Allotment	
	Regional Corporation	

Other Features

- Arctic Refuge Boundary
- Wilderness Boundary

0 1 2 3 4 5 6 7 8 9 10 Miles
0 1 2 3 4 5 6 7 8 9 10 Kilometers

Alaska Albers Equal Area Conic Projection, 1983 North American Datum. 03-0142



Map 2-5
East Fork Chandalar River
(Southern Reach)

Selected LAND STATUS Conveyed

Native Allotment ●

Regional Corporation

Other Features

Arctic Refuge Boundary

0 1 2 3 4 5 6 7 8 9 10 Miles
 0 1 2 3 4 5 6 7 8 9 10 Kilometers

Alaska Albers Equal Area Conic Projection, 1983 North American Datum. 03-0143

In 1863, Archdeacon McDonald of Fort Yukon observed that the Chandalar Kutchin were important providers of caribou meat for the residents of Fort Yukon. Currently, residents of various Native villages trade their area's subsistence resources for those found in other areas. For example, residents of Fort Yukon may give salmon to residents of Arctic Village in exchange for caribou. Before trading occurred, Reverend Albert Tritt, a Neets'aiti Gwich'in born in 1880, wrote that his people led a nomadic life, traveling to the Arctic coast, Rampart, Old Crow, the Coleen River, and Fort Yukon in the 1880s and 1890s. With the introduction of firearms in the early 1900s, family groups began to gather more permanently at several locations; there was no longer a need to disperse into small groups to hunt caribou. The first permanent resident at the present village site was Chief Christian in 1909. In 1943, the Venetie Indian Reservation was established due to the efforts of several area villagers to protect their land for subsistence use. When the Alaska Native Claims Settlement Act (ANCSA) was passed in 1971, Venetie and Arctic Village opted for title to the 1.8 million acres of land in the former reservation (Alaska Division of Community and Regional Affairs 2010).

Residents continue to use the community as a base of operations from which they pursue seasonal subsistence activities (Alaska Division of Community and Regional Affairs 2010). Certain communities, especially Arctic Village and Fort Yukon, serve as regional providers of localized resources. Caribou, moose, sheep, porcupine, rabbit, and ptarmigan are hunted. Freshwater fish, waterfowl, furbearers, firewood, and berries are also harvested. The school, clinic, village council, and stores are the primary employers. Seasonal employment includes construction, firefighting, and guiding. Some residents trap furbearers or sell firewood for income.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

Service management and ownership exceptions apply to the 16 native allotments (totaling 1,755 acres) that exist in the river corridor.

Approximately 32 miles of the East Fork Chandalar River are located within the boundary of PLO 2214 (the original Arctic Range), while the remaining 171 river miles are located in the lands added to the Refuge by ANILCA. The ownership of the submerged lands beneath the lower 172 miles of the river depends on its navigability for purposes of title. If determined navigable, the State would own the submerged lands to the ordinary high water mark beneath those portions of the river in Arctic Refuge. If determined non-navigable, the submerged lands would belong to the adjacent upland landowner. The navigability status of the East Fork Chandalar River is undetermined at this time.

The Service has not obtained any State-based water rights for the East Fork Chandalar River. Since the headwaters of the East Fork Chandalar are located in the Refuge, it is unlikely that other entities would file for diversionary water rights on upper reaches of this river. On the lower 171 miles, other entities could file water rights applications for water diversions that could affect water quantity.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

There are no reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

The Service would work with private landowners, the Venetie and Arctic Village tribal governments, and the communities of Venetie and Arctic Village to administer the East Fork Chandalar River corridor.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

There are no village corporation lands (conveyed or selected) in the East Fork Chandalar corridor. The Service has acquired allotments along the East Fork and plans to continue to acquire allotments in cooperation with The Conservation Fund.

There are six conveyed and one selected ANCSA 14(h)(1) sites in or near the corridor, and these sites have restrictions contained in the patent that prohibit their development or sale. Therefore, these sites will not be acquired by the Service.

The cost of CRMP development, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with the designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The upper 32.9 miles of the East Fork Chandalar River flow through lands administered under Wilderness Management provisions. The lower 170.8 miles of the Refuge segment of the East Fork Chandalar flow through lands administered under Minimal Management provisions.

7. Historical or existing rights that could be adversely affected with designation.

There are no historical or existing rights that could be adversely affected with designation. There are 16 known sites that have historical or cultural significance, including caribou fences with associated settlements, historically used camps, clusters of storage caches, kill sites, graves, and prehistoric camps and sites. These sites would not be adversely affected by designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

There are no land use controls or local zoning controls to protect the river's ORVs from incompatible development.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 Refuge Revised Plan scoping period, the Refuge received three comments supporting designation of East Fork of the Chandalar River and four comments suggesting the need for increased protection of subsistence resources and traditional village uses against general hunters' sometimes unethical hunting practices.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 25 comments for the East Fork Chandalar River from commercial guides, recreational visitors, conservation organizations, an-air taxi operator, Arctic Village residents and council members, Native Village of Venetie council members, a member of the Gwich'in tribal government, and other unidentified commenters. Seven comments support designation of the East Fork Chandalar River, and 18 comments do not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, hunting, fishing, trapping, and subsistence. In their comments, stakeholders identify the following values with the corresponding frequencies: wildlife (18), recreational (13), scenic (15), geologic (7), cultural (13), fish (11), and historic (7). Stakeholders identify travel, sacred sites, private land ownership, intact wilderness, intact ecological system and subsistence—both current and historical—as other East Fork Chandalar River values. Specifically, comments note that the East Fork Chandalar River is, and historically has been, important for subsistence harvest of Dall's sheep, moose, grizzly bear, caribou, wolf, wolverine, red fox, arctic fox, ground squirrel, ptarmigan, porcupine, grayling, whitefish, and waterfowl. It was further noted that the river was a historical trade route between the Gwich'in and the Iñupiat. Stakeholder concerns include cleanliness and sport hunting. Another stakeholder expressed concerns about whether designation would mean additional regulations that could negatively affect a subsistence lifestyle. Stakeholders recommended increasing law enforcement presence.

10. Consistency of designation with other agency plans, programs, or policies.

Wild and scenic river designation of the East Fork Chandalar River would provide a complimentary set of protections to other Refuge and Service policies and programs; the Wilderness Act; ANILCA; the National Historic Preservation Act of 1966, as amended; the Antiquities Act of 1906, 16 U.S.C. § 433 et seq.; the Native American Graves Protection and Repatriation Act, 25 U.S.C. § 3001 et seq.; the Archaeological Resources Protection Act, 16 U.S.C. § 470aa et seq.; and Section 106 of the National Historic Preservation Act of 1966.

11. Contribution to a river system watershed or basin integrity.

The East Fork of the Chandalar is an integral part of the Chandalar and Yukon River watersheds. It's part of an intact ecosystem that supports the subsistence and cultural values held by Alaskan Natives. This river is unique by supporting the economic basis for Arctic Village and providing subsistence opportunities for the entire Chandalar region. Protecting this river is essential to protecting fish and wildlife populations and their crucial role in subsistence uses and traditional cultures.

12. Other issues and concerns, if any.

There are no additional issues or concerns pertaining to the East Fork Chandalar River.

2.4.3 Preliminary Suitability Determination

The East Fork Chandalar River is preliminarily determined to be not suitable. The river valley is wider than one mile for the majority of its length, meaning that a CRMP that protects one-half mile on either side of the river would not be the best management approach to the East Fork Chandalar River and would not be consistent with the Refuge's overarching goals to apply ecosystem- and Refuge-wide management strategies. Additionally, there are many private parcels along the river, and the portion of the river below Arctic Village borders tribal lands to the east, making it difficult for the Service to manage use in the river corridor. Other acts and regulations, including ANILCA, provide protections for the cultural ORV that are more restrictive and comprehensive than the Wild and Scenic Rivers Act. Also, the cultural values could be protected more thoroughly through a Refuge-wide cultural resources management plan. The East Fork Chandalar River's visitor use could be managed through a Refuge-wide Visitor Use Management Plan, one of the step-down plans identified in the Revised Comprehensive Conservation Plan.



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2.5 Hulahula River

Reach: The Hulahula River originates in glaciers of the Romanzof Mountains, flows west for a ways, and then sharply turns to the north as it flows between Mt. Chamberlin and Mt. Michelson and out to Camden Bay.

Total River Length:	96.6 miles	Primary Classification:	Wild
Length on Refuge:	96.6 miles	ORVs:	Recreational
Length in Wilderness:	66 miles		

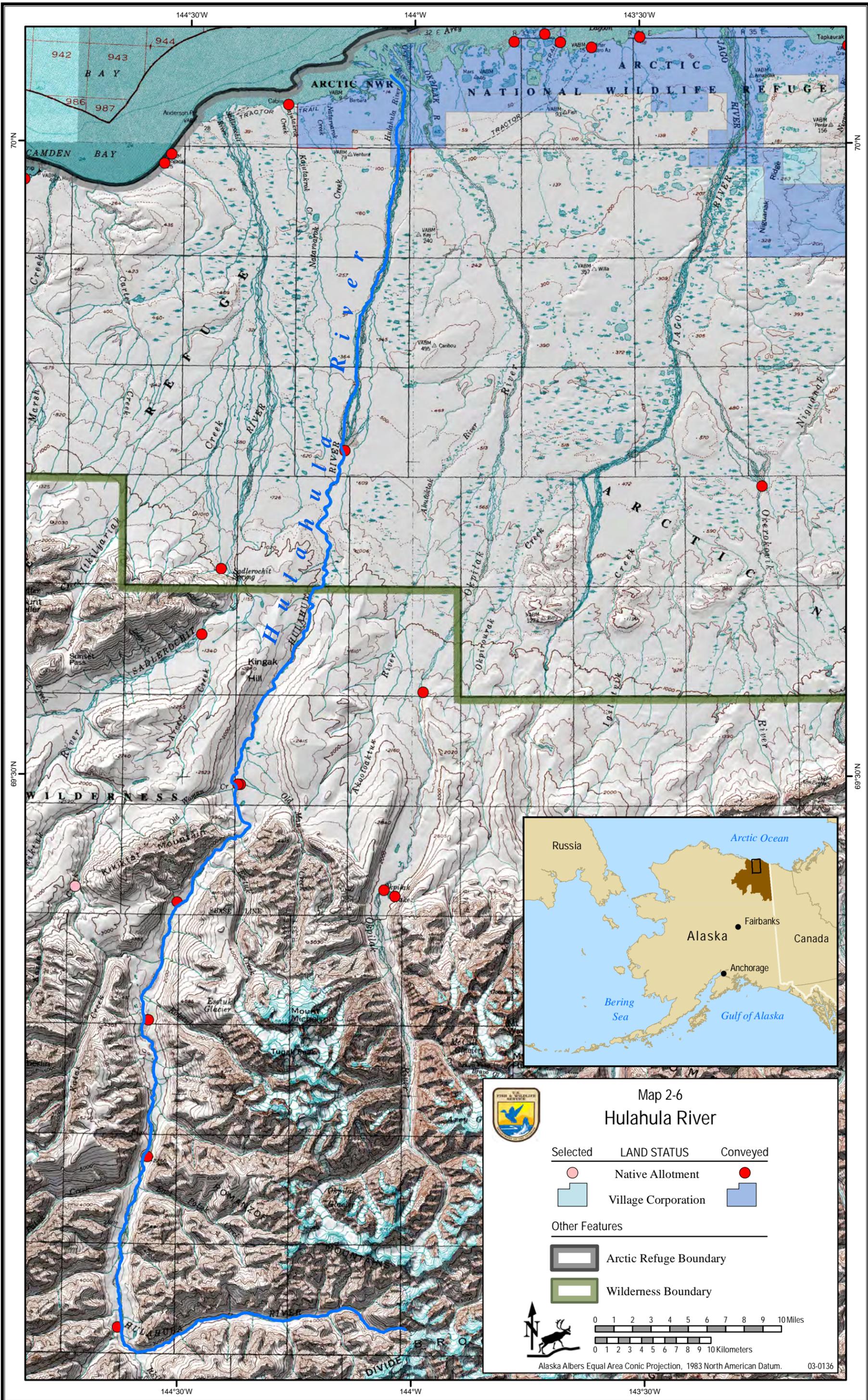
2.5.1 Description/Overview

The Hulahula River originates in the highest peaks of the Brooks Range, flows about 40 miles north through steep-walled glacial valleys, and then abruptly breaks out onto the Coastal Plain. Swift and turbid with glacial silt in the summer, the river is the most technically challenging of the regularly run north-side rivers. A narrow twisting pass across the Continental Divide between the headwaters of the Hulahula and East Fork Chandalar Rivers provides a natural hiking route and flight path. Due to its scenery, accessibility, and floatability, the Hulahula attracts 10 percent of Refuge visitors.

2.5.2 Suitability Factor Assessment

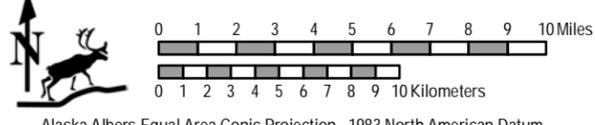
1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

The Hulahula River has outstandingly remarkable cultural values that are unique from other rivers in Alaska and those in the NWSRS. Arctic Refuge is known as a cultural crossroads where Eskimo and pre-Eskimo coastal cultures interacted and traded with Indian and pre-Indian cultures from the interior, north, and south. The cultural exchange in both directions has national importance (D. Corbett, Regional Archaeologist, pers. comm., June 9, 2010). Interviews conducted with tribal council members and elders in the Gwich'in community of Arctic Village described their families and ancestors traveling north along the Hulahula River to trade and barter with Iñupiat people. Similarly, interviews conducted with tribal council members in the Iñupiat community of Kaktovik described families and ancestors trading and bartering with the Gwich'in along the Hulahula River. The interviewees also described the river as having numerous Indian place names associated with travel and trade routes. Additionally, the entire river corridor is intensively used by the Iñupiat people for a variety of subsistence purposes (Exxon Mobil Corporation 2009), there are numerous Native allotments along the corridor, and the river was identified as having important cultural values by both the Iñupiat and Gwich'in. While there are few known archaeological sites along the Hulahula River, there has been little to no survey effort. Given the bicultural importance of the river, it is highly likely the river contains numerous archaeological sites (D. Corbett, Regional Archaeologist, pers. comm., January 11, 2011). Multi-cultural exchange and



Map 2-6
Hulahula River

- | Selected | LAND STATUS | Conveyed |
|----------|---------------------|----------|
| | Native Allotment | |
| | Village Corporation | |
- Other Features
- Arctic Refuge Boundary
 - Wilderness Boundary



Alaska Albers Equal Area Conic Projection, 1983 North American Datum. 03-0136

contemporary cultural values and uses combine to give the Hulahula River outstandingly remarkable cultural values.

The Hulahula River has outstandingly remarkable recreational values and is unique from other rivers in Alaska and those in the NWSRS. It provides an opportunity to float through a steep-walled, wide glacial valley of the Brooks Ranges that offers challenging whitewater before exploding out onto the Coastal Plain, where the water character subdues, but the challenge of navigating rapids is exchanged for proper channel selection as the river winds through fields of deceptively dangerous aufeis. This river offers an unparalleled northern arctic recreational experience.

Because of its remoteness and lack of roads, the area's wildness in the upper reaches is virtually untouched, except for a few landing zones and evidence of previously used campsites. The northern stretches of the river are dotted with culturally significant areas, evidenced by historic and subsistence use cabins and associated structures. Many of these cabins continue to be used as shelter for rural residents who subsistence fish in the winter.

The river is fast and challenging with multiple braided channels and rocky rapids, dropping 2,300 feet over its 100 miles. At average flow rates, the waters are generally class I and II with multiple stretches of class III. Rafters, kayakers, hunters, and hikers from around the world pursue adventure trips on the Hulahula. The average group size is 4.6, and the average trip length is 8.6 days. River trips pass the glaciated peaks of Mt. Michelson and Mt. Chamberlin and often include day hiking trips up side valleys and canyons. Some guide companies also offer winter trips that include winter camping and cross-country skiing.

Recreationists also seek the Hulahula for its wildlife-viewing opportunities. Caribou, grizzly bear, muskoxen, wolves, Dall's sheep, a variety of bird species, and many other wildlife species inhabit this dramatically scenic river corridor.

Other characteristics unrelated to the recreational ORV also affect the suitability of this river. The Hulahula River is one of the most important subsistence use rivers on the north side of the Refuge, particularly for fishing and Dall's sheep hunting by Kaktovik residents.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The entire length of the Hulahula River is located within the boundary of PLO 2214 (the original Arctic Range). The Kaktovik Inupiat Corporation (KIC) owns both the uplands and submerged lands along the lower 5.5 miles of the Hulahula River. The Arctic Slope Regional Corporation owns the subsurface beneath KIC lands and may remove sand and gravel (oil and gas development on or below KIC lands still requires congressional authorization). The submerged lands beneath inland coastal waters (bays, estuaries, and lagoons) remain in Federal ownership. With the exception of six native allotments totaling 279.92 acres, the Service owns the lands and submerged lands along the remaining 91.2 river miles. The four most northern allotments have oil and gas reserved to the United States.

A 17(b) easement provides legally reserved public access across Kaktovik Inupiat Corporation lands between the Hulahula and Okpilak Rivers. This easement totals 0.70 miles of trail and a one-acre parcel designated for use by all-terrain vehicles weighing less than 3,000 lbs; snow-machines; and all non-motorized travel and access on the delta between the two rivers.

The Service has not obtained any State-based water rights for the Hulahula River. Since the entire river is located in the Refuge, it is unlikely that other entities would file for diversionary water rights on this river.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Recreational use and oil and gas exploration and development have the highest potential to be enhanced, foreclosed, or curtailed if the area were included in the NWSRS. Recreational uses in the Hulahula River corridor include hiking, backpacking, floating, hunting, fishing, and wildlife and bird viewing.

Wild and scenic river designation would require the Refuge to address user capacity as part of a CRMP. Management prescriptions and protection of the social and physical experiential dimensions could have a positive and negative impact on recreational use in the Hulahula River corridor. The quality of recreational experiences could be enhanced by limiting or restructuring use. Simultaneously, management structure and perceived controls could detract from the overall experience.

An inventory of Water Resources completed in 1985 (Tweten 1985) identified the top five rivers in the 1002 Area whose watersheds were threatened by potential water and/or mineral resource development and non-consumptive uses. There are two forms of non-consumptive use: 1) those related to socioeconomics, such as general and subsistence hunting and fishing, river floating, recreational uses, aircraft landings, and historical and present travel route use; and 2) those related to construction or maintenance, such as removal of gravel from streambeds to build roads and oil platforms, some forms of dredge mining, and hydroelectric power plants. The Hulahula River was rated first in this study and was identified 1) for potential mineral or oil and gas development; 2) as a source of gravel for road development and other uses; 3) as a source of domestic water; 4) as a navigable transportation route; and 5) as having significant resource values, including habitat for threatened species; habitat for overwintering, spawning, and smolting fish; wetlands dependent on water flow; historical and cultural values; and subsistence and general fishing values.

Potential threats to the Hulahula River delta from oil and gas development include the “Proposed Consistency Determination – Beaufort Sea Area wide Oil and Gas Lease Sales, 2009–2018,” (Alaska Department of Natural Resources 2009b), which includes waters north of and adjacent to the northern boundary of the Refuge. To the extent feasible, the siting of facilities would be prohibited within 500 feet of all fish-bearing streams and water bodies and 1,500 feet from

all current surface drinking water sources. The potential for oil and gas development and the associated gravel pits and facilities (including roads, pump stations, landing strips, and storage facilities) in the Hulahula River watershed could have adverse impacts to the recreational values, including adverse impacts on visitor experiences and expectations. Noise and sight pollution, increased air traffic, and visible human influence would negatively affect the remoteness and solitude currently available on the Refuge.

