WESTERN ALASKA
SUBAREA CONTINGENCY PLAN

SENSITIVE AREAS
SECTION

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SENSITIVE AREAS: INTRODUCTION

This section is intended for use by the On-Scene Coordinators (OSC) during the initial phase of a spill event to assist in ascertaining the location and presence of spill-sensitive biological and cultural resources, services and users in this subarea. This information is specific to this subarea. No attempt has been made to duplicate information contained in easily accessible existing documents. This section, therefore, must be used in conjunction with the referenced materials and informational contacts identified herein. More detailed and current data should be available from on-scene resource experts when they become engaged in the response. This information is geared toward early response. If appropriate, natural resources trustees may be conducting natural resource damage assessment (NRDA) activities in conjunction with response activities. Information regarding NRDA activities should be directed to the natural resources trustees or to their appointed NRDA Liaison.

Often, the most detailed, up-to-date biological and resource use information will come from people who live and work in the impacted area. People from the local community are often knowledgeable sources for information related to fishing, hunting, non-consumptive outdoor sports, and subsistence use. They may also have a good idea of which spill response techniques (especially exclusion and diversion booming) are practicable under prevailing weather and current conditions.

The Alaska Regional Response Team (ARRT) has adopted several documents (see the *Alaska Federal/State Preparedness Plan for Response to Oil & Hazardous Substance Discharges/Releases [Unified Plan])* that address decision making to help protect sensitive areas and resources. These documents (and their location) include:

- *Oil Dispersant Guidelines for Alaska* (see *Unified Plan* Annex F, Appendix 1)
- *In Situ Burning Guidelines for Alaska* (see *Unified Plan* Annex F, Appendix 2)
- *Wildlife Protection Guidelines for Alaska* (see *Unified Plan* Annex G)
- *Alaska Implementation Guidelines for Federal OSCs for the Programmatic Agreement on Protection of Historic Properties during Emergency Response under the National Oil and Hazardous Substances Pollution Contingency Plan Protection of Historic Properties* (see *Unified Plan* Annex M)

In addition, Federal OSCs in Alaska are working in cooperation with the U.S. Department of the Interior and the National Marine Fisheries Service to ensure response activities are conducted meet Endangered Species Act requirements, in accordance with the 2001 *Inter-Agency Memorandum of Agreement Regarding Oil Spill Planning and Response Activities Under the Federal Water Pollution Control Act National Oil and Hazardous Substances Pollution Contingency Plan* (see *Unified Plan* Annex K).

In addition, Annex N of the *Unified Plan* includes *Shoreline Cleanup and Assessment Guidelines*, which provide helpful information on clean-up options by shoreline type.

Section G of the Subarea Contingency Plan contains site-specific Geographic Response Strategies (GRSs) for use by responders in protecting key sensitive areas. In addition, Environmental Sensitivity Index (ESI) maps have been produced that illustrate selected sensitive resources and shoreline types.

This section and the guidelines in the *Unified Plan* are also intended for use by facility/vessel operators in developing industry oil spill prevention and contingency plans. For an operator's facility or area of operation, industry contingency plans describe: (a) environmentally sensitive areas and areas of public concern; (b) how sensitive areas would be prioritized during a spill event; and (c) response strategies to protect sensitive areas at risk. The information in industry plans should be consistent with subarea contingency plans.

The definition of sensitive resources and their geographic locations requires use of field observations and data available from published and non-published materials or through additional field work. Identifying relative priorities among resources and resource uses takes considerable coordination and discussion among resource management agencies. With the limited time and funds available for subarea contingency plan development (there are ten such plans covering the state of Alaska), not all the detailed information about every possible resource at risk is included. Future updates to this document will continue to add information relevant to response activities.

Many of the maps presented in this section are available on-line through the Internet at:

http://www.asgdc.state.ak.us/maps/cplans/subareas.html

Suggestions, comments, and more current information are requested. Please contact either:

Regional Environmental Assistant
Department of the Interior
Office of Environmental Policy
and Compliance
1689 C Street, Room 119
Anchorage, Alaska 99501
271-5011
FAX: 271-4102

Brad Dunker
Alaska Department of Fish and Game
Habitat Division
333 Raspberry Road
Anchorage, Alaska 99518-1599
267-2541
FAX: 267-2499
email: Bradley.dunker@alaska.gov