Oil and gas exploration and development in the Hulahula River corridor could be impacted as a result of designation. The Hulahula River is tentatively classified as wild and, as such, would be withdrawn from appropriation under the mining and mineral leasing laws by Sections 9(a) and 15(2) of the Wild and Scenic Rivers Act.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

The Service would work with private landowners, the Native Village of Kaktovik tribal government, KIC, and the community of Kaktovik to administer the Hulahula River.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

There are 319.89 acres of KIC lands and allotments in the river corridor. The lands are used by Kaktovik residents for subsistence purposes, and acquisition of such lands would not be necessary to protect the recreational and cultural ORVs on the Hulahula.

The cost of CRMP development, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with the designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The upper 66 miles of the Hulahula River flow through lands administered under Wilderness Management provisions. From the 1002 boundary to the KIC boundary (25.1 miles), the Hulahula River flows through lands administered under Minimal Management provisions. The lower 5.5 miles of the Hulahula River are administered by KIC.

Designation of the polar bear as a threatened species under the Endangered Species Act affords additional Federal protections to any lands and waters identified as critical habitat. Approximately 25 miles of the lower Hulahula River is in polar bear critical habitat. Likely, these protections would benefit other wildlife and fish species in the area.

7. Historical or existing rights that could be adversely affected with designation.

There are no historical or existing rights that would be adversely affected with designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

From the Beaufort Sea to 22 miles inland, the Hulahula River is in the Coastal Zone of the North Slope Borough. Under Section 307 (c) of the Coastal Zone Management Act of 1972, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. There are no other local zoning or other land use controls protecting the river's ORVs or preventing incompatible development in the river corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 Arctic Refuge Revised Plan scoping period, the Refuge received nine comments supporting designation of the Hulahula River and one comment saying that the Native allotments and associated structures would preclude the Hulahula from designation.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 21 comments for the Hulahula River from commercial guides, recreational visitors, conservation organizations, Native Village of Kaktovik tribal council members, a resident of Arctic Village, and other unidentified commenters. Nine comments support designation of the Hulahula, and 12 comments do not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, hunting, fishing and subsistence. In their comments, stakeholders identify the following values with the corresponding frequencies: wildlife (16), recreational (15), scenic (17), geologic (11), cultural (8), fish (11), and historic (2). Additionally, stakeholders identify intact wilderness, intact ecological systems, subsistence, historic trade, private land ownership, and birds as other Hulahula River values. Specifically, comments note that the Hulahula's scenery includes some of the highest peaks in the Brooks Range, and the river valley supports a high density of Dall's sheep. Comments further note that the river valley funnels wind in a way that causes snow to melt earlier in the spring, thus creating a longer growing season for plants, including sheep forage. Comments also mentioned that the river's springs provide important overwintering fish habitat, and there are several places with Gwich'in names in the Hulahula River drainage associated with travel and trade routes. Stakeholders are concerned that too many people visit the Hulahula River and that a portion of the river flows through the 1002 Area.

10. Consistency of designation with other agency plans, programs, or policies.

Wild and scenic river designation of the Hulahula would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, the Endangered Species Act, ANILCA, and the Coastal Zone Management Program.

11. Contribution to a river system watershed or basin integrity.

The Hulahula River is the main water body in this northern watershed. By protecting it, protections will likely spread to its tributaries. This river is integral to North Slope ecosystems and residents in Arctic Refuge.

12. Other issues and concerns, if any.

There are no additional issues or concerns pertaining to the Hulahula River.

2.5.3 Preliminary Suitability Determination

The Hulahula River is preliminarily determined to be suitable with a wild river classification. There are three segmentation possibilities: 1) do not segment (include the entire river from its headwaters to the Beaufort Sea); 2) segment at the 1002 boundary (include the river from its headwaters to the 1002 boundary); or 3) segment at the KIC land boundary (include the river from its headwaters to the KIC boundary). These three segmentation possibilities consider manageability (landowner status) and potential development issues.

The rivers in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. To determine a river suitable, Refuge staff believed it was imperative to 1) gain additional management tools through potential designation, and 2) avoid creating new management issues by displacing visitor use to other highly desirable and visited river corridors. Determining the Hulahula River as suitable, along with the Kongakut and Marsh Fork Canning Rivers, achieves these goals. The intent driving this determination is to avoid displacing visitor use to similarly desirable river corridors and to promote holistic, ecosystem-wide, effective management strategies. The Hulahula River is the second most visited river on the Refuge's North Slope, and its popularity has been increasing. The Wild and Scenic Rivers Act provides useful management tools to protect the recreational and cultural ORVs and the scenic, wildlife, and fish values of the Hulahula. Airplane access—the primary mode of access—to the Hulahula River occurs almost exclusively within one-half mile of the river, therefore, access could be regulated by the provisions of a CRMP. Wild river designation would increase the protection and Service's manageability of the Hulahula River corridor.

2.6 Jago River

Reach: The Jago River is flanked by the Romanzof Mountains and is fed by the McCall Glacier on Mt. Itso. It flows through the mountains to the Coastal Plain and finally to the Beaufort Sea.

Total River Length:	83.8 miles	Primary Classification:	Wild
Length on Refuge:	83.8 miles	ORVs:	Wildlife
Length in Wilderness:	39.7 miles		

2.6.1 Description/Overview

The Jago Valley has multiple high flanking lateral moraines, recessional moraines, outwash terraces, and glacial lake deposits. Its U-shaped profile was produced by the Hubley, McCall, and Schwanda glaciers flowing onto the Arctic lowland from the Continental Divide. The Jago River Valley clearly illustrates the natural forces of permafrost in various forms of icing mounds, pingos, and polygons. Visitors are often surprised to also find sand dunes as the river pours out of the mountains onto the Coastal Plain. Because of its remoteness and lack of roads, the area feels virtually untouched other than a few discernible airstrips.

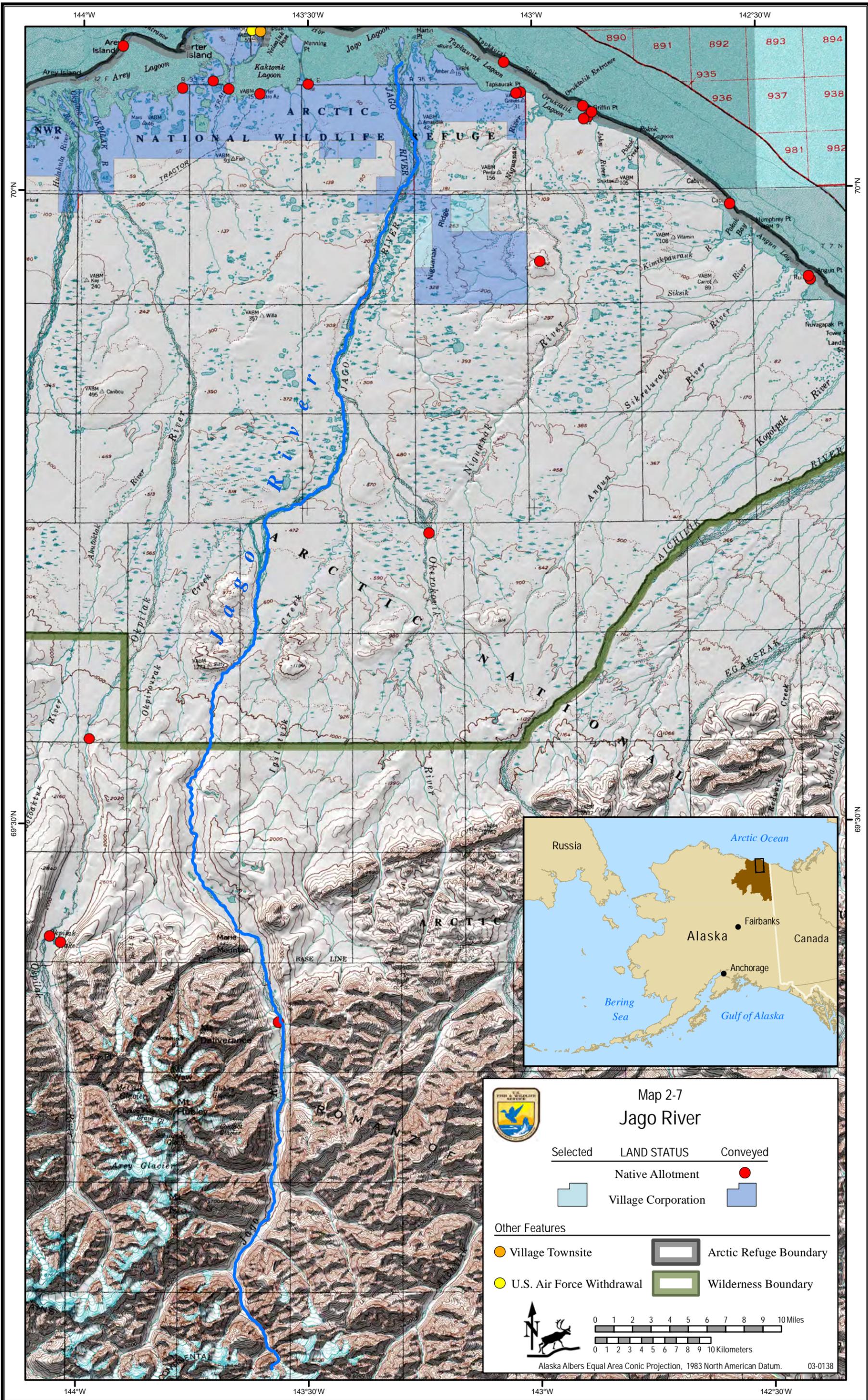
2.6.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

The Jago River has outstandingly remarkable wildlife values. The Jago River Valley contains many string bogs and seepage areas laced with fens and floodplains. This diversity of vascular flora supports heavy seasonal use by wildlife, including the Porcupine and Central Arctic caribou herds, wolves, muskoxen, and bears. These animals provide a variety of wildlife-viewing and photographic opportunities. The Jago River is one of two rivers in the 2010 suitability study that has been a high density calving area (50 percent of calving) in almost all (13) of the 17 years of a long-term research project (Griffith et al. 2002). Also, the Jago boasts the longest segment (61.8 miles) of polar bear denning habitat on the Refuge.

Muskoxen are the only large mammal present year-round in the 1002 Area. As such, they provide continuous food for scavengers and predators. They live in relatively small home ranges with limited seasonal movements and low reproduction rates. They feed on a variety of plants in the summer and sedges and shrubs in areas with low snow cover in the winter.

Another opportunity available on the lower Jago is bird watching. Snow geese begin arriving from their nesting grounds in Canada to the Coastal Plain in late August, peak in early to mid-September, and begin their migration south to Mexico and California in late September (Brackney 1990). When snow geese feed on the Refuge's Coastal Plain, the majority of activity is between the Okpilak and Aichilik Rivers, an area that includes the Jago River corridor. At this crucial time of year, snow geese rely on thermokarst pits with healthy stands of tall cottongrass for feeding and building fat reserves for migration.



**Map 2-7
Jago River**

Selected LAND STATUS

Conveyed

Native Allotment

Village Corporation

Other Features

Village Township

U.S. Air Force Withdrawal

Arctic Refuge Boundary

Wilderness Boundary

0 1 2 3 4 5 6 7 8 9 10 Miles

0 1 2 3 4 5 6 7 8 9 10 Kilometers

Alaska Albers Equal Area Conic Projection, 1983 North American Datum. 03-0138

These important feeding sites, known as staging areas, make up only three percent of the Refuge's Coastal Plain, and they primarily occur near the Jago River. After a flock of snow geese feed on a stand of cottongrass, it takes at least four years for the stand to recover (Hupp and Robertson 1998).

Rare plant taxa, including *Mielichhoferia mielichhoferi*, *Lobaria kurokawae*, *Nephroma isidiosum*, and *Stereocaulon apocalypticum*, also occur in the Jago River Valley.

Characteristics unrelated to the wildlife ORV also affect the suitability of the Jago River. Recreational interest and visitation from hikers, backpackers, hunters, birders, and wildlife viewers has increased during the past decade. For most of the ice-free season, the water volume in the Jago is not adequate for floating. People who do float the river typically do so in small, individual size watercraft, such as inflatable kayaks or packrafts. The Jago is also one of the starting points for traverses up the Okpilak and Hulahula River valleys. This river attracts recreationists from around the world who wish to visit the Refuge.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The entire length of the Jago River is located within the boundary of PLO 2214 (the original Arctic Range). KIC owns both the uplands and submerged lands along the lower 9.5 miles of the Jago River. The Arctic Slope Regional Corporation owns the subsurface beneath KIC lands and may remove sand and gravel (oil and gas development on or below KIC lands still requires congressional authorization). The submerged lands beneath inland coastal waters (bays, estuaries, and lagoons) remain in Federal ownership. With the exception of one 39.98-acre native allotment, the Service owns the lands and submerged lands along the remaining 74.8 river miles.

Two 17(b) easements provide legally-reserved public access across KIC lands along the Jago River and its delta. These easements include 14.4 miles of trail and a one-acre parcel designated for parking and camping at the mouth of the river.

The Service has not obtained any State-based water rights for the Jago River. Since the entire river is located within the boundaries of the Refuge, it is unlikely that other entities would file for diversionary water rights on this river.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Recreational use and oil and gas exploration and development have the highest potential to be enhanced, foreclosed, or curtailed if the Jago were included in the NWSRS.

There are continuous attempts to open the 1002 Area to oil and gas exploration and development. Such exploration and development could pose a threat to the integrity of the Jago River ecosystem and its wildlife ORV by moderately impacting polar bears, brown bears, snow geese, and wolves; and majorly impacting caribou and muskoxen (U.S. Fish and Wildlife Service 1995). Other species, including flora, would also be impacted. Maps of possible facility development of the 1002 Area include a series of drill pads, a central production facility and associated airstrip, and a pipeline and road leading west from the

Jago River Valley to the Hulahula River. According to studies, drill sites, gravel pits, and other associated developments would leave permanent scarring and irreparable damage to vegetation and watershed integrity despite rehabilitation efforts.

Potential threats to the Jago River delta from oil and gas development include the “Proposed Consistency Determination – Beaufort Sea Area wide Oil and Gas Lease Sales, 2009–2018,” (Alaska Department of Natural Resources 2009b), which includes waters north of and adjacent to the northern boundary of the Refuge. To the extent feasible, the siting of facilities would be prohibited within 500 feet of all fish-bearing streams and water bodies and 1,500 feet from all current surface drinking water sources. The potential for oil and gas development and the associated gravel pits and facilities, including roads, pump stations, landing strips, and storage facilities, in the Jago River watershed could have adverse impacts to the recreational values, including adverse impacts on visitor experiences and expectations. Noise and sight pollution, increased air traffic, and visible human influence would negatively affect the remoteness, solitude, and wildlife-viewing opportunities currently available on the Jago River.

Oil and gas exploration and development in the Jago River corridor could be impacted as a result of designation. The Jago River is tentatively classified as a wild river and, as such, would be withdrawn from appropriation under the mining and mineral leasing laws by Sections 9(a) and 15(2) of the Wild and Scenic Rivers Act.

Recreational uses in the Jago River corridor include hiking, backpacking, floating, hunting, fishing, and wildlife and bird viewing. Wild and scenic river designation and subsequent protection of the wildlife ORV likely would not affect recreational use of the river corridor.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

The Service would work with private landowners, the Native Village of Kaktovik tribal government, KIC, and the community of Kaktovik to administer the Jago River.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

The entire length of the Jago River, excluding KIC lands and the one native allotment, is owned and managed by the Service.

The Service has acquired allotments in the Refuge and plans to continue to acquire allotments in consultation with the Refuge manager and in cooperation with The Conservation Fund. However, acquisition of lands along the Jago would not be necessary to manage it as a wild river.

The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The upper 39.7 miles of the Jago River flow through lands administered under Wilderness Management provisions. From the 1002 boundary to the KIC boundary (33.6 miles), the Jago River flows through lands administered under Minimal Management provisions. The lower 9.5 miles of the Jago River are administered by KIC.

Designation of the polar bear as a threatened species under the Endangered Species Act affords additional Federal protections to any lands and waters identified as critical habitat. Approximately 25 miles of the Jago is in designated polar bear critical habitat. Likely, these protections would benefit other wildlife and fish species in the area.

7. Historical or existing rights that could be adversely affected with designation.

There are three historical cabins located on the Jago River delta in Native corporation lands. These would not be adversely affected by designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

From the Beaufort Sea to 41.8 miles inland, the Jago River is in the Coastal Management Zone of the North Slope Borough. Under Section 307 (c) of the Coastal Zone Management Act, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. There are no other local zoning or other land use controls protecting the river's ORVs by preventing incompatible development.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 Arctic Refuge Revised Plan scoping period, the Service received three comments supporting designation of the Jago River.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 13 comments for the Jago River from commercial guides, recreational visitors, conservation organizations, and other unidentified commenters. Seven comments support designation of the Jago River, and six comments do not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, rafting, hunting, and fishing. In their comments, stakeholders identify the following values with the corresponding frequencies: wildlife (13), recreational (10), scenic (13), geologic (7), cultural (3), fish (5), and historic (2). Additionally, stakeholders identify intact wilderness and intact ecological systems as Jago River values. Specifically, comments note that the McCall Glacier is within hiking distance of the river, and the scenery includes mountains Hubley and Waw. Comments also mention that the foothills and Coastal Plain along the Jago are part of the traditional

calving grounds of the Porcupine caribou herd and that the river provides wonderful and challenging whitewater.

10. Consistency of designation with other agency plans, programs, or policies.

Wild and scenic river designation of the Jago River would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, the Endangered Species Act, ANILCA, and the Coastal Zone Management Program.

11. Contribution to a river system watershed or basin integrity.

The Jago River is the main water body in this northern watershed. By protecting it, protections would likely spread to its tributaries. The river is integral to North Slope ecosystems and residents of Kaktovik.

12. Other issues and concerns, if any.

There are no additional issues or concerns pertaining to the Jago River.

2.6.3 Preliminary Suitability Determination

The Jago River is preliminarily determined to be not suitable. The rivers in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. For the Jago River, this is especially true given its location in Arctic Refuge, its low level of visitor use, and its wildlife outstandingly remarkable value. A CRMP would only apply a one-mile wide corridor along the Jago. The Refuge has always taken a holistic approach to wildlife management; therefore, in this situation, the Wild and Scenic Rivers Act does not provide the most appropriate management tool. Protection of the Jago River's wildlife ORV is afforded through other acts, such as the Endangered Species Act; step-down plans, such as the Inventory and Monitoring Plan; and the Revised Comprehensive Conservation Plan.

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2.7 Kongakut River

Reach: The Kongakut is the only major, floatable North Slope river whose entire watershed is in designated wilderness. Originating high in the mountains of the eastern Brooks Range, the river flows north through miles of rugged mountains to the Coastal Plain and empties into the Beaufort Sea.

Total River Length:	116.3 miles	Primary Classification:	Wild
Length on Refuge:	116.3 miles	ORVs:	Recreational, Scenic, Geologic
Length in Wilderness:	116.3 miles		

2.7.1 Description/Overview

The Kongakut River has outstandingly remarkable recreational, scenic, and geologic values that are unique from other rivers in Alaska and those in the NWSRS. The Kongakut River attracts one-quarter of the Refuge's visitors—around 240 people annually. Visitation is driven by two main events: the Porcupine caribou herd migration and the Dall's sheep hunting season. This river also provides the longest stretch of floatable water in the Brooks Range before breaking out onto the Coastal Plain. The river valley is narrow, and the mountains begin close to the river's banks. Many inviting side valleys create innumerable opportunities for day hikes or multiple-day treks. Because of its remoteness and lack of roads, the area is virtually untouched other than a few landing zones, visible camping sites, and emerging trails.