SENSITIVE AREAS: PART ONE – INFORMATION SOURCES

Agency	Resources	Point of Contact
FISH AND WILDLIFE AND HABITAT RESOURCES		
Alaska Department of Fish and Game	fish, shellfish, birds, terrestrial mammals, marine mammals	Division of Habitat Fairbanks 907-459-7285
U.S. Department of the Interior	migratory birds, sea otters, polar bears, walrus, endangered species, anadromous fish in freshwater, bald eagles, wetlands	Office of Environmental Policy & Compliance Anchorage 907-271-5011
U.S. Department of Commerce, National Marine Fisheries Service	sea lions, seals, whales, endangered and threatened marine species and listed anadromous fish in marine waters	Protected Resources Division Anchorage 907-271-5006
U.S. Department of Commerce, National Marine Fisheries Service	essential fish habitat	Habitat Conservation Division Anchorage 907-271-5006
U.S. Department of Commerce, National Marine Fisheries Service	effects of oil on fisheries resources, hydrocarbon chemistry, dispersants	Alaska Fisheries Science Center Auke Bay Laboratory 907-789-6000
University of Alaska	rare and endangered plants	Alaska Natural Heritage Program Anchorage 907-257-2785
CULTURAL AND ARCHAEOLOGICAL SITES		
Alaska Department of Natural Resources	historic sites, archaeological sites, national register sites	Alaska Office of History and Archaeology Anchorage 907-269-8721
U.S. Department of the Interior	archaeological/historical sites in park and wildlife refuge system units, public lands, Native allotments/trust lands; sunken vessels	Office of Environmental Policy & Compliance Anchorage 907-271-5011
SHORELINE TYPES		

Agency	Resources	Point of Contact
U.S. Department of Commerce, National Oceanic & Atmospheric Administration	shoreline types, environmental sensitivity index maps	Scientific Support Coordinator Anchorage 907-271-3593
LAND OWNERSHIP AND CLASSIFICATIONS/DESIGNATIONS		
Alaska Department of Natural Resources	state lands, state parks and recreation areas, state forests, tidelands	Division of Mining, Land, and Water Anchorage 907-269-8565
Alaska Department of Fish and Game	state game refuges, state critical habitats	Division of Habitat Fairbanks 907-459-7285
U.S. Department of the Interior	national parks and preserves, national historic sites, national monuments, national wildlife refuges, public lands, national recreation areas, wild and scenic rivers, wilderness areas, Native trust lands	Office of Environmental Policy & Compliance, Anchorage 907-271-5011
U.S. Department of Defense	military installations and reservations	Alaska Command Anchorage 907-552-3944
Local Governments: – Cenaliulriit Coastal Resource service Area – City of Bethel	municipal and private lands, and rights-of-way coastal program special areas, plans, policies	For the current local government contact information, go to B. Resources Section, Part One Community Profiles For the current tribal contact information, go to B. Resources Section, Part Three Information Directory, Native Organizations and Federally Recognized Tribes
COMMERCIAL HARVEST		
Alaska Department of Fish and Game	fishing permits, seasons	Commercial Fisheries Division Fairbanks 907- 459-7387
Alaska Department of Natural Resources	tideland leases	Division of Mining, Land, and Water Anchorage 907-269-8565
Alaska Department of Environmental Conservation	seafood processing	Division of Environmental Health Juneau 907-269-7644

Agency	Resources	Point of Contact
U.S. Department of Commerce National Marine Fisheries Service	fishing permits, seasons	Protected Resources Division Anchorage 907-271-5006
SUBSISTENCE, PERSONAL, AND SPORT USES		
Alaska Department of Fish and Game	subsistence and personal uses statewide and navigable waters, sport hunting and fishing	Sport Fish Division Fairbanks 907-459-7388
U.S. Department of the Interior	subsistence uses on Federal lands and reserved waters; subsistence uses of: sea otters and migratory birds	Office of Environmental Policy & Compliance, Anchorage 907-271-5011
U.S. Department of Commerce	subsistence use of: whales, porpoises, seals, sea lions	Protected Resources Division Anchorage 907-271-5006
RECREATION AND TOURISM USES		
Alaska Department of Natural Resources	State parks and recreation areas, anchorages, boat launches, campgrounds, State public lands	Division of Parks and Outdoor Recreation Fairbanks 907-451-2695
Alaska Department of Fish and Game	sport hunting and fishing	Division of Habitat Fairbanks 907-459-7285
Alaska Department of Commerce, Community & Economic Development	seasonal events and activities, travel, outdoor activities, local visitor bureaus, tourism industries	Alaska Office of Tourism Development Juneau 907-465-5478
U.S. Department of the Interior	recreation uses in park and wildlife refuge system units and Federal public lands	Office of Environmental Policy & Compliance, Anchorage 907-271-5011
WATER INTAKE AND USE FACILITIES		
Alaska Department of Environmental Conservation	public drinking water wells, treatment, and storage, fish processing facilities	Division of Water Anchorage 907-269-7601
Alaska Department of Fish and Game	hatcheries, ocean net pens and release sites, aquaculture	Division of Habitat Fairbanks 907-459-7285