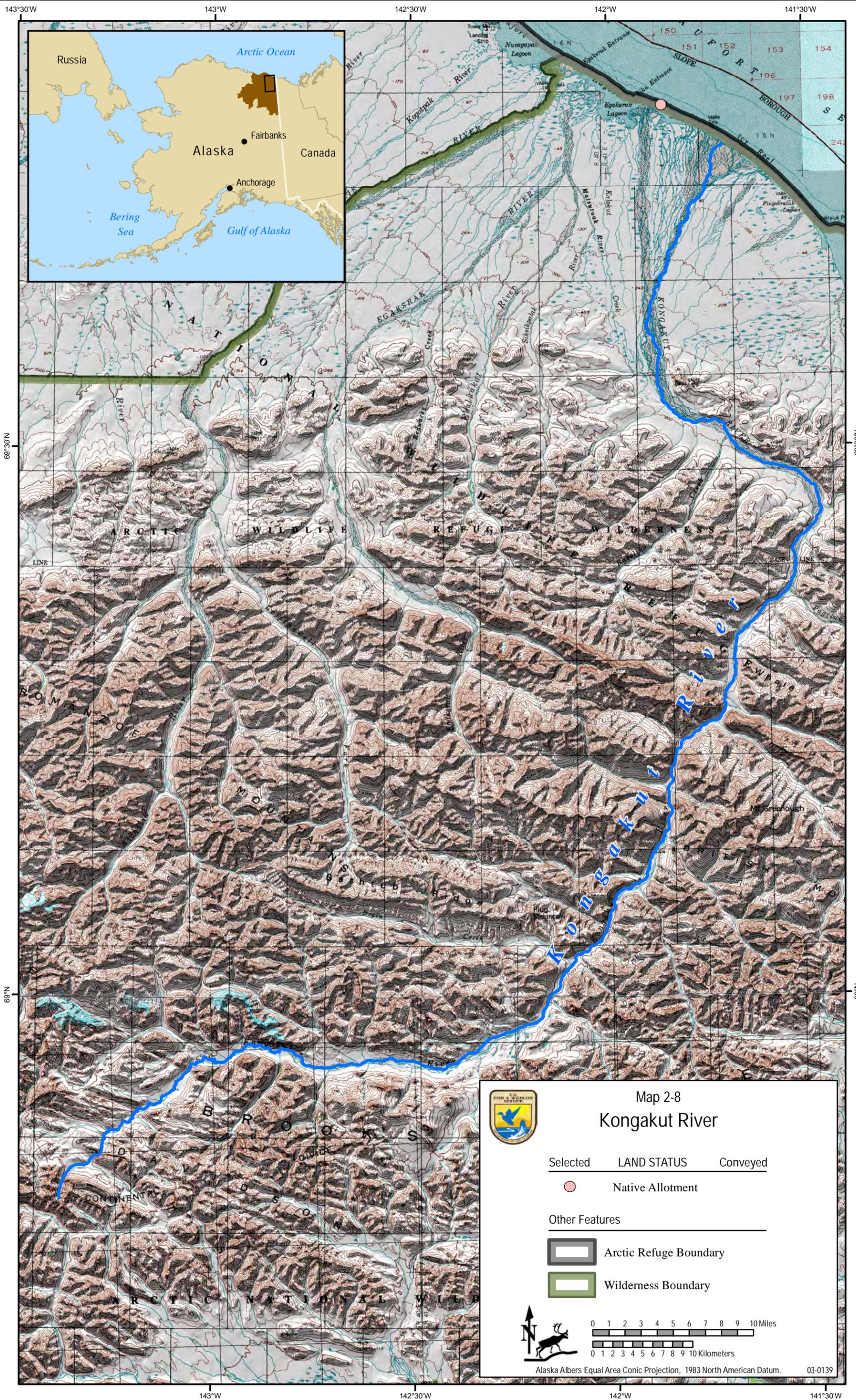
2.7.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

This river has ORVs. The Kongakut is the most heavily used recreational river in the Refuge, attracting people from around the world who wish to recreate in a stunning viewshed. Nearly one-quarter (24 percent) of the commercially-supported visitors to the Refuge visit the Kongakut River. Group sizes average five people, and trip lengths average 9.3 days. At average flow rates, the waters are generally class I and II, but there are stretches of class III where the river narrows into a canyon section.

Water levels and weather patterns are not sufficient to permit water-based recreation year-round; therefore, intense use occurs between mid-June and early September. In those months, most use is concentrated in two key time periods—the weeks that offer the highest likelihood of viewing the Porcupine caribou herd migration and the earlier weeks of the Dall's sheep hunting season. Backpacking trips make up at least 12 percent of the commercially-supported use of the Kongakut River, with many visitors focusing on the opportunity to observe the Porcupine caribou herd's migration.

Other recreational opportunities also attract visitors. The Kongakut's terminus at the Beaufort Lagoon allows a boater the unique opportunity to journey along Icy Reef, an approximately 20-mile long barrier reef in the Beaufort Sea. Visitors come to the Kongakut River for hiking, backpacking, floating, hunting, dog mushing, and wildlife



Map 2-8
Kongakut River

Selected LAND STATUS Conveyed

● Native Allotment

Other Features

▭ Arctic Refuge Boundary

▭ Wilderness Boundary

0 1 2 3 4 5 6 7 8 9 10 Miles
 0 1 2 3 4 5 6 7 8 9 10 Kilometers

Alaska Albers Equal Area Conic Projection, 1983 North American Datum. 03-0139

viewing. As a secondary summer activity, many people fish the Kongakut for its healthy population of Arctic grayling and char. Birders seek out two particular species: the gray-headed chickadee and Smith's longspur. They also hope to catch a glimpse of a bluethroat (Steve Kendall, Refuge Ornithologist, pers. comm. 2010). Wildlife viewers hope to see caribou, muskox, wolves, and brown and polar bears. Recreation on the Kongakut allows visitors to experience many of these activities in a single trip.

The Kongakut has outstandingly remarkable scenic values. The river provides spectacular views throughout its entire length as it travels by steep-walled canyons, landslide features, side canyons, and contorted rock formations. Bathtub Ridge and Dar Hill are two particularly stunning formations. The river offers expansive views from the mountains to the Coastal Plains to the Beaufort Sea. The Kongakut estuary forms a distinct habitat of extensive mud flats, polygonal ground, and Aeolian landforms that add to the visual diversity of the area. The extensive lagoon system, delta, and perennial aufeis field (known as the Beaufort Lagoon) and Icy Reef also add to the viewshed. Photographic opportunities with the combination of landforms and wildlife are limitless.

Lastly, the Kongakut River has outstandingly remarkable geologic values. Steep canyons littered with contorted rock formations; the Coastal Plain alluvial delta; 12-foot high canyons of aufeis; the spectacular landslide near Drain Creek that removed half of an unnamed mountain; and the unusual topography of Bathtub Ridge are just a few of the geologic features found in the Kongakut River corridor. Several faults expose thousands of years of geologic processes.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The Kongakut is the only major, floatable North Slope river whose entire course is in designated wilderness and is managed exclusively by the Refuge. The entire length of the Kongakut River is located within the boundary of PLO 2214 (the original Arctic Range). There are no inholdings, Native corporation lands, or Native allotment lands in the river corridor. One 34.63-acre allotment selection is currently being adjudicated by the BLM.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Recreational use and oil and gas exploration and development of the Kongakut River have the highest potential to be enhanced, foreclosed, or curtailed if the area were included in the NWSRS. Recreational uses include hiking, backpacking, floating, hunting, fishing, and wildlife and bird viewing.

The 1988 Plan identified the Kongakut River as an area experiencing minor adverse impacts on recreational and wilderness values due to increased visitor use. More recent evaluations reveal these impacts are now major. Wild and scenic river designation would require the Refuge to address user capacity as part of a CRMP. Management prescriptions and protection of the social and physical experiential dimensions could have a positive and negative impact on recreational use of the Kongakut River. The quality of recreational experiences could be enhanced by limiting or restructuring use.

Simultaneously, management structure and perceived controls could detract from the overall experience.

Wild and scenic river designation would have no impacts on water developments (to date, no water developments or diversions have been proposed). The Service completed a reservation order for water rights under PLO 2214 on December 6, 1960, and has unquantified water rights for habitat protection. The State of Alaska does not have any water rights on the Kongakut River. Designation would not affect the annual mean flow or water quality as defined in the Hydrologic Reconnaissance of the Eastern North Slope, Alaska 1975 report or the Inventory of Water Resources completed in 1985.

Potential threats to the Kongakut River delta from oil and gas development include the “Proposed Consistency Determination – Beaufort Sea Area wide Oil and Gas Lease Sales, 2009–2018,” (Alaska Department of Natural Resources 2009b), which includes waters north of and adjacent to the northern boundary of the Refuge. To the extent feasible, the siting of facilities would be prohibited within 500 feet of all fish-bearing streams and water bodies and 1,500 feet from all current surface drinking water sources. The potential for oil and gas development and the associated gravel pits and facilities, including roads, pump stations, landing strips and storage facilities, in the Kongakut River watershed could have adverse impacts to the recreational values, including visitor experiences and expectations. Noise and sight pollution, increased air traffic, and visible human influence would negatively affect the remoteness and solitude currently available on the Refuge.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

All the land in the Kongakut River corridor is owned by the Service; therefore, the Service would be responsible for administering the Kongakut River corridor.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

Regardless of designation, the Refuge would have costs associated with managing this river, including increased costs for monitoring impacts and implementing visitor use surveys. However, the costs associated with a CRMP are likely to be notably higher. New regulations, permit conditions, and potential visitor restrictions could require extensive outreach, education, and enforcement. The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation. There are no lands or interests in lands or waters that need to be acquired by the agency to effectively manage the Kongakut as a designated wild and scenic river.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The entire 116.3 miles of the Kongakut River flows through lands administered under Wilderness Management provisions.

In 2004, the Refuge began requiring all commercial air operators to restrict their landings to barren soils or gravel bars in the Kongakut River corridor. Public comments indicate that the current regulations on commercial operators are not sufficient to protect the river from overuse or to provide opportunities for solitude.

The Service currently does not have a visual resource management program or other mechanism to protect the scenic values along this segment. However, protection of visual resources would likely be derived from the Revised Plan and other management authorities.

Designation of the polar bear as a threatened species under the Endangered Species Act affords additional Federal protections to any lands and waters identified as critical habitat. Approximately 42 miles of the Kongakut is in designated polar bear critical habitat. Likely, these protections would benefit other wildlife and fish species in the area.

7. Historical or existing rights that could be adversely affected with designation.

There are no historical or existing rights in the river corridor.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

From the coast to about 18.5 miles south, the Kongakut is in the Coastal Management Zone of the North Slope Borough. Under Section 307 (c) of the Coastal Zone Management Act, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. There are no other local zoning or other land use controls protecting the river's ORVs to prevent incompatible development in the river corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 Arctic Refuge Revised Plan scoping period, the Refuge received 13 comments supporting designation of the Kongakut River, 2 asking for increased resource protection, and 13 expressing concern about human impacts on the Kongakut river corridor and its related resources.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 18 comments for the Kongakut River from commercial guides, recreational visitors, conservation organizations, a Native Village of Kaktovik tribal council member, and other unidentified commenters. Nine comments support designation of the Kongakut River, and nine comments do not clearly mention support or opposition to designation.

Stakeholder comments indicate that river uses include commercial and non-commercial recreation, hunting, fishing, and rafting. In their comments, stakeholders identify the following values with the corresponding frequencies: wildlife (16), recreational (15), scenic (16), geologic (13), cultural (7), fish (13), and historic (5). Additionally, stakeholders identified intact wilderness, intact ecological systems, birds, and subsistence as other Kongakut River values. Specifically, comments note that caribou heavily use the lands along the Kongakut River for migration, calving, and post-calving, and the river's springs provide overwintering fish habitat. Comments also mentioned that aufeis fields on the river bars provide mineral salts for Dall's sheep, and there are old sod house sites along the delta's coast. One stakeholder wrote, "To me, this experience is the quintessential Arctic Refuge; to experience mountains, alpine tundra, coastal plain, coastal estuary, and barrier islands." One stakeholder suggested restricting activity at Caribou Pass while the first 1,000 caribou migrate through to avoid interfering with the start of their migration across the river. Stakeholder concerns for the Kongakut River include too many visitors and a warming climate, evidenced by the intrusion of balsam poplar on the Kongakut and its side tributaries.

10. Consistency of designation with other agency plans, programs, or policies.

Wild and scenic river designation of the Kongakut would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, the Endangered Species Act, ANILCA, and the Coastal Zone Management Program.

11. Contribution to a river system watershed or basin integrity.

Wild river designation of the Kongakut would aid in protecting a watershed important to the Porcupine caribou herd while also providing recreational access to the area. The headwaters of the Kongakut nearly touch the Sheenjek River—a designated wild river—at a meadow pass that defines the continental divide of the Brooks Range. This presents a rare opportunity to tie two unique and interrelated river systems together under the Wild and Scenic Rivers Act.

12. Other issues and concerns, if any.

There are no additional issues or concerns pertaining to the Kongakut River.

2.7.3 Preliminary Suitability Determination

The Kongakut River is preliminarily determined to be suitable with a wild river classification. The rivers in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. To determine a river suitable, Refuge staff believed it was imperative to 1) gain additional management tools through potential designation, and 2) avoid creating new management issues by displacing visitor use to other highly desirable and visited river corridors. Determining the Kongakut River suitable, along with the Hulahula, Marsh Fork Canning, and Atigun rivers, achieves these goals. The intent driving this determination is to avoid displacing visitor use to similarly desirable river corridors and to promote holistic, ecosystem-wide, effective management strategies. The

Kongakut River is by far the Refuge's most visited river, and the high levels of visitation have visibly impacted the land, thus affecting the river's recreational and scenic ORVs. The Wild and Scenic Rivers Act provides useful, meaningful, and additional legally binding management tools to protect the Kongakut's ORVs. In its mountainous stretches (where most visitation occurs), the river valley is narrow, and access and camping locations are within one-half mile of the river. Therefore, a CRMP is an appropriate and necessary tool to ensure that the Kongakut's ORVs are protected. Wild river designation would increase the protection and Service's manageability of the Kongakut River corridor.



2.8 Okpilak River

Reach: The silt-laden Okpilak begins in the heart of the most active glacial area of the Refuge. Its rugged, steep terrain and melting icy masses create a torrent of water in the headwaters that is channeled through a vertical canyon and then abruptly flattens as it flows onto the Coastal Plain to the Beaufort Sea.

Total River Length:	73.3 miles	Primary Classification:	Wild
Length on Refuge:	73.3 miles	ORVs:	Scenic, Geologic
Length in Wilderness:	36.5 miles		

2.8.1 Description/Overview

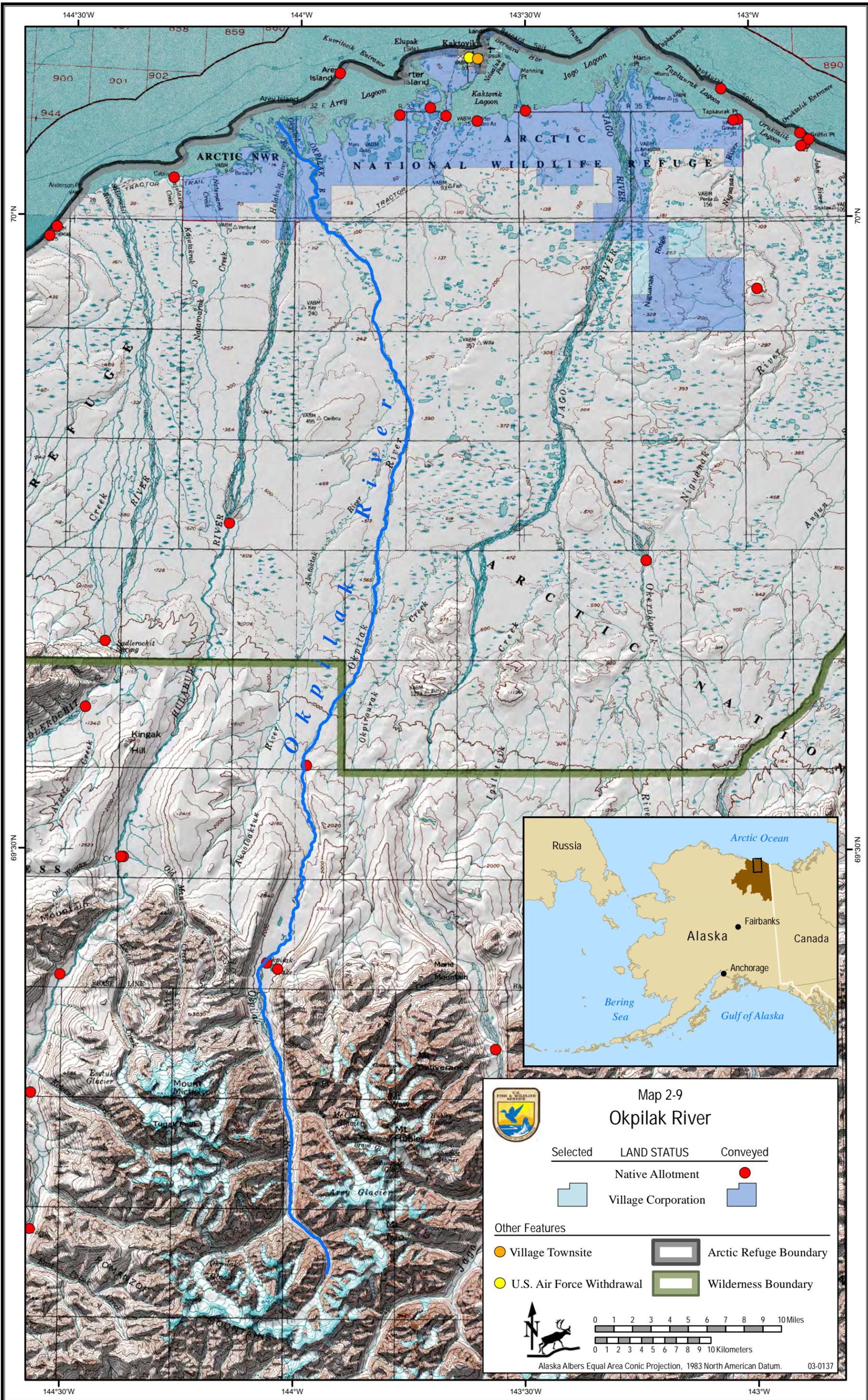
The Okpilak River flows north through a classic U-shaped valley in the heart of the most active glacial area of the Refuge. The silt-laden river was recommended as a national landmark because of its prominent moraines, fans, sand dunes, outwashes, and other glacial features. The upper river is too wild and dangerous for almost all river floaters, and the terrain precludes aircraft access. Only the most adventurous boaters willing to carry their boats upstream would attempt this section of river. These factors, however, offer hikers and backpackers an uncommonly tranquil and scenic experience.

2.8.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

The Okpilak River has outstandingly remarkable scenic and geologic values that are distinctly different from other rivers in Alaska and those in the NWSRS. Compared to other rivers in the Refuge, the Okpilak contains the largest amount of glacial features, including moraines, fans, kames, sand dunes, and outwashes. The river is fed by hanging glaciers that appear precariously attached to stark, steep, rocky mountain sides. Located in the Romanzof Mountains of the eastern Brooks Range, the river's headwaters are found in two different glaciers in two different valleys. The river's flow is then supplemented by melting ice of the Split, Arey, and Leffingwell glaciers downstream of the headwaters. The glacially fed streams join to form the Okpilak River, which then cuts a 10–40 foot deep postglacial canyon for a distance of roughly 4.4 miles. In the mountains, the valley walls are covered with massive lateral moraines that rise to over 980 feet and postglacial alluvial-colluvial cones or fans that rise above the broad valley floor upwards of 490 feet. Further northward, the valley is mantled by a series of end, recessional, ground, terminal, and lateral moraines, kames, and glaciofluvial outwash.

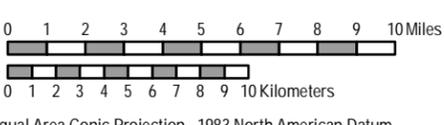
Where vegetated, the high mountainous terrain is blanketed with lichens and mosses; otherwise it's full of frost-shattered bedrock and fell-field. The Okpilak is located on the east flank of snow-capped Mt. Michelson where multiple-crested lateral moraines emerge from tributary valleys with visible cirques. The lower river corridor contains small lakes, including the east and west Okpilak lake systems. The Coastal Plain offers beautiful expansive views in all directions. The hot springs allow soakers to watch Dall's sheep and caribou while looking over the floodplain.



Map 2-9
Okpilak River

Selected	LAND STATUS	Conveyed
	Native Allotment	
	Village Corporation	

- Other Features
- Village Townsite
 - U.S. Air Force Withdrawal
 - Arctic Refuge Boundary
 - Wilderness Boundary



Characteristics unrelated to the scenic and geologic ORVs also affect the suitability of the Okpilak River. Visitors usually access the Okpilak by portaging from the Hulahula or Jago Rivers or by flying to the mid-valley landing area. Exploring the upper river valley feels like retreating to the prehistoric age due to the pure lack of human presence. Because the river flows from some of the highest mountains, this valley is rarely used as a flight path, and the only landing area is where the mountains abruptly meet the Coastal Plain; therefore, noise pollution is kept to an absolute minimum. Also, recreationists visiting one of Alaska's "best kept secret" valleys may treat themselves to a soak in one of the North Slope's only true hot springs. The wildness and supreme, stark beauty of the area is unmatched by other Refuge river valleys.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The entire length of the Okpilak River is located within the boundary of PLO 2214 (the original Arctic Range). KIC owns both the uplands and submerged lands along the lower 7.1 miles of the Okpilak River. The Arctic Slope Regional Corporation owns the subsurface beneath KIC lands and may remove sand and gravel (oil and gas development on or below KIC lands still requires congressional authorization). The submerged lands beneath inland coastal waters (bays, estuaries, and lagoons) remain in Federal ownership. With the exception of three native allotments totaling 159.91 acres, the Service owns the lands and submerged lands along the remaining 66.2 river miles. The United States reserved oil and gas on all three allotments.

Two 17(b) easements provide legally reserved public access across KIC lands along the Okpilak River. These easements—7.36 miles of trail and a one-acre parcel—were designated for use by all-terrain vehicles weighing less than 3,000 pounds, snowmachines, and all non-motorized travel and access located on the delta between the Hulahula and Okpilak Rivers.

The Service has not obtained any State-based water rights for the Okpilak River. Since the entire river is located within the boundaries of the Refuge, it is unlikely that other entities would file for diversionary water rights on this river.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Recreational use and oil and gas exploration and development have the highest potential to be enhanced, foreclosed, or curtailed if the Okpilak were included in the NWSRS.

There are continuous attempts to open the 1002 Area to oil and gas exploration and development. Such exploration and development could pose a threat to the integrity of the Okpilak River ecosystem and its scenic ORV. Maps of possible facility development of the 1002 Area include a series of drill pads, a central production facility with airstrip landing area, a pipeline, and a road. According to studies, drill sites, gravel pits, and other associated developments would leave permanent scarring and irreparable damage to vegetation and watershed integrity despite rehabilitation efforts.

Potential threats to the Okpilak River delta from oil and gas development include the “Proposed Consistency Determination – Beaufort Sea Areawide Oil and Gas Lease Sales, 2009–2018” (Alaska Department of Natural Resources 2009b) which includes waters north of and adjacent to the northern boundary of the Refuge. To the extent feasible, the siting of facilities would be prohibited within 500 feet of all fish-bearing streams and water bodies and 1,500 feet from all current surface drinking water sources. The potential for oil and gas development and the associated gravel pits and facilities, including roads, pump stations, landing strips, and storage facilities, in the Okpilak River watershed could have adverse impacts to the scenic values and would likely have an impact on visitor experiences and expectations. Noise and sight pollution, increased air traffic, and visible human influence will have an adverse impact on the sense of remoteness and solitude currently available in the Okpilak River Valley.

An inventory of Water Resources completed in 1985 (Tveten 1985) identified the top five rivers in the 1002 Area whose watersheds were threatened by potential water and/or mineral resource development and non-consumptive uses. There are two forms of non-consumptive use: 1) those related to socioeconomics, such as general and subsistence hunting and fishing, river floating, recreational uses, aircraft landing, and historical and present travel route use; and 2) those related to construction or maintenance, such as removal of gravel from streambeds to build roads and oil platforms, some forms of dredge mining, and hydroelectric power plants. The Okpilak River was rated third in this study and was identified 1) for potential mineral or oil and gas development; 2) as a source of gravel; and 3) as having significant resource values, including habitat for overwintering, spawning, and smolting fish, and wetlands dependent on water flow.

The Okpilak River is tentatively classified as a wild river and, as such, would be withdrawn from appropriation under the mining and mineral leasing laws by Sections 9(a) and 15(2) of the Wild and Scenic Rivers Act. Designating the Okpilak as a wild river would foreclose all oil and gas development, mineral exploration, dredge mining, and the removal of gravel from the riverbed and surrounding delta in the river corridor.

Recreational uses in the Okpilak River corridor include hiking, backpacking, hunting, and wildlife and bird viewing. Wild and scenic river designation and subsequent protection of the scenic and geologic ORVs likely would not affect recreational use of the river corridor.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

The Service would work with private landowners, the Native Village of Kaktovik tribal government, KIC, and the community of Kaktovik to administer the Okpilak River.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

The entire length of the Okpilak River, excluding KIC lands and the two Native allotments, is owned and managed by the Service. KIC owns both the uplands and

submerged lands along the lower 7.1 miles of the Okpilak River. Allotment owners own a portion of the submerged lands.

The Service has acquired allotments in the Refuge and plans to continue to acquire allotments in consultation with the Refuge manager and in cooperation with The Conservation Fund. However, acquisition of lands in the Okpilak River corridor would not be necessary to manage it as a designated wild and scenic river.

The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The upper 36.5 miles of the Okpilak River flow through lands administered under Wilderness Management provisions. From the 1002 boundary to the KIC boundary (29.65 miles), the Okpilak River flows through lands administered under Minimal Management provisions. The lower 7.1 miles of the Okpilak River are administered by KIC.

The Service currently does not have a visual resource management program or other mechanism to protect the scenic values along this segment. However, protection of visual resources would likely be derived from the Revised Plan and other management authorities.

Designation of the polar bear as a threatened species under the Endangered Species Act affords additional Federal protections to any lands and waters identified as critical habitat. Approximately 27 miles of the Okpilak is in designated polar bear critical habitat. Likely, these protections would benefit other wildlife and fish species in the area.

7. Historical or existing rights that could be adversely affected with designation.

There are no historical or existing rights that would be adversely affected with designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

From the Beaufort Sea to 30.9 miles inland, the Okpilak River is in the Coastal Management Zone of the North Slope Borough. Under Section 307 (c) of the Coastal Zone Management Act, the activities of all Federal agencies directly affecting the coastal zone should be consistent, to the maximum extent practicable, with the approved State coastal zone management plan. There are no other local zoning or other land use controls protecting the river's ORVs by preventing incompatible development in the river corridor.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 Arctic Refuge Revised Plan scoping period, the Refuge received four comments supporting wild river designation for the Okpilak River.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 11 comments for the Okpilak River from conservation organizations, commercial guides, recreational visitors, and other unidentified commenters. Seven comments support designation of the Okpilak River, and four comments do not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and rafting. In their comments, stakeholders identify the following values with the corresponding frequencies: wildlife (10), recreational (7), scenic (10), geologic (7), cultural (4), fish (4), and historic (1). Additionally, stakeholders identify intact wilderness and intact ecological systems as other Okpilak River values. Specifically, comments note that the foothills and Coastal Plain along the Okpilak are important calving and post-calving grounds for the Porcupine caribou herd, and that subsistence use occurs along the Okpilak delta. Comments also mention that the Coastal Plain is an important staging area for white-fronted snow geese, and the river provides challenging whitewater. One stakeholder mentions that the Okpilak contains “the most beautiful view from a hot springs anywhere in North America,” and it should be nominated for a National Natural Landmark.

10. Consistency of designation with other agency plans, programs, or policies.

Wild river designation of the Okpilak would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, the Endangered Species Act, ANILCA, and the Coastal Zone Management Program.

11. Contribution to a river system watershed or basin integrity.

The Okpilak River is the main water body in this northern watershed. By protecting it, protections would likely spread to its tributaries. The river is integral to North Slope ecosystems and residents of Kaktovik.

12. Other issues and concerns, if any.

There are no additional issues or concerns pertaining to the Okpilak River.

2.8.3 Preliminary Suitability Determination

The Okpilak River is preliminarily determined to be not suitable. The rivers in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. For the Okpilak River, this is especially true given its location in Arctic Refuge, its extremely low level of visitor use, and its scenic and geological ORVs. The Okpilak’s scenery and geology are already protected through other mechanisms, and their continued protection would be addressed more adequately through the Revised Comprehensive Conservation Plan and its potential step-down plans, such as a Wilderness Stewardship Plan and Visitor Use Management Plan.

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2.9 Neruokpuk Lakes (Peters and Schrader Lakes)

Reach: These lakes are the two largest and most northern arctic alpine lakes in North America. The two large, deep, connected lakes are surrounded by steep slopes rising to some of the highest peaks in the Brooks Range.

Total River Length:	32.2 miles	Primary Classification:	Wild
Length on Refuge:	32.2 miles	ORVs:	Scenic, Geologic, Fish
Length in Wilderness:	32.2 miles		

2.9.1 Description/Overview

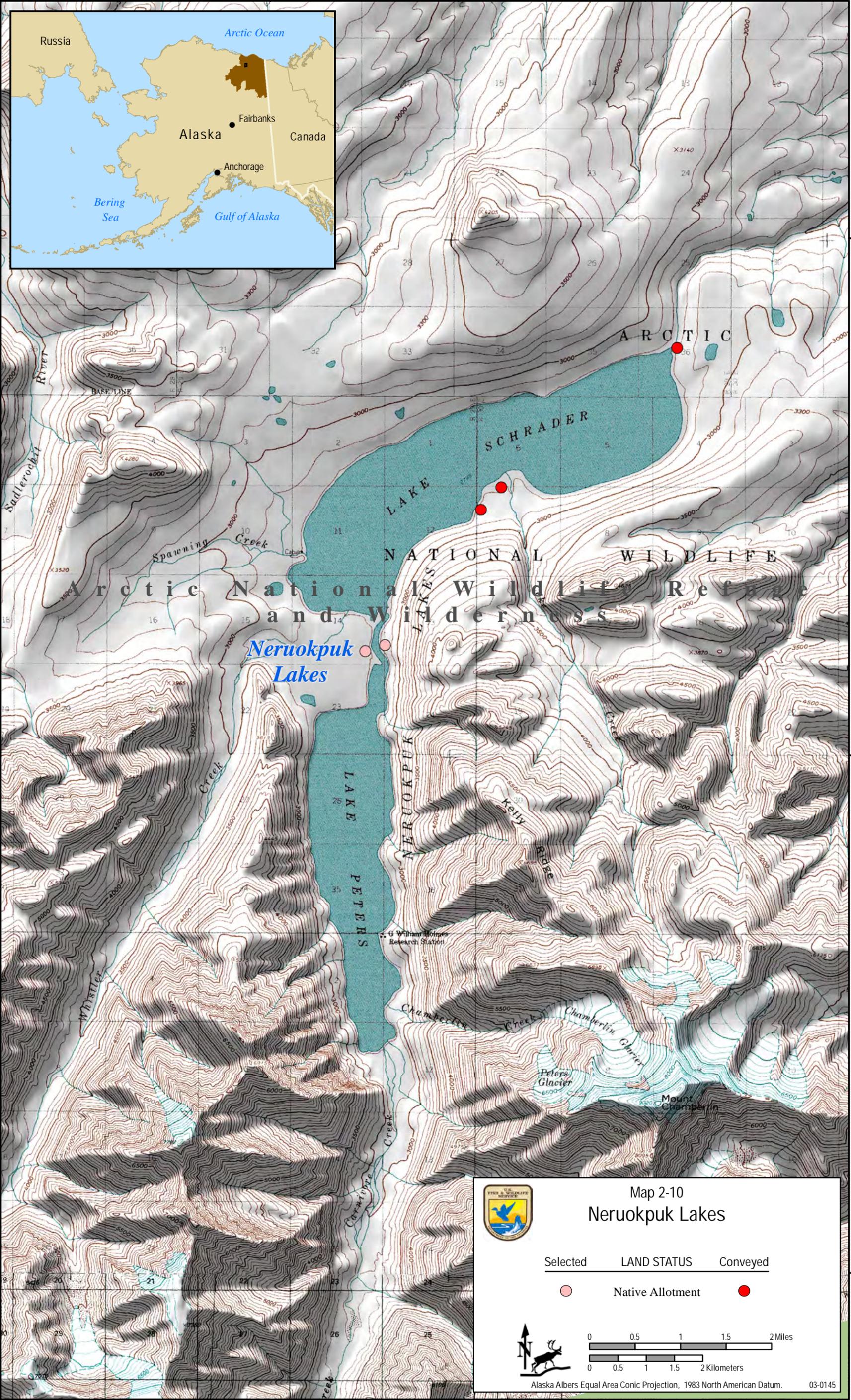
Peters and Schrader Lakes are the two largest, deepest, most northern arctic alpine lakes in North America and are part of a water system that connects the headwaters above the lakes to downstream rivers. They lie north of the Brooks Range between the Canning and Hulahula Rivers. Their stunning beauty and central location for many recreational activities, including hiking, mountain climbing, wildlife viewing, fishing, and hunting, have attracted visitors from around the world.

2.9.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

The Neruokpuk Lakes have outstandingly remarkable scenic, geologic, and fish values that are unique from other waters in Alaska and those in the NWSRS. Peters and Schrader Lakes are the two largest, deepest, and most northern arctic alpine lakes in North America and have been recognized for their ecological uniqueness and significance by many scientists. Peters and Schrader Lakes were named for William John Peters (1863–1942), a USGS topographer, and Frank Charles Schrader (1860–1944), a USGS geologist, who explored this region in 1901 on a reconnaissance led by Peters. The significance of the lakes was first recognized in 1968 by Dr. Frederick C. Dean, who recommended Peters and Schrader Lakes for designation as a National Natural Landmark. Bliss and Gustafson (1981) identified the site as having a high degree of national significance and recommended it a second time as a National Natural Landmark. Finally, Gordon and Shaine (1978) listed it as one of the State's outstanding scenic complexes, which led to the lakes and surrounding area being designated by the Service as the Neruokpuk Lakes Public Use Natural Area in 1977.

The scenic value of the Neruokpuk Lakes is the highest of any Arctic Slope site with rich flora and fauna and textbook geologic features associated with glaciers and permafrost (Murray 1979). These arctic alpine lakes lie in a narrow U-shaped valley with ridges and peaks rising over 4,900 feet on either side. Open tundra surrounds Schrader Lake to the north, and the Brooks Range flank Peters Lake to the south. The lake complex is surrounded by prominent glacial features, including Chamberlin Glacier, aretes, hanging glacial valleys, cirque glaciers, surficial glacial deposits, and turquoise waters. The scenery in this complex varies widely from the low rolling expanses of tussocks on the hillsides



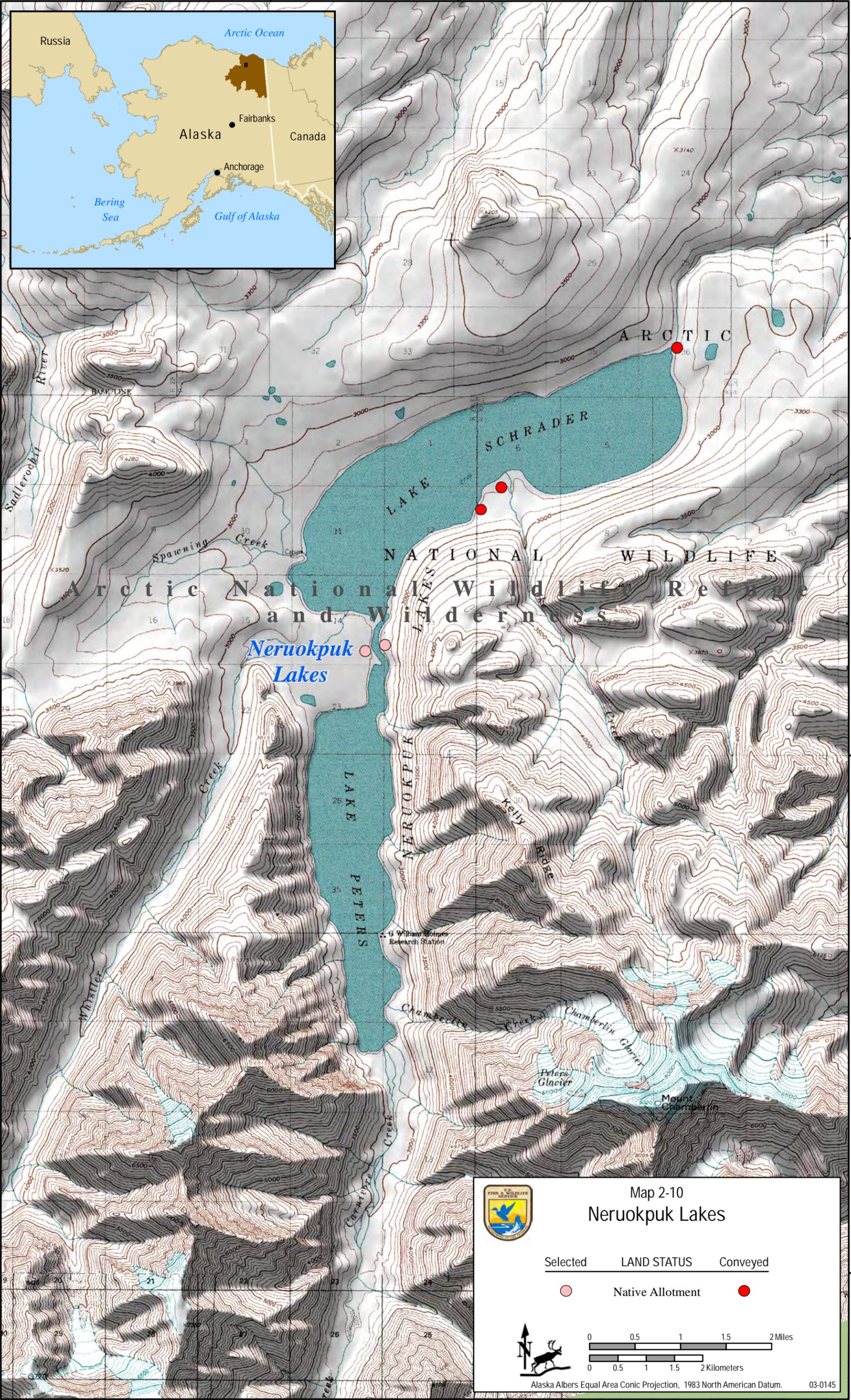
Map 2-10
Neruokuk Lakes

Selected LAND STATUS Conveyed

Native Allotment

0 0.5 1 1.5 2 Miles
0 0.5 1 1.5 2 Kilometers

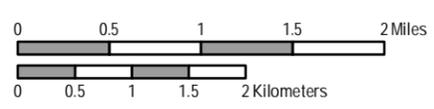
Alaska Albers Equal Area Conic Projection, 1983 North American Datum. 03-0145



Map 2-10
Neruokuk Lakes

Selected LAND STATUS Conveyed

○ Native Allotment ●



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

03-0145

surrounding Schrader Lake to the high alpine fell-fields and rock deserts above Peters Lake. The distinct differences between the lakes extend to the colors of the lakes: Peters Lake is turbid from glacially fed waters, while Schrader Lake is exceptionally clear. With the expansive views, a historical research facility, and a high variety of flora and fauna, this complex of lakes and streams provides a highly valuable scenic experience.