Agency	Resources	Point of Contact
Alaska Department of Natural Resources	tidelands leases, aquaculture sites, private logging camps and log transfer facilities	Division of Mining, Land, and Water Juneau 907-465-3400
U.S. Coast Guard	marinas and docks, mooring buoys	Sector Anchorage Anchorage 907-271-6700

SENSITIVE AREAS: PART TWO-AREAS OF ENVIRONMENTAL CONCERN

A. BACKGROUND/CRITERIA

The following relative priority listing was developed by the Sensitive Areas Work Group, with representatives from State and Federal agencies and the private sector. The list prioritizes resources into designations of major, moderate, and lesser concern. Resources are not prioritized within each designation. These designations are for consideration in initial spill response activities, they are not applicable to extended clean-up activities. This prioritization scheme must be used in conjunction with spill-specific information (e.g., size and location of spill, type of product, trajectory) to determine the actual protection priorities for that discharge. Specific guidance to On-Scene Coordinators for protecting cultural resources is contained in Annex M of the Unified Plan. Data gaps in the index are discussed in Part Five, Significant Data Gaps and Information Needs.

The following criteria were developed as tools to establish levels of concern. These criteria are not listed in a priority order.

CRITERIA FOR RELATIVE PRIORITY RATING

- human economic disruption -- economic/social value; human food source disruption
- mortality -- wildlife, fish, other organisms (how many potentially killed in relation to abundance)
- animal displacement and sensitivity to displacement
- aesthetic degradation
- habitat availability and rarity
- sublethal effects, including sensitivity to physical or toxic effects of oil or hazardous substances and long-term affects to habitat, species, or both
- threatened and endangered species, and/or other legal designation
- persistent concentration of oil or hazardous substances
- reproduction rate or recolonizing potential
- relative importance to ecosystem
- potential for physical contact with spill--pathway of oil or hazardous substances
- resource sensitivity to response measures

B. AREAS OF MAJOR CONCERN

Shoreline Geomorphology - Coastal Habitat Types:
- River deltas
- Sheltered lagoons
- Open lagoons
- Salt marshes
- Mud flats
- Barrier islands
- Spit beaches
- Protected bays

Upland Habitat Types:
- Riparian Willow

Lake and River Habitats:
- Connected lakes
- Freshwater springs

Threatened or Endangered Species Habitat:
- Steller's Eider Critical Habitat
- Spectacled Eider Critical Habitat
- Western Steller Sea Lion Haulouts, Rookeries and Critical Habitat
- North Pacific Right Whale Critical Habitat
- Polar Bear Critical Habitat
- Ringed Seal Shorefast Ice Concentration Areas

Harbor Seal Haulout Areas (>10 animals)
Spotted Seal Haulout Areas (> 10 animals)
Walrus Haulout Areas
Beluga Whale Concentration Areas
Caribou Calving and Insect Relief Areas
Large Seabird Colonies (> 100 birds)
Waterfowl and Shorebird Spring and Fall Concentration Areas
Anadromous Fish Spawning and Rearing Streams (i.e., salmon, Dolly Varden, whitefish)
Herring Spawning Areas
Land Management Designations:
- Federal: Wilderness
  Wild and Scenic Rivers
  National Natural Landmarks
- State: Refuges

Cultural Resources/Archaeological Sites:
- National Historic Landmarks
- Burial Sites
- National Register Eligible Village Sites
- Intertidal Sites

Subsistence Harvest Areas
High Commercial Use Areas
High Recreational Use Areas

C. AREAS OF MODERATE CONCERN

Spotted Seal Haulout Areas (< 10 animals)
Harbor Seal Haulout Areas (< 10 animals)
Seabird Colonies (10 - 100 birds)
Waterfowl and Shorebird Nesting or Molting Concentration Areas
Anadromous Fish Streams (rearing only)
Bear Concentration Areas (marine mammal/carcasses; salmon)
Commercial Harvest Areas
Recreational Use Areas
Land Management Designations:
- Federal: National Parks
  National Wildlife Refuges

Cultural Resources/Archaeological Sites:
- National Register Eligible Sites (Other Than Village Sites)
- Sites Adjacent To Shorelines

D. AREAS OF LESSER CONCERN

Upland Habitat Types:
- Mesic/dry tussock tundra
- Alpine tundra

Gray Whale Nearshore Migration and Feeding Areas
Walrus General Distribution
Northern Fur Seal General Distribution
Seabird Colonies (< 10 birds)
Waterfowl and Shorebird General Distribution
General Freshwater Fish Habitat
Land Management Designations:
- Federal: Public Lands
  National Preserves
- State: General Public Lands

E. AREAS OF LOCAL CONCERN

An August 2000 Federal/State joint survey of Native tribes in the yielded additional information about sensitive areas near villages, as viewed from the local perspective. The tribes responding to the survey, their top five sites of concern, and the reason for their importance, is presented below.