The Neruokpuk Lakes are surrounded by some of the highest peaks in the Brooks Range. Lake Schrader is roughly five miles long and one mile wide and is confined by the Itkillik terminal and lateral moraine remnants. It is fed primarily by Whistler and Coke Creeks and Lake Peters. Glacial features dominate the valley scenery. Large boulder fields on rolling tundra, the Chamberlin glacial drift sheet with visible lateral moraines, coalescing alluvial fans, and fresh talus slopes can all be seen from the lakes' shores. A delta has formed between the two lakes where they drain into the Kekiktuk River basin.

Peters Lake, located at the foot of the tallest mountain in the Refuge (Mt. Chamberlin), is 3.85 miles long and is connected to the south end of Schrader Lake by a narrow channel approximately 1.2 miles long. Peters Lake is naturally dammed—in part by till and outwash and in part by the broad delta of Whistler Creek. Peters Lake is fed primarily by Carnivore and Chamberlin Creeks, and the valley is predominantly in low-grade metamorphic rocks of the Neruokpuk Formation.

The exceptionally large, 600-foot-deep connected lakes support the largest, healthiest population of lake trout north of the Brooks Range. They are also a known wintering site for Dolly Varden. Populations of resident char have been found in both lakes. Each population remains in its respective stream, lake, or spring for all stages of its life history.

Smith and Glesne (1983) reported Arctic grayling to be the most numerous species in samples in 1979, though grayling were outnumbered by Arctic char in 1980 samples. Adult grayling generally migrate from their overwintering habitats in deep lakes, river channels, river deltas, or spring fed streams to their spawning grounds when the ice begins to melt and break up in the spring. Juvenile grayling move out of the smaller streams by September to deeper pools for overwintering (Craig and Poulin 1975). On the North Slope, grayling sometimes migrate into coastal areas, concentrating around river mouths where salinities are low and food is more abundant.

The Kekiktuk River and the Neruokpuk Lakes support overwintering arctic grayling and Dolly Varden. Freshwater overwintering sites are few in number and restricted in area. Arctic grayling return to the same areas for spawning, feeding, and overwintering each year (Craig and Poulin 1975; Armstrong 1986). Because extensive movement may be vital to the survival of Arctic grayling (and other fishes of the Coastal Plain), care must be taken to protect essential overwintering habitat and to allow for unimpeded migration. Overwintering habitat is critical to the survival of grayling; it is considered the major limiting factor for populations of Arctic fishes.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The Neruokpuk Lake complex is located within the boundary of PLO 2214 (the original Arctic Range). Title to the submerged lands beneath the Neruokpuk Lake complex is apportioned between the Service and three patented allotments. There are two allotments totaling 319.97 acres on the south side and one allotment of 159.9 acres on the northeast shore of Schrader

Lake. There is an application for an 80-acre allotment that, if conveyed, would occupy both sides of the stream that connects Peters Lake and Schrader Lake. In the event the allotment is conveyed, the submerged land bordering the allotment would be owned by the allotment owner. If patented, this parcel would have ownership of the submerged lands in the segment of stream bordered by the allotment.

The Service has not obtained any State-based water rights for the water bodies in the Neruokpuk Lake complex.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Intensive winter subsistence fishing and caribou hunting occur in and around this lake complex. Inclusion in the NWSRS could enhance the protections of these traditional uses.

Recreational use also has the potential to be enhanced, foreclosed, or curtailed if the area were included in the NWSRS. Recreational uses include hiking, backpacking, mountain climbing, hunting, and fishing.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

The Service would work with private landowners, the Native Village of Kaktovik tribal government, and the community of Kaktovik to administer the Neruokpuk Lake complex.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

Excluding the three native allotments, the entire Neruokpuk Lake complex is owned and managed by the Service. The Service has acquired allotments in the Refuge and plans to continue to acquire allotments in consultation with the Refuge manager and in cooperation with The Conservation Fund. However, acquisition of lands around the Neruokpuk Lake complex would not be necessary to manage it as a designated wild and scenic river.

The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The entire 32.2 miles of the Neruokpuk Lakes complex lies in lands administered under Wilderness Management provisions.

The Neruokpuk Lakes Public Use Natural Area was established on May 2, 1977, and encompasses 204,000 acres surrounding the lake complex; its purpose is to preserve essentially unmodified natural areas free of human impacts for public use and research.

The Service currently does not have a visual resource management program or other mechanism to protect the scenic values along this segment. However, protection of visual resources would likely be derived from the Revised Plan and other management authorities.

7. Historical or existing rights that could be adversely affected with designation.

There are no historical or existing rights that could be adversely affected with designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

There are no local zoning or other land use controls in place that would protect the lake complex's ORVs or prevent incompatible development on native allotments.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 Arctic Refuge Revised Plan scoping period, the Refuge did not receive any comments supporting designation of the Neruokpuk Lakes. However, the Refuge received seven comments supporting or opposing the need to manage the area as wilderness, and in particular, to remove the administrative buildings along the shore of Peters Lake.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 11 comments for the Neruokpuk Lakes from commercial guides, recreational visitors, conservation organizations, the State of Alaska, the Citizens' Advisory Commission on Federal Areas, the Native Village of Kaktovik tribal president, and other unidentified commenters. Seven comments support, two comments oppose, and two comments do not clearly mention support or opposition to designation of the Neruokpuk Lakes. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, hunting, rafting, and subsistence. In their comments, stakeholders identify the following values with the corresponding frequencies: wildlife (4), recreational (6), scenic (7), geologic (5), cultural (1), fish (6), and historic (1). Additionally, stakeholders identify intact wilderness, intact ecological systems, and subsistence as Neruokpuk Lake values. Specifically, comments supporting designation note that the lakes are an outstanding example of post-glacial scenery, including views of Mt. Chamberlin. Comments also mention that the lakes are important to waterfowl, and are part of a designated Public Use Natural Area. Comments opposing designation question whether the Neruokpuk Lakes qualify to be considered under the Wild and Scenic Rivers Act because Section 16(a) defines the term "river" as "[...] small lakes," but the eligibility report describes the Neruokpuk lakes as "the two largest and most northern alpine lakes in North America." One stakeholder recommends removing any structures on the lakes.

10. Consistency of designation with other agency plans, programs, or policies.

Wild and scenic river designation of the Neruokpuk Lakes complex would provide a complimentary set of protections to other Refuge and Service policies and programs, the Wilderness Act, and ANILCA.

11. Contribution to a river system watershed or basin integrity.

As one of the key overwintering sites on the North Slope for Arctic grayling, Arctic char, and lake trout, protection of the Neruokpuk Lakes complex is essential to the health and integrity of Arctic fish populations across the North Slope. These lakes are integral to the entire Arctic Coastal Plain.

12. Other issues and concerns, if any.

Refuge facilities located on the eastern shore of Peters Lake were established by the Department of the Navy as a substation of the Naval Arctic Research Laboratory in 1959 and consisted of six buildings. The facility now consists of three buildings and an outhouse and is utilized for wildlife surveys, research projects, field visits by agency leaders and others, and law enforcement. These buildings may qualify for the National Register of Historic Places. The presence of historical or administrative buildings does not preclude designation.

2.9.3 Preliminary Suitability Determination

The Neruokpuk Lakes complex is preliminarily determined to be not suitable. The waters in Arctic Refuge are already afforded an extremely high level of protection due to their remote location and existing protections. The fish, scenic, and geologic ORVs of the Neruokpuk Lakes complex are already adequately protected through existing provisions and through Public Use Natural Area and designated wilderness status. Continued protection of the Neruokpuk Lakes complex's ORVs would be ensured through the Revised Comprehensive Conservation Plan and its prescribed step-down plans. A Refuge-wide approach to visitor use, natural resource, and fish and wildlife management would be more effective for managing this lake complex.

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2.10 Porcupine River

Reach: The Porcupine is one of the largest tributaries of the Yukon River and is a historically important travel route. The Refuge portion begins at the United States-Canada border and flows downstream for approximately 85 miles.

Total River Length:	476 miles	Primary Classification:	Wild
Length on Refuge:	85 miles	ORVs:	Historic, Cultural, Geologic, Wildlife
Length in Wilderness:	0 miles		

2.10.1 Description/Overview

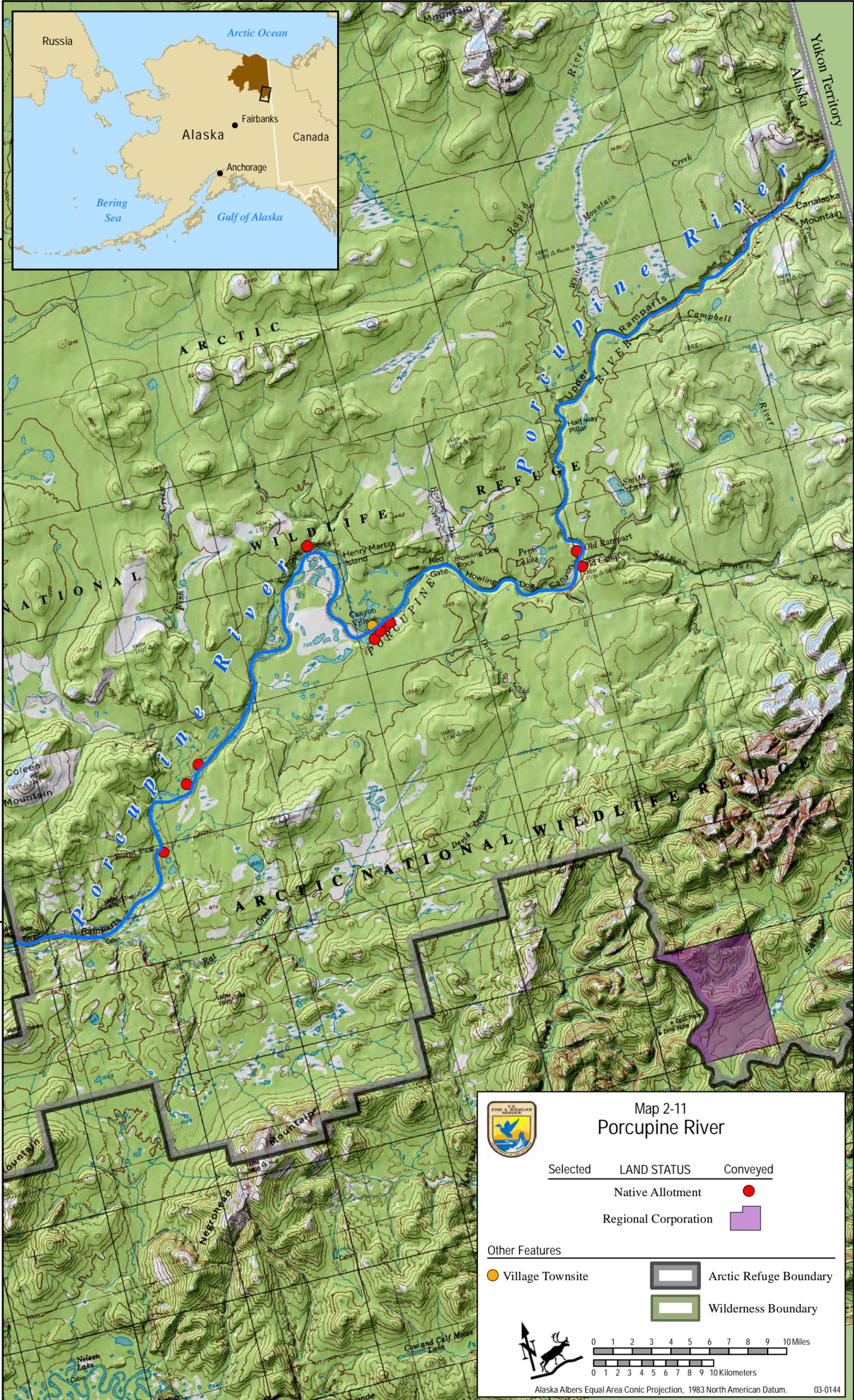
ANILCA (1980) mandated that the Porcupine River be evaluated for its eligibility and suitability for inclusion in the NWSRS. The National Park Service (1984) concluded with an eligible but non-suitable determination for two main reasons. First, the Porcupine River serves as an essential water highway for local travel and commerce, and there was concern that designation might constrain uses of the river for transportation purposes. Second, there was no support for designation from either the State of Alaska, who determined this river to be “navigable” and owns the riverbed from bank to bank at ordinary high water, or from private landowners, who have extensive inholdings along the river, particularly along its lower reaches.

2.10.2 Suitability Factor Assessment

1. Characteristics that do or do not make the river a worthy addition to the NWSRS.

The following was taken from the National Park Service Suitability study of the Porcupine River (National Park Service 1984). The Porcupine River has outstandingly remarkable historic, cultural, geologic, and wildlife values. The combination of values is similar to other major river segments in Alaska that have been designated into the NWSRS. The entire study area possesses these ORVs, but they are more prevalent, or at least more universally recognized, in and between the upper and lower Ramparts. Because of its remoteness and lack of roads, the river’s wildness is virtually untouched despite the presence of some small cabin developments.

As an important travel route, the Porcupine River filled a chapter in the history of Alaska and the Yukon Territory. Most notable was its role during the heyday of trapping and the activities of the Hudson’s Bay Company. Today, the river is important to local people who rely on it as a means for travel and for pursuing a more traditional way of life. The river provides a traveler the opportunity to experience the voyages of the explorers and fur traders of the mid-1800s, when the Porcupine River was the main corridor to Alaska’s interior. Old Rampart and Burnt Paw were once Hudson’s Bay Company trading posts. Other settlements, including Seventeen-Mile, Rampart House, Old Village, and 25–30 trapper cabin sites scattered along the banks, represent a period when the river was heavily traveled and these areas were frequented as stopover sites. In 1890, J.H. Turner of the U.S. Coast and Geodetic Survey travelled up the Porcupine



**Map 2-11
Porcupine River**

Selected	LAND STATUS	Conveyed
	Native Allotment	●
	Regional Corporation	■

Other Features

●	Village Townsite	▭	Arctic Refuge Boundary
▭		▭	Wilderness Boundary

0 1 2 3 4 5 6 7 8 9 10 Miles
0 1 2 3 4 5 6 7 8 9 10 Kilometers

Alaska Albers Equal Area Conic Projection, 1983 North American Datum. 03-0144

143°W

142°30'W

142°W

67°30'N

67°N

66°30'N

River and onto the Arctic Coastal Plain via the Firth River. The Porcupine River is the point of British incursion into Alaska.

As recorded in a geological survey in 1940, the Porcupine River historically was a focus for tourists to access the area using canoes or folding boats. Also, freight for settlements on the Porcupine was brought down the Yukon by river steamer to Fort Yukon. It was then reshipped up the Porcupine using shallow-draft launches pushing 30 to 40 foot scows carrying 80 tons or more of cargo. The first steamer travelled up the Porcupine River above the Ramparts in 1889.

The Porcupine River possesses cultural importance and notable archeological resources. The river was ice-free during the late Pleistocene, making it a focus of research into the earliest peoples of the New World. Archeological sites range in age from relatively modern historic sites to those reaching at least 9,000 years into the past. Stratified sites are extremely rare in interior Alaska, and the several found along the Porcupine hold a unique record of human cultural change and adaptation in the region.

The Porcupine River provides wildlife habitat for many species, including large mammals (moose, caribou, brown and black bears, wolf, and wolverine), smaller mammals (furbearing species), and birds (waterfowl, birds of prey, and upland game birds). The winter range of the Porcupine caribou herd extends into the upper Porcupine River drainage. All or part of the herd occasionally crosses the river during spring and fall migrations, often near the Canadian border. Brown bears are more common along the river corridor than elsewhere in the region. Wolves roam the Porcupine drainage and use the river as a travel corridor, especially in winter. Waterfowl and other water birds nest, feed, and raise broods in habitat provided by oxbow lakes, ponds, and quiet stretches of the river. The river is also an important waterfowl migration route in the spring and fall. The cliffs in the upper Ramparts are considered important habitat for peregrine falcons, which nest there. Raptor nesting density along that portion of the Porcupine River in Arctic Refuge is among the highest known in the State.

The river can be divided into five well-defined areas, each with distinctive physiography, bedrock geology, and surficial sediments. Geological studies suggest an interesting pattern of geological events in the Porcupine River Valley and northern Yukon Territory. There are terraces in the valley that exhibit characteristics of a fast, deep, turbulent river. These characteristics are unlike those created by a broad, relatively placid river, which is what the Porcupine resembles today.

2. The status of land ownership, minerals (surface and subsurface) use in the area, including the amount of private land involved and associated or incompatible uses.

The Porcupine River is located outside the boundary of PLO 2214 (the original Arctic Range) and was determined navigable in 2005, confirming the State's title to the submerged lands beneath the river. There are 10 allotments totaling 839 acres and no lands owned by Native corporations in the Refuge river corridor.

If any marketable deposits of oil and gas or other mineral resources were found on private land, these could be developed. Depending upon future discoveries of resources, pipelines might be constructed across or along the river corridor. Additional land-based support facilities would probably be contained on private lands.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS, and values that would be foreclosed or diminished if the area were not designated.

Access to the river corridor is currently by aircraft, snowmachine, or boat. The river serves as an essential water highway for local travel and commerce. Land use for recreational and subsistence activities, access to seasonal residences, and resource exploration is characterized as occasional and intermittent. Outside the concentrations of residential, service, and industrial land use by residents of Fort Yukon, Arctic Village, Chalkyitsik, and Venetie, few families and individuals reside year round. Designation would likely not affect local travel, commerce, or boating activities.

The Porcupine River is an integral part of the land and water resource base for the subsistence economy of residents of the Yukon Flats, particularly those of Fort Yukon and Chalkyitsik. Portions of the river, especially near its mouth, are extensively used by local people for travel, trapping, hunting, wood gathering, and other uses.

There are no proposed water resource developments, such as dams or diversions. Wild river designation would preclude any future oil and gas leasing or development on Federal lands along this section of river.

4. The extent to which the administration of the river, including the costs thereof, may be shared by State, local, or other agencies and individuals should the river be included in the national system.

The Service would work with private landowners, the State of Alaska, and subsistence communities and their governments to administer the Porcupine River.

5. Estimated cost of acquiring necessary lands, interests in lands, and administering the area if designated.

Most of the uplands in the study area are owned and managed by the Service, but the submerged lands beneath the entire length of the navigable Porcupine River (all lands located between the ordinary high water marks of the river) are owned by the State of Alaska (Alaska Statehood Act, Public Law 85-508; Federal Submerged Lands Act of 1953, PL 83-31).

Land or scenic easement acquisition would not be required to manage the study area as a designated wild and scenic river. However, private and State lands along the river could be acquired with the consent of the owner through the purchase of fee title or easements or through trade.

The cost of developing a CRMP, related data needs, and any management actions resulting from this planning effort may be offset by increased funding and staffing associated with designation.

6. Ability of the agency to manage and protect the river area or segment as a wild and scenic river, or other means to protect the identified values other than wild and scenic river designation.

The entire 85-mile Arctic Refuge segment of the Porcupine River flows through lands administered under Minimal Management provisions.

State ownership of the bed of the Porcupine River may restrict the ability of the Service to effectively manage the Porcupine River as a wild and scenic river. Section 13 (f) of the Wild and Scenic Rivers Act says that a State's existing rights, including the right of access with respect to the beds of navigable streams and rivers, shall not be affected by designation.

7. Historical or existing rights that could be adversely affected with designation.

The Porcupine River divides the RS 2477 Rampart House-Demarcation Point trail and Nation River-Rampart House trail claims, which traverse the Canada-Alaska border.