Oscarville Tribal Council

Oscarville Slough	Whitefish
Kuskokwim River	Seasonal subsistence use
Island near Oscarville	Watefowl nest and summer camp for village

Newtok Traditional Council

School	Children
Houses	Family & children
Local store	Food
River	Access to subsistence
Church	Worship

Native Village of Nightmute

Nightmute High school	Children
Toksook River	Subsistence fishing
Nightmute spring waters	Drinking water
Tundra, ponds, rivers	Waterfowl, land birds, plants (subsistence)
Nightmute public places	Clinic, post office, work office

Native Village of Kwinhagak

School	Educational facility
Clinic/washeteria	Health facility
Stores (2)	Food, clothing
Fish plant	Jobs for Villagers
Airport	Transportation facility

Pitka□s Point Traditional Council

Infiltration gallery	Drinking water
Yukon River	Subsistence use
Anreafski River	Subsistence use
Tundra around community	Subsistence use

Native Village of Algaaciq

Water source	Community drining water
Andreafski River	Subsistence use
High school	Public school
Gas station	Fuel storage area
River gas station	Gas station near river

Native Village of Scammon Bay

Fishing places in the river	Subsistence fishing

Nunakauyak Traditional Council

Southside Pond	Adjacent to bay
Southside Bay	Tank farm less that 10 from Bay

Native Village of Tuntutuliak

Tagyaraq River	Subsistence use
Kialiq River & sources	Subsistence use
Qiniaq River	Subsistence use
LAMS	School

Tununak IRA Council

Tununak Bay	Subsistence use
Tununak River	Subsistence use
Tununak oil & fuel tanks	Quality of air

SENSITIVE AREAS: PART THREE - RESOURCE SENSITIVITY

The following sensitivity tables were developed by the State and Federal Natural Resources Trustees with legislative responsibility for management and protection of these resources. This includes the following agencies: National Marine Fisheries Service, U.S. Fish and Wildlife Service, National Park Service, Bureau of Land Management, Alaska Department of Fish and Game, and Alaska Department of Natural Resources. This information is a summary derived from recent field studies, research reports, long-term monitoring, stakeholder input, and local knowledge. Periods and/or conditions when resources are of varying levels of concern (low, medium, high) with respect to affects from an oil spill are noted in the following tables.

GEOMORPHOLOGY

CATEGORY	LOW	MEDIUM	HIGH
COASTAL HABITAT TYPES			River deltas Sheltered lagoons Open lagoons Salt Marshes Barrier islands Mudflats Spit beaches Protected bays
LAKE AND RIVER HABITAT TYPES			Connected lakes Freshwater springs
UPLAND HABITAT TYPES	Alpine tundra Mesic/dry tussock tundra		Riparian Willow

RINGED SEALS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE		pack ice	shorefast ice
SUSCEPTIBILITY		year around	
HUMAN HARVEST	Nov 1 - Jan 15		Jan 15 - Oct 30

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Nearshore concentrations in shorefast ice	==========										=======	
Pupping and Weaning			=========									
Molting			==========									
Present in area	==========											

BEARDED SEALS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE		Pack ice	ice-edge
SUSCEPTIBILITY		year around	
HUMAN HARVEST	Nov 1 - Jan 15		Jan 15 - Oct 30

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Pupping and weaning			=========									
Molting					====							
Present in Bering Sea	==========											

SPOTTED SEALS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE (ON HAULOUTS)	< 10	10 - 100	> 100
SUSCEPTIBILITY		year around	
HUMAN HARVEST	Nov 1 - Jan 15		Jan 15 - Oct 30

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Pupping and weaning			======									
Molting					======							
In Nearshore waters					==========							

HARBOR SEALS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	<10	10 - 100	>100
SUSCEPTIBILITY		year round	
HUMAN HARVEST	Nov 1 - Jan 15		Jan 15 - Oct 30

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Coastal haulouts					==========							
Pupping					======							
In Nearshore Waters	==========											

NORTHERN FUR SEALS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE (ON HAULOUTS)	June - October		
SUSCEPTIBILITY	May - October		
HUMAN HARVEST	August - October		

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Pupping						==========						
Molting					========							
Present							==========					

BELUGA WHALES

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 10	10 -50	> 50
SUSCEPTIBILITY	Nov 15 - Mar 31		Apr 1 - Nov 15
HUMAN HARVEST	Oct 1 - Apr 15		Apr 15 - Oct 1

[1] Concentrations of Beluga whales occur at the mouths of the Yukon River from mid June to mid August

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
In Nearshore waters					==========							
Calving					======							

GRAY WHALES

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Dec 1 – Apr 30	May 1 - Nov 30	
SUSCEPTIBILITY		When Present	
HUMAN HARVEST			Mar 1 - Apr 15 Aug 15 - Nov 15

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Nearshore migration & feeding	==========											

WALRUS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Dec 1 - Apr 1	Jul 1 - Sep 15	Apr 1 - Jul 1 Sep 1 - Dec 1
SUSCEPTIBILITY		year around	
HUMAN HARVEST			Apr 15 - May 30 Aug 15 - Oct 15 Dec 1 - Mar 30

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Present on haulouts or in nearshore waters	==========											

POLAR BEARS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Open Water	Shore-fast Ice	Pack Ice/Shorefast Ice Flaw
SUSCEPTIBILITY			year around

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Denning of pregnant females	=======										======	
Along or on the coastline	=======											

BROWN BEAR/BLACK BEAR

CATEGORY	LOW	MEDIUM	HIGH
SUSCEPTIBILITY	Nov 1-Apr 1	Apr 1 - Oct 30	
HUMAN HARVEST	Nov 1-Apr 1	Jun 1 - Aug 1	Apr 1 - May 30 Aug 1- Oct 30

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Denning	==========										=======	
Concentration associated w/ mammalian food sources				==========								
salmon streams					==========							

CARIBOU

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE *			
SUSCEPTIBILITY	Nov 1 - Mar 15	Mar 15-May 20 Aug 15-Sep 15	May 20 - Aug 15 Sep 15 - Oct 31
HUMAN HARVEST	Apr 1 - Aug 10 Oct 1 - Oct 30		Nov 1 - Apr 1 Aug 10 - Sep 30

*Seven herds use various portions of this region. Depending on the general herd size, location, insect presence, and the climatic conditions; abundance may vary widely. As a result, specific abundance figures will not be established for use in prioritizing the importance of an area.

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Calving period					==							
Insect Relief habitat						=====						

MUSKOXEN

CATEGORY	LOW	MEDIUM	HIGH
SUSCEPTIBILITY		Year-round	
HUMAN HARVEST	Sep 1 - Sep 30; Feb 1 - Mar 25		

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Calving					======							

WATERFOWL AND SHOREBIRDS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	In Prep.		
SUSCEPTIBILITY	Nov 1 - Apr 1	Apr 1 - May 15	May 15 - Nov 1
HUMAN HARVEST*	Nov 1 - Apr 1	July 1 - Aug 1	Apr 1 - Jun 30; Aug 1 - Nov 1

* Waterfowl eggs are harvested from early May through late July.

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Arrival/Nesting/broodrearing					==========							
Molting/feeding concentrations						==========						
Fall migration							==========					

SEABIRDS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 10	10 - 100	> 100
SUSCEPTIBILITY *	Nov 1 - Jan 31	Feb 1 - March 31	Apr 1 - Nov 1
SPECIES DIVERSITY	1 – 3	4 - 6	> 6
HUMAN HARVEST**			Apr 1 - Nov 1

* Some seabirds may winter in leads in the ice ** Seabird eggs are harvested from May through July

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
At breeding colonies				==========								
Feeding near colonies				==========								

SALMON (pink, chum, coho, sockeye, and chinook)

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	All anadromous fish streams in this area are considered important.		
SUSCEPTIBILITY	June 15 - Jul 15		Jul 15 - June 15
HUMAN HARVEST			May 20 - Sep 30

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Spawning						==========						
Eggs/fry in gravels	==========							==========				
Year-round rearing in freshwater	==========							==========				

DOLLY VARDEN

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	All anadromous fish streams in this area are considered important.		
SUSCEPTIBILITY		June 1 - Sept 15	Sep 15 - June 1
HUMAN HARVEST			Year-round

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Spawning									========			
Overwintering	==========								========			
Eggs/fry in stream gravels	==========								==========			
Rearing in freshwater	==========								==========			

ANADROMOUS WHITEFISH

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Limited Data are Currently Available on Fish Populations within Western Alaska Area Streams		
SUSCEPTIBILITY		June 1 - Sep 15	Sep 15 - June 1
HUMAN HARVEST			Year-round

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Spawning									======			
Overwintering	==========											=======
Spring migration						=======						
Fall migration									==========			

PACIFIC HERRING

CATEGORY	LOW	MEDIUM	HIGH
Abundance			
Susceptibility			May 1 - Aug 30
Human Harvest		July 1 - Sep 30	May 1 - June 30

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Spawning					======							
Overwintering	==========											=======

FRESHWATER FISH

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Limited Data are Currently Available on Fish Populations in Many Western Alaska Area Streams		
SUSCEPTIBILITY		Jun 1 - Oct 1	Oct 1 - Jun 1
HUMAN HARVEST			year-round

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Spawning												
Spring					======							
Fall										======		
Overwintering	==========											========

LAND MANAGEMENT DESIGNATIONS

CATEGORY	LOW	MEDIUM	HIGH
FEDERAL LANDS	Public Land	National Parks Wildlife Refuges	Wild & Scenic Rivers Wilderness Areas National Natural Landmarks
STATE LANDS	Public Land*		Refuges

* Includes submerged lands out to 3 miles and historic bays and inlets.