All historic or existing rights associated with subsistence, travel, and access would be protected under other authorities (ANILCA, Alaska Statehood Act, and Submerged Land Act) and would not be adversely affected by designation.

8. Adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.

Infrastructure associated with mineral extraction or oil exploration is an incompatible development that could impact the river's ORVs. However, no developments have been made, and exploration has been sparse.

9. Support or opposition of local governments, State governments, and stakeholders to designation under the Wild and Scenic Rivers Act.

During the 2010 Arctic Refuge Revised Plan scoping period, the Refuge received two comments supporting designation of the Porcupine River and five comments indicating the importance of and need for protection of wildlife, fish, and subsistence resources in the Porcupine River area. The comments also included several references to the importance of the Porcupine River for cultural, scenic, geologic, and historical resources.

During the 2010 stakeholder comment period regarding suitability criteria, the Service received 27 comments for the Porcupine River from commercial guides, recreational visitors, the State of Alaska, the Citizens' Advisory Council for Federal Areas, a member of the Gwich'in tribal government, and other unidentified commenters. Six comments support, three comments oppose, and 18 comments do not clearly mention support or opposition to designation. Stakeholder comments indicated that river uses include commercial and non-commercial recreation, hunting, fishing and subsistence. In their comments, stakeholders identify the following values with the corresponding frequencies: wildlife (22), recreational (16), scenic (18), geologic (7), cultural (17), fish (21), and historic (17). Additionally, stakeholders identified intact wilderness, intact ecological systems,

private land ownership, travel, sacred sites, subsistence, trapping, and hunting as other Porcupine River values.

Specifically, comments supporting designation note that the ramparts of the Porcupine River provide a scenic setting for river travelers. The State of Alaska comments that they oppose designation of the Porcupine River because it was previously studied and found eligible but not suitable due to the river being legally defined as navigable. As such, the lands comprising the river bed and both banks below the ordinary high water mark are owned by the State of Alaska. The State also comments that the BLM filed a recordable disclaimer of interest for the Porcupine River, disclaiming all Federal property interest in the river's submerged lands. The Citizens' Advisory Commission on Federal Areas echoes the comments of the State and adds that because the National Park Service already completed the study of the Porcupine River, the Service is exceeding its authority under both ANILCA and the Wild and Scenic River Act by reviewing the river for designation as part of the Revised Plan. Regardless of designation, Alaska's jurisdiction and management of fish and wildlife, water quality, and similar river resources would not be affected.

Several comments express how important the Porcupine River is for people dependent on subsistence and that subsistence rights need to be protected. Stakeholder concerns for the Porcupine include sport hunting, illegal hunters and trappers, oil drilling, and cleanliness. Several stakeholders mentioned concerns about how forest fires around the Porcupine are allowed to burn out naturally rather than be actively extinguished. Another commenter urges the Service to keep the Porcupine River wild and allow for recreational uses. Stakeholders suggest increasing law enforcement presence, closing the river to sport hunting and oil drilling, protecting traditional hunting grounds, and regulating trash backhaul.

10. Consistency of designation with other agency plans, programs, or policies.

Wild and scenic river designation of the Porcupine would provide a complimentary set of protections to other Refuge and Service policies and programs; ANILCA, the National Historic Preservation Act of 1966, as amended; the Antiquities Act of 1906, 16 U.S.C. § 433 et seq.; the Native American Graves Protection and Repatriation Act, 25 U.S.C. § 3001 et seq.; the Archaeological Resources Protection Act, 16 U.S.C. § 470aa et seq.; and Section 106 of the National Historic Preservation Act.

11. Contribution to a river system watershed or basin integrity.

The entire Porcupine River, including the portion in Canada, drains an area of about 46,000 square miles (Selkregg 1976:). The Porcupine is joined by the Coleen and Sheenjok Rivers and eventually flows into the Yukon River. It is an integral part of the Yukon River watershed and holds extreme cultural and subsistence values by the Alaskan Native and Canadian First Nation communities. Protecting this river is essential to protecting fish and wildlife populations and the biological diversity of the region.

12. Other concerns, if any.

There are no additional issues or concerns pertaining to the Porcupine River.

2.10.3 Preliminary Suitability Determination

The Porcupine River is preliminarily determined to be not suitable. The extensive review of the Porcupine River conducted between 1981 and 1984 concluded that the Porcupine River was not suitable for designation under the Wild and Scenic Rivers Act. The situation in 2011 does not differ enough from 1984 to warrant an opposing conclusion. Additionally, the river's status as navigable would make it difficult for the Service to develop and execute an effective management plan, considering that the State of Alaska is opposed to designation. The currently available mechanisms are sufficient to protect the Porcupine River's historic, geologic, cultural, and wildlife ORVs. The continued protection of these values will be addressed more adequately through the Revised Comprehensive Conservation Plan and its potential step-down plans, such as an Inventory and Monitoring Plan and Fire Management Plan.

3. Conclusions

Preliminary suitability determinations considered all 12 criteria for each river and the full analysis presented earlier in this report. However, two factors heavily influenced our determinations. First, we considered whether designation would result in a useful suite of management tools that would help the Refuge better manage a river corridor. Second, we considered whether designation might create new management issues, such as displacing visitor use to other rivers or areas of the Refuge. Preliminarily, four Refuge rivers were determined suitable: Atigun, Marsh Fork Canning, Hulahula, and Kongakut (Map 3-1). We are soliciting input from the public and the agency on these preliminary determinations. Suitability determinations will be finalized with the record of decision on the Revised Plan.



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

70° N

70° N

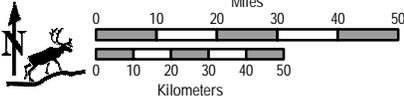


Map 3-1

Arctic National Wildlife Refuge

Suitable Rivers

-  Suitable Rivers*
-  Arctic Refuge Boundary
-  Wilderness Boundary
-  1002 Area
-  Village Native Corporation Lands
-  Roads
-  U.S.- Canada Border
-  Continental Divide



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

*These rivers have been preliminarily determined suitable.

Prudhoe Bay

Kaktovik

Camden Bay

Beaufort Sea

Hulahula River

Kongakut River

Marsh Fork

Aitgun River

Arctic Village

Canada

69° N

69° N

68° N

68° N

67° N

67° N



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

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Appendix A. Consultation and Coordination

A.1 Introduction

The U.S. Fish and Wildlife Service made a determined effort to consult with those having a direct or indirect legal or administrative interest in the results of the Wild and Scenic River Review process (stakeholders) on Arctic National Wildlife Refuge. After the eligibility report was drafted, a letter was sent to 379 stakeholders on October 6, 2010, requesting comments about the review process.

In addition, a 45-day tribal consultation period was held regarding the internal draft of the Revised Plan. Formal letters were sent to nine tribal council leaders of federally recognized tribal governments in or near Arctic Refuge on November 1, 2010. On November 3–6, 2010, Arctic Refuge Manager Richard Voss and Assistant Manager Hollis Twitchell consulted in person with local government officials, village elders, and residents of the villages of Venetie, Arctic Village, and Kaktovik.

A.2 Persons, Groups, Agencies, and Governments Consulted

Below is a list of the people, groups, agencies, and governments who were consulted during the Wild and Scenic River Review process.

Federal Government

Environmental Protection Agency
 Federal Subsistence Board
 Gates of the Arctic National Park
 National Marine Fisheries Service
 National Park Service
 North Slope Science Initiative
 Office of Environmental Policy and
 Compliance
 U.S. Arctic Research Commission
 U.S. Bureau of Indian Affairs
 U.S. Bureau of Land Management
 U.S. Coast Guard
 U.S. Department of the Interior,
 Regional Solicitor
 U.S. Department of the Interior,
 Senior Advisor to the Secretary for
 Alaska
 U.S. Fish & Wildlife Service
 U.S. Forest Service
 U.S. Geological Survey
 U.S. Minerals Management Service
 Yukon Flats National Wildlife Refuge

Alaska State Government

Alaska Board of Fisheries
 Alaska Board of Game
 Alaska Bureau of Wildlife Enforcement
 Alaska State Troopers
 Alaska Department of Commerce,
 Community, and Economic
 Development
 Alaska Department of Fish and Game
 Alaska Department of Natural
 Resources
 ANILCA Program

Local Governments

Arctic Village Council
 Canyon Village Traditional Council
 Chalkyitsik Village Council
 Chalkyitsik Traditional Council
 City of Fort Yukon
 City of Kaktovik
 Gwichyaa Zhee Gwich'in Tribal
 Government
 Native Village of Kaktovik
 Native Village of Kotzebue

North Slope Borough
Tuntutuliak Traditional Council
Village of Venetie Tribal Government
Village of Venetie Village Council
Vuntut Gwitchin First Nation

Tribal Consultation

Anaktuvuk Tribal President
Arctic Village First Chief
Beaver Traditional Council First Chief
Birch Creek Tribal First Chief
Chalkyitsik Traditional Council First Chief
Circle Traditional Council First Chief
Fort Yukon Tribal First Chief
Kaktovik Tribal Administer
Stevens Village Tribal First Chief
Venetie Tribal First Chief

Native Corporations

Chalkyitsik Native Corporation
Doyon Ltd.
Kaktovik Inupiat Corporation
Nana Regional Corporation
Arctic Slope Regional Corporation

Native Organizations

Alaska Federation of Natives
Alaska Inter-Tribal Council
Council of Athabascan Tribal Governments
Gwich'in Steering Committee
Inuit Circumpolar Council
Tanana Chiefs Conference

Other Organizations/Associations

Aircraft Owners and Pilots Association
Alaska Oil and Gas Association
Alaska Air Carriers Association
Citizens' Advisory Commission on Federal Areas
Polar Bears International
Rural Cap
Safari Club International
Sierra Club
Sustainable Arctic Tourism Association
Wilderness Society
Wilderness Watch

Councils/Committees

Fairbanks Fish and Game Advisory Committee
North Slope Regional Advisory Committee
Western Interior Regional Advisory Council
Yukon Flats Resource Conservation and Development

Businesses/Industry

Alyeska Pipeline Service Company
Arctic Power, Inc.
Chignik Airways, Inc.
Coldfoot Camp
Deadhorse Camp
Everts Air Service
North Star Terminal & Stevedore Co., LLC
Kavik River Camp

Arctic Refuge Special Use Permit

Holders

Authorized air operators
Authorized hunting guides
Authorized recreational and educational guides

Individuals

Native allottees

Other

Nomads Online Classroom Expeditions
Parks Canada, Western Arctic Field Unit
Parks Canada, Vuntut National Park
Porcupine Caribou Management Board
University of Alaska, Fairbanks – Institute of Arctic Biology, Toolik Field Station

Appendix B. Stakeholder Outreach

On October 6, 2010, the Refuge sent an outreach letter to 379 stakeholders. The letter informed them of the Wild and Scenic River Review process, the preliminary decisions made for the eligibility phase of the review, and asked them to provide information for use during the suitability study. This appendix contains a copy of the stakeholder letter and its two attachments: 1) an eligibility report summary and, 2) a comment form for suitability criteria.



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United States Department of the Interior



FISH AND WILDLIFE SERVICE

Arctic National Wildlife Refuge

101 12th Avenue, Room 236
Fairbanks, Alaska 99701-6267
(907) 456-0250

October 5, 2010

Dear Interested Party:

The Fish and Wildlife Service (FWS), Arctic National Wildlife Refuge (Refuge), is completing a Wild and Scenic River (WSR) review as part of the revised Comprehensive Conservation Plan (CCP) and Environmental Impact Statement (EIS). The Wild and Scenic Rivers Act requires that such a study be completed whenever Federal agencies revise their land use plans. This multi-step process includes **eligibility** review, **suitability** analysis, and potential Congressional **designation**.

This month the Arctic Refuge completed the **eligibility** report which can be found at <http://arctic.fws.gov/ccp.htm>. The report details which rivers and river systems on FWS lands within the Refuge meet the criteria to be eligible for designation. The eligibility phase of the study is solely an inventory designed to identify outstanding river-related values (ORVs) (which are defined in the Wild and Scenic Rivers Act) and does not examine competing uses for the identified rivers and river systems. A summary of this report, list of eligible rivers, and associated outstanding river-related values is attached.

The FWS is now beginning the next phase of the WSR review. The **suitability** analysis is the process of determining whether each segment identified as eligible would be a worthy addition to the National Wild and Scenic Rivers System. During the initial stage of the suitability process, the FWS is considering a number of suitability criteria such as manageability of each segment, land ownership, use tradeoffs and conflicts, usage levels, and availability of other methods for protecting values, to name a few.

At this time, the FWS is soliciting data from interested stakeholders and partners for each of the eligible rivers. The most helpful data is information that directly addresses the suitability criteria. The FWS will then use these data in making draft suitability determinations during the alternatives analysis for the Draft CCP/EIS. **Please send us your comments regarding the eligible rivers of interest to you by November 12, 2010.** When the Draft CCP/ EIS is published (tentatively scheduled for spring of 2011), the public will have 90-days to comment on the draft suitability determinations.

If you have any questions, please contact Sharon Seim at (907) 456-0501 or e-mail them to ArcticRefugeCCP@fws.gov.

Sincerely,

Richard Voss
Refuge Manager

Enclosures: Summary of Eligibility Report, List of Eligible Rivers;
Comment Request Form

Attachment #1

Arctic National Wildlife Refuge Eligibility Report Summary

The Wild and Scenic Rivers Act, (Pub. L. 90-543 as amended: 16 U.S.C. 1271-1287) (the Act) establishes a method for providing federal protection for certain free-flowing rivers and preserving them and their immediate environments for the use and enjoyment of present and future generations. The function of the wild and scenic river review is to inventory and study the rivers and water bodies within the boundary of the Arctic National Wildlife Refuge (Refuge) to determine whether they merit inclusion in the National Wild and Scenic River System (NWSRS).

Minimum Wild and Scenic River Criteria

To be eligible for designation as a Wild and Scenic River, a river or river segment and its immediate environment is required to possess at least one “outstandingly remarkable value” (ORV) and be free flowing.

Outstandingly Remarkable Values (ORVs)

The Refuge Wild and Scenic River Eligibility Review evaluated the seven ORVs mentioned in the Act: scenic, recreational, geological, fish, wildlife, historical, and cultural. While the spectrum of resources that may be considered is broad, ORVs must be directly river-related. They should:

1. Be located in the river or on its immediate shore;
2. Contribute substantially to the functioning of the river ecosystem; and/or
3. Owe their location or existence to the presence of the river.

If a river was found to meet the eligibility criteria, it was evaluated to determine the tentative classification.

Wild and Scenic River Classification

“1) **Wild river areas** – *Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.*

“2) **Scenic river areas** – *Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.*

“3) **Recreational river areas** – *Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.”*

A comprehensive list was identified of all named refuge rivers and river segments from the U.S. Geological Survey (USGS) Geographic Names Information System and the National Hydrography Dataset. A total of 160 rivers and creeks were identified, all of which are free flowing. Rivers with known river-related public use were identified to be reviewed further. For a further explanation of the process, see the Arctic National Wildlife Refuge Eligibility Report (at <http://arctic.fws.gov/ccp.htm>). The findings of that report are included in the following summary table.

Eligible Rivers

River System	Description	*Segment Length	Preliminary Classification	Remarkable Values
Atigun River	The Atigun River flows into the refuge from bordering State and BLM lands and can be accessed by the Dalton Highway. The portion that's on the refuge is often referred to as Atigun Gorge. The Gorge ends just before the confluence with the Sagavanirktok River.	11.08	Wild	Geology
Canning River	The Canning River is the longest north flowing river within the Refuge. It forms the western boundary of the Refuge as it flows through mountains, to foothills, to the coastal plain, and finally to the arctic coast.	125.50	Wild	Wildlife, Fish
Marsh Fork – Canning River	The Marsh Fork begins and ends in the precipitous Phillip Smith Mountains, flowing through spectacular vistas of rocky peaks. Just before reaching the foothills, the Marsh Fork joins the main stem of the Canning.	53.84	Wild	Recreation
East Fork – Chandalar River	The East Fork has its headwaters near the Romanzof Mountains in the eastern Brooks Range. It's surrounded by Refuge until Arctic Village, where it then forms the Refuge's southern boundary. The East Fork eventually flows into the main stem of the Chandalar River.	203.71	Wild	Culture
Hulahula River	The Hulahula begins in glaciers of the Romanzof Mountains, flows west and then about 100 miles north, through valleys between Mt. Chamberlin and Mt. Michelson, onto the coastal plain, and ending in Camden Bay.	96.64	Wild	Recreation
Jago River	The Jago River is flanked by the Romanzof Mountains and is fed by the McCall Glacier on Mt. Itso. It flows through the mountains to the coastal plain and finally to the arctic coast.	83.77	Wild	Wildlife

Eligible Rivers				
River System	Description	*Segment Length	Preliminary Classification	Remarkable Values
Kongakut River	The Kongakut is the only major refuge river whose entire course is within designated wilderness. Originating high in the mountains of the eastern Brooks Range, the river flows generally north through miles of rugged mountains to the coastal plain and emptying into Beaufort Sea.	116.27	Wild	Recreation, Scenery, Geology
Okpilak River	The silt-laten Okpilak begins in the heart of the most active glacial area of the Refuge. The river churns as it flows north through a classic U-shaped valley containing moraines, fans, sand dunes and other glacial features. The water then abruptly flattens as it flows onto the coastal plain to the arctic coast.	73.25	Wild	Scenery, Geology
Neruokpuk Lakes	These lakes are the two largest and most northern arctic alpine lakes in North America. The two large, deep, connected lakes are surrounded by steep slopes rising to some of the highest peaks in the Brooks Range.	9.86	Wild	Scenery, Geology, Fish
Porcupine River	The Porcupine is one of the largest tributaries of the Yukon River and a historically important travel route. The Refuge portion begins at the Canada/US border and flows downstream for approximately 85 miles.	84.77	Wild	History, Culture, Geology, Wildlife, Fish

**Segment Length is approximate*

*** Preliminary classifications are interim classifications and can change through Suitability, Recommendation or Designation.*

Attachment #2

Arctic National Wildlife Refuge – Wild and Scenic River Review

Stakeholder Comments on Suitability Criteria

Are any of the Refuge’s Eligible Rivers of specific interest to you? If so, please mark the river values that are important to you.

River	River Values							
	Recreation	Scenery	History	Culture	Geology	Wildlife	Fish	Other
Atigun River								
Canning River								
Marsh Fork – Canning River								
East Fork – Chandalar River								
Hulahula River								
Jago River								
Kongakut River								
Okpilak River								
Neruokpuk Lakes								
Porcupine River								

Do you own land or an allotment adjacent to or near one or more of these rivers? Yes No Which ones?

Do you have a claim or existing right associated with any of these rivers? Yes No Explain.

Do you use or plan to use any of these rivers for commercial use, hunting, recreation, subsistence etc.?
 Yes No Explain.

Are the river values you selected above at risk? Yes No Explain.

How do you think the river and/or river values you selected above should be protected? Explain.

Do you have additional questions or concerns about designation and how it may impact you, your community, your authority, or use of these rivers?

Anything else we should know? Are there other rivers with similar values that you think the Refuge should consider for further protections?

Your comments or questions are welcome anytime.

Please contact Sharon Seim (907) 456-0501 for more information or visit our website at <http://arctic.fws.gov/ecp.htm>.
 Use additional paper if necessary or email your responses, comments, or questions to ArcticRefugeCCP@fws.gov

Appendix C. Comments on Non-Eligible Rivers

The Service received comments about 15 rivers that were not determined to be eligible: the Aichilik, Coleen, Ivishak, Junjik, Katakaturuk, Middle Fork Chandalar, Okerokovik, Sadlerochit, Sagavanirktok, Salmon Trout, Sheenjek (already a designated wild river), Tamayariak, and Turner Rivers; and Joe and Spring Creeks. Comments came from ten stakeholders, including commercial guides, recreational visitors, conservation organizations, residents of Arctic Village, Arctic Village council members, the Native Village of Kaktovik Tribal President, and a Native Village of Venetie council member. While the State of Alaska and the Citizens' Advisory Commission on Federal Areas did not comment on the following rivers, they stated they're opposed to wild and scenic river designation of any river in the Refuge. For information about general wild and scenic river comments and/or comments pertaining to eligible rivers, please reference the suitability report. The Refuge received the following comments about non-eligible rivers.