CULTURAL RESOURCES/ARCHAEOLOGICAL SITES

CATEGORY	LOW	MEDIUM	HIGH
CULTURAL AND ARCHAEOLOGICAL SITES	Cultural Resources that do not meet National Register criteria	National Register eligible sites (excluding villages sites) Sites adjacent to shorelines	National Historical Landmarks National Natural Landmarks Burial sites National Register eligible village sites Intertidal sites

SENSITIVE AREAS: PART FOUR – BIOLOGICICAL AND HUMAN USE RESOURCES

A. INTRODUCTION

The background information contained in this section is a mixture of references to readily available documents, knowledgeable contacts, and data not readily available elsewhere.

This subarea has a diverse array of habitats and an equally diverse complement of species that use these habitats. Some of the species found in this subarea spend only a brief, but essential, portion of their life cycle here. The abundance of water in lakes, ponds, streams, inlets, bays, and coastal areas provides habitat for waterfowl form all four North American flyways. Not only does this subarea, specifically the Yukon Delta National Wildlife Refuge, support a varied population of mammals, fish and birds, which are important in maintaining the traditional subsistence way of life of local residents, it also is the nesting and rearing habitat of four geese species (cackling Canada geese, Pacific flyway white-fronted geese, emperor geese, and brant) and other waterfowl, shorebirds, and seabirds which are of national significance.

B. HABITAT TYPES

Shoreline habitats have been defined and ranked according to Environmental Sensitivity Index (ESI) standards produced by the National Oceanic and Atmospheric Administration (NOAA) in *Environmental Sensitivity Index Guidelines* (October 1997). Seasonal ESI maps in poster and atlas formats have been produced for the subarea, as shown on the following index map. These maps are available on the internet at: http://www.asgdc.state.ak.us/maps/cplans/nwa/pdfs/ESI_DATA/INDEX.PDF

Updated ESI information can also be found on the internet at:

http://response.restoration.noaa.gov/type_subtopic_entry.php?RECORD_KEY%28entry_subtopic_type%29=entry_id,subtopic_id,type_id&entry_id(entry_subtopic_type)=74&subtopic_id(entry_subtopic_type)=8&type_id(entry_subtopic_type)=3

1. Benthic Habitats

Oil vulnerability is lower in benthic areas than in the intertidal zone since contamination by floating slicks is unlikely. Sensitivity is derived from the species which use the habitat. Benthic habitats have not been traditionally classed by ESI rankings, but are treated more like living resources which vary with season and location. Benthic habitats include: submerged aquatic vegetation beds, large beds of kelp, worm reefs, coral reefs.

2. Shoreline Habitats

Habitats (estuarine, large lacustrine and riverine) ranked from least to most sensitive (see the following table) are described below:

ESI #1--Exposed impermeable vertical substrates: exposure to high wave energy or tidal currents on a regular basis, strong wave-reflection patterns common, substrate is impermeable with no potential for subsurface penetration, slope of intertidal zone is 30 degrees or greater, attached organisms are hardy and accustomed to high hydraulic impacts.

ESI #2--Exposed impermeable substrates, non-vertical: exposure to high wave energy or tidal currents on a regular basis, strong wave-reflection patterns regular, substrate is impermeable with no potential for subsurface penetration over most of intertidal zone, slope of intertidal zone is less than 30 degrees, there can be accumulated but mobile sediments at the base of cliff, attached organisms are hardy and accustomed to high hydraulic impacts.

ESI #3--Semi-permeable substrate: substrate is semi-permeable with oil penetration less than 10 cm, sediments are sorted and compacted, slope is less than 5 degrees, sediment and potential for rapid burial mobility is low, surface sediments are subject to regular reworking by waves, there are relatively low densities of infauna.

ESI #4--Medium permeability substrate: substrate is permeable with oil penetration up to 25 cm, slope is 5 - 15 degrees, rate of sediment mobility is high with accumulation of up to 20 cm of sediments in a single tidal cycle, sediments are soft with low trafficability, low densities of infauna.

ESI #5--Medium to high permeability substrate: substrate of medium to high permeability which allows oil penetration up to 50 cm, spatial variations in distribution of grain sizes with finer ones at high tide line and coarser ones in the storm berm and at toe of beach, 20 percent is gravel, slope between 8 and 15 degrees, sediment mobility is high during storms, sediments are soft with low trafficability, low populations infauna and epifauna except at lowest intertidal levels.

ESI #6--High permeability substrates: substrate is highly permeable with oil penetration up to 100 cm, slope is 10 to 20 degrees, rapid burial and erosion of shallow oil can occur during storms, high annual variability in degree of exposure and frequency of wave mobilization, sediments have lowest trafficability of all beaches, natural replenishment rate is the lowest of all beaches, low populations of infauna and epifauna except at lowest intertidal levels.

ESI #7--Exposed flat permeable substrate: flat (less than 3 degrees) accumulations of sediment, highly permeable substrate dominated by sand, sediments are well saturated so oil penetration is limited, exposure to wave or tidal-current energy is evidenced in ripples or scour marks or sand ridges, width can vary from a few meters to one kilometer, sediments are soft with low trafficability, high infaunal densities.

ESI #8--Sheltered impermeable substrate: sheltered from wave energy and strong tidal currents, substrate of bedrock or rocky rubble, variable in oil permeability, slope greater than 15 degrees with a narrow intertidal zone, high coverage of attached algae and organisms.

ESI #9--Sheltered flat semi-permeable substrate: sheltered from wave energy and strong tidal currents, substrate is flat (less than 3 degrees) and dominated by mud, sediments are water-saturated so permeability is low, width varies from a few meters to one kilometer, sediments are soft with low trafficability, infaunal densities are high.

ESI #10--Vegetated wetlands: marshes and swamps with various types of emergent herbaceous grasses and woody vegetation over the substrate.

Alaska ShoreZone Coastal Habitat Mapping. An on-going coastal habitat mapping effort is producing an on-line database, digital maps, and color aerial imagery and videos of the coastline in the subarea. This geo-referenced data set collected at low tide includes coastal geomorphology and biological habitat for some intertidal and shallow subtidal areas.

Responders have access to several useful tools through the ShoreZone web portal. Low altitude video and high resolution still photos are available with longitude and latitude and presented spatially on base maps (basic maps, topos, and satellite images). Also, habitat maps can be generated online for attributes such as Oil Residency Index, ESI, and sensitive biota (e.g. eelgrass).

The National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Regional Office hosts the Alaska ShoreZone web portal at:

http://alaskafisheries.noaa.gov/shorezone/

3. Upland Habitats

At this time, no uplands or wetlands classifications directly related to sensitivity to oil spills has been identified. A general wetlands classification has been developed by the U.S. Fish and Wildlife Service, National Wetlands Inventory, in Anchorage. Considerable mapping of wetlands has been completed, some of which are available in a Geographic Information System database (see the following figure). Updated map data is being placed on the National Wetlands Inventory Internet web site at: http://wetlands.fws.gov/