Aichilik River

During the 2010 stakeholder comment period regarding suitability criteria, the Service received six comments for the Aichilik River from a commercial guide, recreational visitors, conservation organizations, and the Native Village of Kaktovik Tribal President. Five comments support considering the Aichilik for designation and one comment does not clearly mention support for or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation, fishing, and subsistence. In their comments, stakeholders identified the following values with the corresponding frequencies: scenic (4), geologic (2), wildlife (4), fish (4), and cultural (1). Additionally, stakeholders identified intact wilderness, intact ecological systems, and subsistence as other Aichilik River values. Specifically, comments note that the river provides backpacking, rafting, and wildlife-viewing opportunities and is well known for its wolves; the migrating Porcupine caribou herd; cliff nesting raptors; and a concentration of nesting tundra swans, geese, and other waterfowl and shorebirds at its delta. Comments also note that the river contains dramatic scenery with mountain spires, auffs fields, Dryas terraces, and gravel bars full of coral and other fossils. Comments also mention that the river should be recommended for designation because it forms the wilderness boundary of the Refuge and because the river corridor was part of the range for herding reindeer.

Coleen River

During the 2010 Refuge comment period regarding suitability criteria, the Service received five comments from commercial guides, a recreational visitor, and conservation organizations. All five comments support considering the Coleen River for designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (3), scenic (2), geologic (5), wildlife (5), fish (2), cultural (5), and historic (1). Additionally, stakeholders identify intact wilderness, intact ecological systems, and remoteness as other Coleen River values. Specifically, comments note that the Coleen River should be eligible for wild river status because it contains many ORVs such as archeological evidence of Iñupiat cultures;

special geological features like Conglomerate Mountain and Bear Mountain; and wildlife habitat for caribou and migratory moose populations.

Ivishak River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments for the Ivishak River from a commercial guide, a recreational visitor, and conservation organizations. Ivishak River is already designated as a Wild River. The four comments support extending designation to the Ivishak River's tributaries. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (3), scenic (4), geologic (2), and wildlife (4). Additionally, stakeholders identify intact wilderness and intact ecological systems as other Ivishak River values. Specifically, comments note that the river provides special recreational opportunities because it is near Dalton Highway.

Joe Creek

During the 2010 Refuge comment period regarding suitability criteria, the Service received one comment from a commercial guide who supports considering Joe Creek for designation. The stakeholder identified wildlife, fish, and intact wilderness as Joe Creek values. The comment notes that Joe Creek is an important international caribou migration corridor linking the Firth River with points east.

Junjik River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments for the Junjik River from a commercial guide, an Arctic Village resident, Arctic Village council members, and a Venetie Tribal Government council member. Three comments support considering the Junjik River for designation, and one comment does not clearly mention support or opposition to designation. Stakeholder comments indicate that river uses include commercial recreation and subsistence. In their comments, stakeholders identify the following values with the corresponding frequencies: recreational (1), wildlife (1), and cultural (3). Additionally, stakeholders identify intact wilderness and subsistence as other Junjik River values. Specifically, comments note that the Junjik River should be designated as a wild river due to its variety of resources; concentration of Native allotments, which represent high use areas for subsistence; seasonal habituation of families; and unique water qualities (the Gwich'in believe the Junjik possesses mineral and medicinal health qualities). Comments also note that resources harvested along the river include Dall's sheep, moose, grizzly bear, caribou, wolf, wolverine, red and arctic fox, ground squirrel, ptarmigan, porcupine, grayling, whitefish, and waterfowl.

Katakturuk River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments for the Katakturuk River from a commercial guide, a recreational visitor, and conservation organizations. All comments support considering the river for designation. One stakeholder indicates that river uses include commercial and non-commercial recreation.

Stakeholders identified the following values with the corresponding frequencies: recreational (2), scenic (4), geologic (4), wildlife (4), fish (3), and cultural (2). Additionally, stakeholders identified intact wilderness and intact ecological systems as other Katakaturuk River values. Specifically, comments note that the Katakaturuk River provides calving and post-calving habitat for the Porcupine caribou herd and the summer range for the Central Arctic herd; and habitat for fish, Dall's sheep, wolves, and grizzly bears. Comments also note that the river offers hiking opportunities and scenic views of mountains and a canyon.

Middle Fork Chandalar River

During the 2010 Refuge comment period regarding suitability criteria, the Service received one comment from a conservation organization supporting wild and scenic river consideration for the Middle Fork Chandalar. The stakeholder identifies wildlife and scenery as values of the river.

Okerokovik River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments from a commercial guide, a recreational visitor, and conservation organizations. All comments support considering the river for designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation. In their comments, stakeholders identify the following values with the corresponding frequencies: recreational (1), scenic (2), geologic (1), wildlife (4), cultural (1), and historic (1). Additionally, stakeholders identify intact wilderness and intact ecological systems as other Okerokovik River values. Specifically, comments note that the Okerokovik River provides calving and post-calving habitat for the Caribou Porcupine herd and contains an aufeis field and a large spring. Comments also noted that wildlife sightings include grizzly bears, wolverine, and a wolf.

Sadlerochit River

During the 2010 Refuge comment period regarding suitability criteria, the Service received five comments from a commercial guide, a recreational visitor, conservation organizations, and the Native Village of Kaktovik Tribal President. Four comments support considering the river for designation. One comment does not clearly mention support for or opposition to designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (2), scenic (3), geologic (4), wildlife (4), fish (4), cultural (1), and historic (1). Additionally, stakeholders identify intact wilderness and intact ecological systems as other Sadlerochit river values. Specifically, comments note that: 1) the river contains diverse scenery with the Brooks Range, braided channels, and polygonated tundra; 2) the river contains Fire Creek Canyon, which is a geological ORV; 3) the river historically was used for reindeer herding; 4) Sadlerochit Springs has been nominated as a National Natural Landmark, is one of the largest perennial springs on the North Slope, and hosts several unique plant and bird species; 5) the springs and river provide important spawning, rearing, and overwintering habitat for Dolly Varden and Arctic grayling; 6) both the river and springs are important to many other species, including birds and muskoxen; 7) the river can act as a scientific control, which may be significant for climate change research; 8) designation is

feasible because the river system is almost entirely in Federal ownership; and 9) consideration should be given to connect the river with Neuruokpuk Lakes for designation.

Sagavanirktok River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments for the Sagavanirktok River from a commercial guide, a recreational visitor, and conservation organizations. All four comments support considering the river for designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (4), scenic (4), geologic (2), wildlife (4), and fish (1). Additionally, stakeholders identify intact wilderness and intact ecological systems as other Sagavanirktok River values. Specifically, comments note that the river provides wildlife habitats for caribou, Dall's sheep, and moose; and it is important for general hunting. Comments also note that the river has added recreational value due to its proximity to Dalton Highway.

Salmon Trout River

During the 2010 Refuge comment period regarding suitability criteria, the Service received one comment from a conservation organization that supports considering the Salmon Trout for designation. The stakeholder identified scenery, wildlife, fish, and history as river values.

Sheenjek River

During the 2010 Refuge comment period regarding suitability criteria, the Service received one comment from a Venetie Tribal Government council member noting that the Sheenjek River should have an ORV for subsistence and cultural use. The portion of the Sheenjek that flows through Arctic Refuge is already designated as a wild river. The stakeholder noted that the Sheenjek River is so important that it was seriously considered as the permanent location for what is now Arctic Village.

Spring Creek

During the 2010 Refuge comment period regarding suitability criteria, the Service received two comments for Spring Creek from a commercial guide and a resident of Arctic Village. One comment supports considering Spring Creek for designation, and one comment does not clearly mention support for or opposition to designation. In their comments, stakeholders identified the following values with the corresponding frequencies: recreational (1), wildlife (1), and cultural (1). Additionally, one stakeholder identified intact wilderness as another value of the creek. One comment notes that Spring Creek has a natural warm spring and four Native allotments along its waterway.

Tamayariak River

During the 2010 Refuge comment period regarding suitability criteria, the Service received four comments for the Tamayariak River from a commercial guide, a recreational visitor, and

conservation organizations. All comments support considering the Tamayariak River for designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (1), scenic (1), geologic (1), wildlife (4), and fish (3). Additionally, stakeholders identify intact wilderness and intact ecological systems as other Tamayariak River values. Specifically, comments note that lakes in the Tamayariak River delta contain adequate, clean water important to birds and fish, and that the river provides habitat for caribou and muskoxen. Comments also note that the river's tributaries and complex of lakes, wetlands, and mudflats provide outstanding habitat for migratory birds and that the Tamayariak's tributaries should also be considered for designation.

Turner River

During the 2010 Refuge comment period regarding suitability criteria, the Service received three comments for the Turner River from a commercial guide, a recreational visitor, and conservation organizations. All comments support considering the Turner River for designation. Stakeholder comments indicate that river uses include commercial and non-commercial recreation and identify the following values with the corresponding frequencies: recreational (1), scenic (2), wildlife (3), and cultural (2). Additionally, stakeholders identify intact wilderness and intact ecological systems as additional Turner River values. Specifically, comments note that that the river's proximity to Demarcation Bay and nearby barrier islands makes it especially productive for wildlife and waterfowl. Comments also note that it contains a diversity of landscapes and is highly used by the Porcupine caribou herd during the calving and post-calving seasons.

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Appendix D. Interim Management Prescriptions

D.1 Introduction

Interim management to adequately protect a candidate river's free flow, water quality, outstandingly remarkable values, and preliminary or recommended classification is derived from an agency's existing authorities and subject to existing private rights. The intent of interim protective management is to assure that a river maintains its eligibility status while Congress reviews and considers a river for designation. Interagency guidance (Interagency Wild and Scenic River Coordinating Council 1999) directs land managers to develop interim management prescriptions for suitable rivers. The intent of the prescriptions is to maintain, not enhance, the current condition and values of each suitable river.

The following prescriptions were developed from the Management Guidelines and Policies discussed in Chapter 2 of the Arctic National Wildlife Refuge (Arctic Refuge, Refuge) Revised Comprehensive Conservation Plan (Plan, Revised Plan).

The Kongakut River and the upper portion of the Hulahula River flow through lands designated as wilderness. The interim management prescriptions for these river segments were drawn from the Refuge's Wilderness Management or Wild River Management categories—whichever provided the most protection to the river from a particular use or activity. The Atigun and Marsh Fork Canning Rivers, and the lower portion of the Hulahula River, flow through lands managed as Minimal Management. The interim prescriptions for these river segments were derived from the Refuge's Wild River or Minimal Management categories—whichever provided the most protection to the river from a particular use or activity.

The two sets of interim management prescriptions are similar whether the river flows wholly or partially within designated wilderness. The primary difference between the prescriptions is that activities and uses conducted by the Service in designated wilderness are subject to a minimum requirements analysis (MRA), which is a decision making process to determine if the proposed activities are necessary to administer the area as wilderness and to accomplish the purposes of the Refuge, including the purposes of the Wilderness Act. Terms used in the following table are defined as:

- Allowed – Activity, use, or facility is allowed under existing NEPA analysis, appropriate use findings, Refuge compatibility determinations, and applicable laws and regulations of the Service, other Federal agencies, and the State of Alaska
- May be Allowed – Activity, use, or facility may be allowed subject to site-specific NEPA analysis, an appropriate use finding (when required), a specific Refuge compatibility determination (when required), and compliance with all applicable laws and regulations of the Service, other Federal agencies, and the State of Alaska
- May be authorized – Activity, use, or facility may only be allowed with a required special use permit or other authorization
- Not allowed – Activity, use, or facility is not allowed

Table D-1. Interim Management Prescriptions for Suitable Rivers

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
ECOSYSTEM, HABITAT, FISH and WILDLIFE MANAGEMENT		
<p>Collecting Information on and Monitoring Ecosystem Components Data gathering, monitoring, and maintaining a comprehensive database of selected ecosystem components (e.g., plants, animals, fish, water, air)</p>	Allowed (subject to MRA)	Allowed
<p>Research and Management <i>By the Service:</i> Access and collection of data necessary for management decisions or to further science</p>	Allowed (subject to MRA)	Allowed
<p><i>By the Alaska Department of Fish and Game:</i> Access and collection of data necessary for management decisions or to further science</p>	Allowed (subject to MRA)	Allowed
<p><i>By Other Researchers:</i> Access and collection of data necessary for management decisions or to further science</p>	May be authorized (subject to MRA)	May be authorized
<p>Research and Management Facilities May be permanent or temporary structures or camps, including weirs, counting towers, and sonar counters</p>	May be allowed (subject to MRA)	May be allowed
<p>Describing, Locating, and Mapping Habitats Development of quantitative, written, and graphic descriptions of fish and wildlife habitat, including water, food, and shelter components</p>	Allowed (subject to MRA)	Allowed
<p>Habitat Management <i>Mechanical Treatment:</i> Activities such as cutting, crushing, or mowing of vegetation; water control structures; fencing; artificial nest structures</p>	Not allowed	Not allowed
<p><i>Chemical Treatment:</i> Use of chemicals to remove or control non-native species</p>	May be allowed (subject to MRA)	May be allowed

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Manual Treatment: Use of hand tools to remove, reduce, or modify hazardous plant fuels or exotic plant species, or to modify habitats (e.g., remove beaver dams)	May be allowed (subject to MRA)	May be allowed
Aquatic Habitat Modifications Activities such as stream bank restoration, passage structures, fish barriers, or removal of obstacles that result in physical modification of aquatic habitats to maintain or restore native fish species	May be allowed (subject to MRA)	May be allowed
Fire Management Prescribed Fires: Fire ignited by management actions to meet specific management objectives	May be allowed (subject to MRA)	May be allowed
Wildland Fire Use: The planned use of any wildland fire to meet management objectives	May be allowed (subject to MRA)	May be allowed
Fire Suppression: Management actions intended to protect identified values from a fire, extinguish a fire, or confine a fire	Allowed	Allowed
Non-native and Pest Plant Control Monitoring, extirpation, control, removal and/or relocation, and other management practices for pest and non-native plant species	May be allowed (subject to MRA)	May be allowed
Water Quality and Quantity Management Monitoring of water quality and quantity to identify baseline data and for management purposes; includes installation of gauging stations	Allowed (subject to MRA)	Allowed
Reintroduction of Species The reintroduction of native species to restore diversity of native fish, wildlife, and habitats	May be allowed (subject to MRA)	May be allowed

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
<p>Fish and Wildlife Control The control, relocation, sterilization, removal, or other management of native species, including predators, to maintain diversity of native fish, wildlife, and habitats; favor other fish or wildlife populations; protect reintroduced, threatened, or endangered species or to restore depleted native populations</p>	May be allowed (subject to MRA)	May be allowed
<p>Non-native Species Management The removal or control of non-native species (including predators)</p>	May be allowed (subject to MRA)	May be allowed
<p>Pest Management and Disease Prevention and Control Relocation or removal of organisms that threaten human health or survival of native fish, wildlife, or plant species; management practices directed at controlling pathogens that threaten fish, wildlife, and people, such as rabies and parasite control</p>	May be allowed (subject to MRA)	May be allowed
<p>Fishery Restoration Actions taken to restore fish access to spawning and rearing habitat, or actions taken to restore populations to historic levels; includes harvest management, escapement goals, habitat restoration, stocking, egg incubation boxes, and lake fertilization</p>	May be allowed (subject to MRA)	May be allowed
<p>Fishery Restoration Facilities Fisheries facilities may be permanent or temporary and may include hatcheries, fish ladders, fish passages, fish barriers, and associated structures</p>	May be authorized (subject to MRA)	May be authorized
<p>Fishery Enhancement Activities applied to a fish stock to supplement numbers of harvestable fish to a level beyond what could be naturally produced based upon a determination or reasonable estimate of historic levels</p>	May be authorized (subject to MRA)	May be authorized

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Fishery Enhancement Facilities May be permanent or temporary and may include hatcheries, egg incubation boxes, fish ladders, fish passages, fish barriers, and associated structures	May be authorized (subject to MRA)	May be authorized
Native Fish Introductions Movement of native fish species within a drainage on the Refuge to areas where they have not historically existed	May be allowed (subject to MRA)	May be allowed
Non-native Species Introductions Introduction of species not naturally occurring within the Refuge	Not allowed	Not allowed
SUBSISTENCE		
Fishing, Hunting, Trapping, and Berry Picking The taking of fish, wildlife, and other natural resources for personal consumption, as provided by law	Allowed	Allowed
Collection of House Logs and Firewood Harvesting live standing timber greater than 6 inches diameter at breast height for personal or extended family use	May be authorized	May be authorized
Collection of House Logs and Firewood Harvesting live standing timber between 3 and 6 inches diameter at breast height for personal or extended family use	20 trees or less per year allowed; more than 20 trees per year may be authorized	20 trees or less per year allowed; more than 20 trees per year may be authorized
Collection of Plant Materials Harvesting trees less than 3 inches diameter at breast height, dead standing or downed timber, grass, bark, and other plant materials used for subsistence purposes	Allowed	Allowed

Appendix I: Wild and Scenic River Review

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Temporary Facilities Establishment and use of tent platforms, shelters, and other temporary facilities and equipment directly related to the taking of fish and wildlife	Tent platforms may be authorized; all others may be allowed	Tent platforms may be authorized; all others may be allowed
Subsistence Cabins – See Cabins (below)		
Access for Subsistence Use of snowmobiles, motorboats, and other means of surface transportation traditionally employed for subsistence purposes	Allowed	Allowed
PUBLIC ACCESS		
Foot	Allowed	Allowed
Dogs and Dog Teams	Allowed	Allowed
Other Domestic Animals Includes horses, mules, llamas, etc. (certified weed-free feed required)	Allowed	Allowed
Non-motorized Boats Includes canoes, kayaks, rafts, etc.	Allowed	Allowed
Motorized Use of snowmobiles, motorboats, airplanes, and non-motorized surface transportation methods for traditional activities and for travel to and from villages and home sites	Allowed	Allowed
Highway Vehicles	Not allowed	Not allowed
Off-Road Vehicles (All-Terrain Vehicles) Includes air boats and air-cushion vehicles	Not allowed, with exceptions	Not allowed, with exceptions
Helicopters Includes all rotary-wing aircraft	Not allowed, with exceptions	Not allowed, with exceptions
PUBLIC USE, RECREATION, and OUTREACH ACTIVITIES		
Hunting, Fishing, Wildlife Observation, Wildlife Photography, Interpretation, and Environmental Education Note: All activities listed are priority public uses	Allowed	Allowed

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Trapping, Walking, Hiking, Camping at Undeveloped Sites, and Dog Sledding	Allowed	Allowed
General Photography See also COMMERCIAL USES	Allowed	Allowed
Outreach Activities	Allowed	Allowed
All Weather Roads And associated developments, including bridges	Not allowed	Not allowed
Unimproved Roads Note: While unimproved roads are not allowed in Minimal, Wilderness, and Wild River Management categories, roads may exist; in these management categories, the roads would not be designated for use or maintained	Not allowed	Not allowed
Designated Off-Road Vehicle (All-Terrain Vehicle) Routes and Areas	Not allowed	Not allowed
Roadside Exhibits and Waysides	Not applicable	Not applicable
Constructed and Maintained Airstrips	Not allowed	Not allowed
Constructed Hiking Trails Includes bridges, boardwalks, trailheads, and related facilities	May be allowed (subject to MRA)	May be allowed
Designated Hiking Routes Unimproved and unmaintained trails; may be designated by signs, cairns, and/or on maps	Allowed	Allowed
Boat Launches and Docks Designated sites for launching and storing watercraft or tying up a float plane	Generally not allowed (subject to MRA)	Generally not allowed
Visitor Contact Facilities A variety of staffed and unstaffed facilities providing information on the Refuge and its resources to the public; facilities range from visitor centers to kiosks and signs	Not allowed (subject to MRA)	Not allowed
Campgrounds Developed sites accessible by highway vehicles	Not applicable	Not applicable