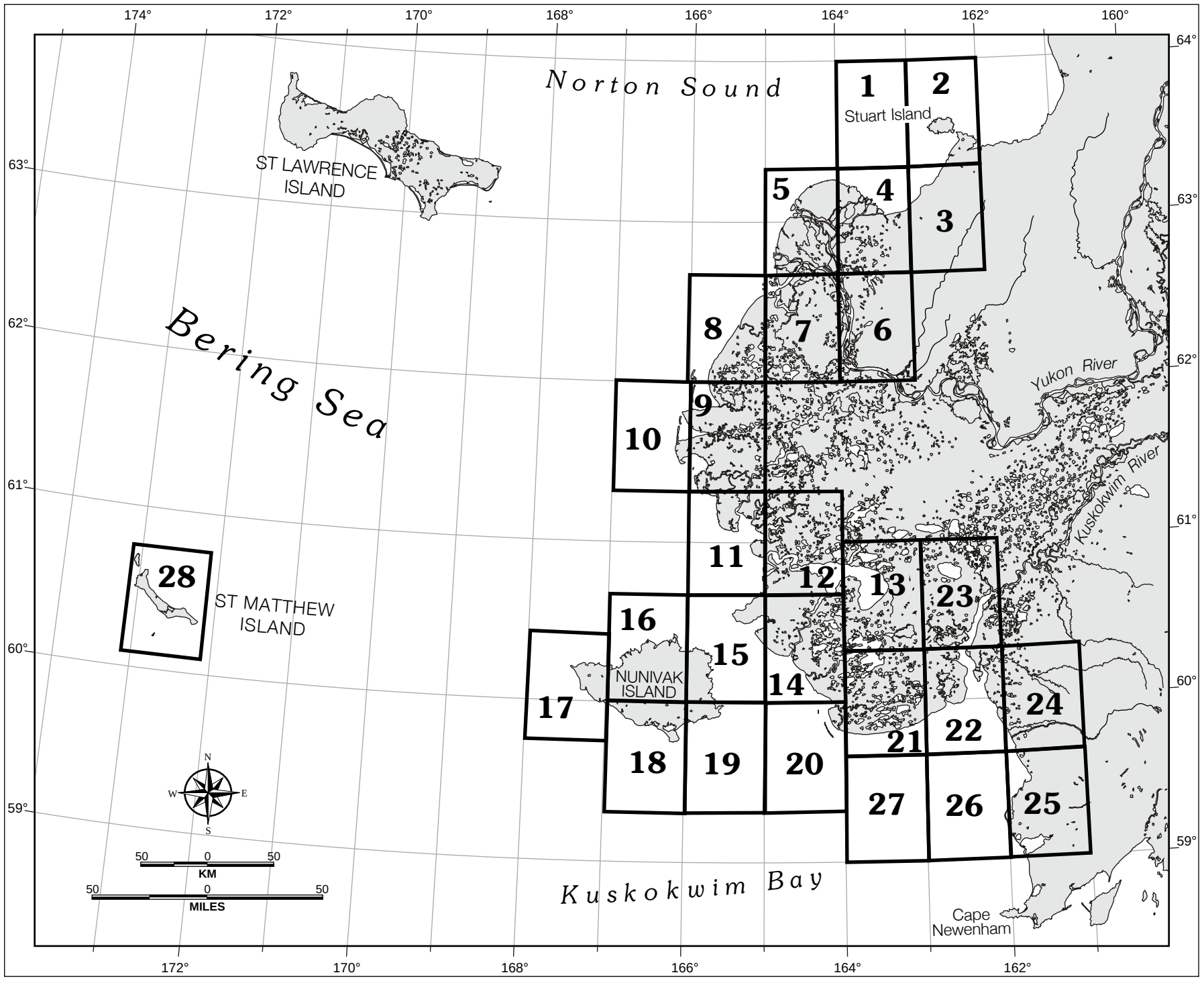
ESI HABITAT RANKING

ESI NO.	ESTUARINE	LACUSTRINE	RIVERINE (large rivers)
1 A	Exposed rocky cliffs	Exposed rocky cliffs	Exposed rocky banks
1 B	Exposed sea walls	Exposed sea walls	Exposed sea walls
2	Exposed wave-cut platforms	Shelving bedrock shores	Rocky shoals; bedrock ledges
3	Fine- to medium-grained sand beaches	Eroding scarps in unconsolidated sediments	Exposed, eroding banks in unconsolidated sediments
4	Coarse-grained sand beaches	Sand beaches	Sandy bars and gently sloping banks
5	Mixed sand and gravel beaches	Mixed sand and gravel beaches	Mixed sand and gravel bars and gently sloping banks
6 A	Gravel beaches	Gravel beaches	Gravel bars and gently sloping banks
6 B	Riprap	Riprap	Riprap
7	Exposed tidal flats	Exposed flats	Not present
8 A	Sheltered rocky shores	Sheltered scarps in bedrock	Vegetated, steeply sloping bluffs
8 B	Sheltered sea walls	Sheltered sea walls	Sheltered sea walls
9	Sheltered tidal flats	Sheltered vegetated low banks	Vegetated low banks
10 A	Saltwater marshes		
10 B	Freshwater marshes	Freshwater marshes	Freshwater marshes
10 C	Freshwater swamps	Freshwater swamps	Freshwater swamps
10 D	Mangroves		

"Environmental Sensitivity Index Guidelines" (October 1995) NOAA Technical Memorandum NOS ORCA 92

Sensitivity of Coastal Environments and Wildlife to Spilled Oil

WESTERN ALASKA



Supported by:

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Juneau, Alaska

National Oceanic and Atmospheric Administration
Seattle, Washington and Anchorage, Alaska

MAY 2003

The Wetlands Status map may be viewed at the DNR Prevention and Emergency Response Subarea Plan Maps website located at:

http://www.fws.gov/wetlands/Data/mapper.html

C. BIOLOGICAL RESOURCES

1. Threatened and Endangered Species

Federally listed threatened and endangered species are protected under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.). If response strategies are proposed in locations where migratory birds and/or marine mammals listed as threatened and/or endangered are (or may be) present, the Federal On-Scene Coordinator will need to immediately consult with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service (as appropriate) regarding the proposed strategies, in accordance with the Endangered Species Act Memorandum of Understanding (see the *