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
<p>Hardened Campsites Areas where people can camp that are accessible by vehicle or on foot but where the only facilities provided are for public health and safety and/or resource protection; may include gravel pads for tents, hardened trails, and/or primitive toilets</p>	Allowed (subject to MRA)	Allowed
<p>Temporary Facilities Includes tent frames and platforms, caches, and other similar or related facilities; does not include cabins</p>	May be authorized	May be allowed
<p>Public Use Cabin A cabin administered by the Service and available for use by the public; intended only for short-term public recreational use and occupancy</p>	Not allowed	Not allowed
<p>Administrative Cabin Any cabin primarily used by Refuge staff or other authorized personnel for the administration of the Refuge</p>	May be allowed (subject to MRA)	May be allowed
<p>Subsistence Cabin Any cabin necessary for health and safety and to provide for the continuation of ongoing subsistence activities; not for recreational use</p>	Existing cabins allowed to remain; new cabins may be authorized	Existing cabins allowed to remain; new cabins may be authorized
<p>Other Cabins Cabins associated with authorized activities or uses by other government agencies</p>	May be authorized	May be authorized
<p>Commercial Cabin Any cabin that is used in association with a commercial operation, including but not limited to commercial fishing activities and recreational guiding services</p>	Existing cabins allowed to remain; new cabins not allowed	Existing cabins allowed to remain; new cabins may be authorized
<p>Administrative Field Camps Temporary facilities used by Refuge staff and other authorized personnel to support individual (generally) field projects; may include, but not limited to, tent frames and temporary or portable outhouses, shower facilities, storage and/or maintenance facilities, and caches</p>	May be allowed (subject to MRA)	May be allowed

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
<p>Administrative Field Sites Permanent facilities used by Refuge staff or other authorized personnel for the administration of the Refuge; includes administrative cabins and related structures (see Cabins) and larger multi-facility administrative sites necessary to support ongoing field projects, research, and other management activities; temporary facilities, to meet short-term needs, may supplement the permanent facilities at these sites</p>	Use of existing sites allowed including replacement of existing facilities as necessary; new sites may be allowed (subject to MRA)	Use of existing sites allowed including replacement of existing facilities as necessary; new sites may be allowed
<p>Refuge Administrative Office Complex Facilities necessary to house Refuge operations, outreach, and maintenance activities, and associated infrastructure; includes staff offices, storage, maintenance, parking lots, and other similar facilities</p>	Not allowed	Not allowed
<p>Hazardous Materials Storage Sites, including appropriate structures and equipment, necessary for the storage and transfer of fuels and other hazardous materials necessary for administrative purposes; must be in compliance with all Federal and State requirements</p>	May be allowed (subject to MRA)	May be allowed
<p>Residences Residential housing for Refuge staff and their families; includes single and multi-family dwellings</p>	Not allowed	Not allowed
<p>Bunkhouses Quarters to house temporary and similar employees, volunteers, visitors, and other agency personnel</p>	Not allowed	Not allowed
<p>Aircraft Hangars and Facilities for Storage of Aircraft</p>	Not allowed	Not allowed
<p>Boat Launches and Docks Designated sites for launching and storing watercraft or tying up a float plane</p>	May be allowed (subject to MRA)	May be allowed

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ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
<p>Radio Repeater Sites Sites used to maintain radio communications equipment; may include a location for helicopter access</p>	May be allowed (subject to MRA)	May be allowed
COMMERCIAL ACTIVITIES or USES		
Guiding and Outfitting	May be authorized	May be authorized
Transporting	May be authorized	May be authorized
Fixed-Wing Air Taxis	May be authorized	May be authorized
Helicopter Air Taxis	Not allowed	Not allowed
Bus and Auto Tours	Not applicable	Not applicable
<p>Surface Geological Studies Includes surface rock collecting and geological mapping activities (includes helicopter or fixed-wing access)</p>	May be authorized	May be authorized
<p>Geophysical Exploration and Seismic Studies Examination of subsurface rock formations through devices that set off and record vibrations in the earth; usually involves mechanized surface transportation but may be helicopter supported; includes studies conducted for the Department of the Interior</p>	Not allowed	May be authorized
<p>Core Sampling Using helicopter transported motorized drill rig to extract subsurface rock samples; does not include exploratory wells; includes sampling conducted for Department of the Interior</p>	Not allowed, with exceptions	Not allowed, with exceptions
<p>Other Geophysical Studies Helicopter-supported gravity and magnetic surveys and other minimal impact activities that do not require mechanized surface transportation</p>	Not allowed	May be authorized
<p>Oil and Gas Leasing Leasing, drilling, and extraction of oil and gas for commercial purposes; includes all associated above and below ground facilities.</p>	Not permitted unless authorized by Congress under ANILCA 1003	Not permitted unless authorized by Congress under ANILCA 1003

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
Sale of Sand, Gravel, and Other Common Variety Minerals Extraction of sand, gravel, and other saleable minerals for commercial purposes; includes commercial use by Federal, State, and local agencies	Not allowed	Not allowed
Other Mineral Leasing Includes the extraction of coal, geothermal resources, potassium, sodium, phosphate, sulfur, or other leasable minerals for commercial purposes; exceptions are available for cases of national need	Not allowed	Not allowed
Mining of Hardrock Minerals Development of valid (pre-ANILCA) mining claims (lode, placer, and mill sites) on Refuge lands for the purpose of extracting hardrock minerals (there are no valid claims on the Refuge)	Not allowed	Not allowed
Commercial Filming, Videotaping, and Audio taping	May be authorized	May be authorized
Grazing	Not allowed	Not allowed
Agriculture (Commercial)	Not allowed	Not allowed
Commercial Fishery Support Facilities At or below 1979 levels	Not applicable	Not applicable
Commercial Fishery Support Facilities Above 1979 levels	Not allowed	May be authorized
Seafood Processing	Not allowed	Not allowed
Aquaculture and Mariculture Support Facilities	Not allowed	Not allowed
Commercial Timber and Firewood Harvest	Not allowed	May be authorized
Commercial Gathering of Other Resources	Not allowed	Not allowed
Transportation and Utility Systems Includes transmission lines, pipelines, telephone and electrical power lines, oil and gas pipelines, communication systems, roads, airstrips, and other necessary related facilities; does not include facilities associated with on-Refuge oil and gas development	May be authorized by Congress	May be authorized

ACTIVITY or USE	RIVERS (or Segments) in DESIGNATED WILDERNESS	RIVERS (or Segments) in MINIMAL MANAGEMENT
<p>Navigation Aids and Other Facilities Includes air and water navigation aids and related facilities; communication sites and related facilities; facilities for national defense and related air and/or water navigation aids; and facilities for weather, climate, and fisheries research and monitoring; includes both private and government facilities</p>	<p>May be authorized (subject to MRA)</p>	<p>May be authorized</p>
<p>Major Hydroelectric Power Development Hydroelectric dams creating a change in stream flow with an elevation change and reservoir behind the dam</p>	<p>Not allowed</p>	<p>Not allowed</p>
<p>Small Hydroelectric Power Development Hydroelectric generation by low-head or in-stream structures that do not change the flow of the river</p>	<p>Not allowed</p>	<p>Not allowed</p>

D.2 References

Interagency Wild and Scenic Rivers Coordinating Council 1999. The Wild and Scenic River Study Process, Technical Report. Washington, D. C.

Appendix E. Existing Protections

E.1 Introduction

Management and protection of Refuge resources throughout the National Wildlife Refuge System are influenced by a wide array of laws, treaties, and executive orders and the corresponding regulations and policies used to implement them. Among the most important are the Refuge System Administration Act, as amended by the Refuge System Improvement Act; the Refuge Recreation Act; the Migratory Bird Treaty Act; and the Endangered Species Act (see Section E.2 of this appendix for more information). Below are some overarching ways that Arctic Refuge values and resources are currently protected:

- For national wildlife refuges in Alaska, the Alaska National Interest Lands Conservation Act (ANILCA), as amended, provides key management direction. In 1980, ANILCA established Federal public lands across Alaska, and the Arctic National Wildlife Range was expanded in size and renamed the Arctic National Wildlife Refuge. The establishing orders under ANILCA outline the purposes for Arctic Refuge and require that these purposes be protected. ANILCA Section 303 (B) states:

“The purposes for which the Arctic National Wildlife Refuge is established and shall be managed include-

(i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char [note in 2001- now mostly called Dolly Varden] and grayling;

(ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;

(iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and

(iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge.”

- Additional ANILCA provisions authorize studies and programs related to wildlife and other natural resources, subsistence opportunities, recreational activities, and economic uses. The original Arctic Range was established in 1960 *“for the purpose of preserving unique wildlife, wilderness and recreational values.”*
- All refuges are regulated by the Code of Federal Regulations. Title 50 part 36 of the Code of Federal Regulations, General Refuge Regulations, applies specifically to Alaska Refuges. Currently there are no Arctic Refuge specific regulations. All applicable State and Federal laws apply on Arctic Refuge. The State hunting regulations apply to the general harvest of fish and wildlife, and the Federal subsistence hunting regulations apply to the harvest of fish and wildlife by federally qualified subsistence users.
- Most visitors access the Refuge using the commercial services of a guide and/or air operator. Conducting a commercial activity on the Refuge requires a special use permit that contains activity-specific conditions. Before issuing a permit, the Refuge manager

must determine that the proposed activity is compatible, which is done through a compatibility determination and a Section 810 Analysis. Except for hunting guides, there are no limits to the number of clients an operator may service. However, recreation guides may only have one guided float trip on a river at any given time. Guided float trips are limited to 10 people, and guided land-based activities are limited to 7 people (both limits include guides).

- Comprehensive conservation plans for Alaska refuges describe broad management categories (Intensive, Moderate, Minimal, Wilderness, and Wild River Management) to outline the types of activities that would be allowed in different areas across a refuge. Although five management categories exist, only the least intrusive are administratively and legally applied on Arctic Refuge: Minimal, Wilderness, and Wild River management. Minimal Management applies to all lands within the Refuge that are not designated wilderness or within a designated wild river corridor. Wilderness Management applies to all designated wilderness within the Refuge. Table E-1 outlines the differences between Minimal and Wilderness Management.

E.2 Applicable Laws and Executive Orders

This list is not exhaustive; rather, it is meant to represent the types of laws, regulations, acts, etc., that currently protect Arctic Refuge's river values.

Rivers and Harbor Act (1899) (33 U.S.C. 403): Section 10 of this act requires the authorization by the U.S. Army Corps of Engineers prior to any work in, on, over, or under a navigable water of the United States.

Antiquities Act (1906): Authorizes the scientific investigation of antiquities on Federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Migratory Bird Treaty Act (1918): Designates the protection of migratory birds as a Federal responsibility. This act enables the setting of seasons and other regulations, including the closing of areas, Federal or non-Federal, to the hunting of migratory birds.

Migratory Bird Conservation Act (1929): Establishes procedures for acquisition by purchase, rental, or gift of areas approved by the Migratory Bird Conservation Commission.

Fish and Wildlife Coordination Act (1934), as amended (1958): Requires that the Service and State fish and wildlife agencies be consulted whenever water is to be impounded, diverted, or modified under a Federal permit or license. The Service and State agency recommend measures to prevent the loss of biological resources, or to mitigate or compensate for the damage. The project proponent must take biological resource values into account and adopt justifiable protection measures to obtain maximum overall project benefits. A 1958 amendment added provisions to recognize the vital contribution of wildlife resources to the nation and to require equal consideration and coordination of wildlife conservation with other water resources development programs. It also authorized the Secretary of Interior to provide public fishing areas and accept donations of lands and funds.

Table E-1. Minimal vs. Wilderness Management

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

Migratory Bird Hunting and Conservation Stamp Act (1934): Requires every waterfowl hunter 16 years of age or older to carry a stamp; also earmarks proceeds of Duck Stamps to buy or lease waterfowl habitat. A 1958 amendment authorizes the acquisition of small wetland and pothole areas to be designated as 'Waterfowl Production Areas,' which may be acquired without the limitations and requirements of the Migratory Bird Conservation Act.

Historic Sites, Buildings, and Antiquities Act (1935) as amended: Declares it a national policy to preserve historic sites and objects of national significance, including those located on refuges. Provides procedures for designation, acquisition, administration, and protection of such sites.

The Bald and Golden Eagle Protection Act of 1940 (16USC 668 et seq.): Provides protection for bald and golden eagles.

Fish and Wildlife Act (1956): Established a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of refuges (Appendix E: Applicable Laws and Executive Orders).

Fish and Wildlife Coordination Act of 1958: Requires equal consideration and coordination of wildlife conservation with other water resource development programs.

Refuge Recreation Act (1962): Allows the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient funds are available to manage the uses.

Wilderness Act (1964) as amended: Directed the Secretary of Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within National Wildlife Refuge and National Park Systems and to recommend to the President the suitability of each such area or island for inclusion in the National Wilderness Preservation System, with final decisions made by Congress. The Secretary of Agriculture was directed to study and recommend suitable areas in the National Forest System.

National Wildlife Refuge System Administration Act (1966) 16 USC 668dd-668ee: Provides for administration, management, and planning for national wildlife refuges.

National Historic Preservation Act (1966) as amended: Establishes as policy that the Federal Government is to provide leadership in the preservation of the nation's prehistoric and historic resources.

National Environmental Policy Act (1969): Requires the disclosure of the environmental impacts of any major Federal action significantly affecting the quality of the human environment.

The Clean Water Act of 1972, Section 404 (33 USC1344 et seq.), as amended: Provides for protection of water quality.

Endangered Species Act (1973): Requires all Federal agencies to carry out programs for the conservation of endangered and threatened species.

Clean Water Act (1977): Requires consultation with the Corps of Engineers (404 permits) for major wetland modifications.

Surface Mining Control and Reclamation Act (1977) as amended (Public Law 95- 87) (SMCRA): Regulates surface mining activities and reclamation of coal-mined lands. Further regulates the coal industry by designating certain areas as unsuitable for coal mining operations.

Executive Order No. 11593, Protection and Enhancement of the Cultural Environment: States that if the Service proposes any development activities that may affect archaeological or historical sites, the Service will consult with Federal and State historic preservation officers to comply with Section 106 of the National Historic Preservation Act of 1966, as amended.

Executive Order 11988, Floodplain Management (1977): Each Federal agency shall provide leadership and take action to reduce the risk of flood loss and minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplains.

Executive Order 11990, Protection of Wetlands (1977): Order directs Federal agencies to (1) minimize destruction, loss, or degradation of wetlands, and (2) preserve and enhance the natural and beneficial values of wetlands when a practical alternative exists.

Executive Order 12372 (Intergovernmental Review of Federal Programs): Directs the Service to send copies of the environmental assessment to State planning agencies for review.

Fish and Wildlife Improvement Act (1978): Improves the administration of fish and wildlife programs and amends several earlier laws including the Refuge Recreation Act, the National Wildlife Refuge System Administration Act, and the Fish and Wildlife Act of 1956. It authorizes the Secretary to accept gifts and bequests of real and personal property on behalf of the United States. It also authorizes the use of volunteers on Service projects and appropriations to carry out a volunteer program.

Archaeological Resources Protection Act (1979) as amended: Protects materials of archaeological interest from unauthorized removal or destruction and requires Federal managers to develop plans and schedules to locate archaeological resources.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (PL 96-510; 42 USC 9601, et aeq.) (CERCLA): Provides mechanisms for hazardous waste cleanup.

Fish and Wildlife Conservation Act of 1980 (16 USC 661-667e) as amended: Requires the Fish and Wildlife Service to monitor non-game bird species, identify species of management concern, and implement conservation measures to preclude the need for listing under the Endangered Species Act.

Emergency Wetlands Resources Act (1986): Promotes the conservation of migratory waterfowl and offsets or prevents the serious loss of wetlands by the acquisition of wetlands and other essential habitats.

Oil Pollution Act of 1990 (PL 101-380; 33 USC 2701, et seq.): Provides oil pollution policies and protections.

Federal Noxious Weed Act (1990): Requires the use of integrated management systems to control or contain undesirable plant species, and an interdisciplinary approach with the cooperation of other federal and state agencies.

Native American Graves Protection and Repatriation Act (1990): Requires federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession.

Americans With Disabilities Act (1992): Prohibits discrimination in public accommodations and services.

Executive Order 12996 Management and General Public Use of the National Wildlife Refuge System (1996): Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the Refuge System.

Executive Order 13007 Indian Sacred Sites (1996): Directs federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

National Wildlife Refuge System Improvement Act (1997) PL 105-57: This act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966. Defines the National Wildlife Refuge System and authorizes the Secretary to permit any use of a refuge, provided such use is compatible with the major purposes for which the refuge was established. The Refuge Improvement Act clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation); establishes a formal process for determining compatibility; establishes the responsibilities of the Secretary of Interior for managing and protecting the System; and requires a Comprehensive Conservation Plan for each refuge by the year 2012.

National Wildlife Refuge System Volunteer and Community Partnership Enhancement Act (1998): Amends the Fish and Wildlife Act of 1956 to promote volunteer programs and community partnerships for the benefit of national wildlife refuges and for other purposes.

Executive Order 13112 Invasive Species (1999): Directs Federal agencies to prevent the introduction of invasive species, control populations of such species, monitor invasive species populations, provide for restoration of native species and habitat conditions in ecosystems that have been invaded, conduct research, promote public education on invasive species and the means to address them, and consult with the Invasive Species Council.

Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, 6 November 2000: Provides a mechanism for establishing regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications.

Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, 2001: Instructs Federal agencies to conserve migratory birds by several means, including the incorporation of strategies and recommendation found in Partners in Flight Bird Conservation plans, the North American Waterfowl Plan, the North American Waterbird Plan, and the United States Shorebird Conservation Plan, into agency management plan and guidance documents.

Director's Order Number 132 (January 18, 2001): National Wildlife Refuge System Mission, Goals, and Purposes. This reiterates the mission of the Refuge System and how it relates to the mission of the Service. Order also provides guidance on the use of goals and purposes in the administration and management of the system.

Appendix F. List of Contributors

Name	Title	Agency	Contribution
Michelle Bailey	<i>Outdoor Recreation Planner</i>	BLM	WSR suitability, stakeholder outreach
Heather Bartlett	<i>Law Enforcement Officer/Pilot</i>	Service	Law enforcement, public use, permit administration WSR Team Leader
Alan Brackney	<i>Wildlife Biologist/GIS Specialist</i>	Service	Wildlife biologist, GIS WSR Team Member
Bret Christensen	<i>Navigable Waters Specialist</i>	Service	Water rights, jurisdictions, navigability
Debra Corbett	<i>Regional Archaeologist</i>	Service	Cultural and historical resources
Donita Cotter	<i>National Wild and Scenic River Coordinator</i>	Service	WSR policy and guidance WSR Team Member
Judy Culver	<i>Outdoor Recreation Planner</i>	BLM	WSR suitability
Jennifer Reed	<i>Park Ranger/Visitor Services Specialist</i>	Service	Public use, interpretation, permit administration, education WSR Team Member
Meghan Murphy	<i>Visitor Services Specialist</i>	Service	Comments summary
Sharon Seim	<i>Natural Resource Planner</i>	Service	Planning process, NEPA coordination WSR Team Member
Richard Voss	<i>Arctic National Wildlife Refuge Manager</i>	Service	Refuge Manager

WSR – Wild and Scenic River

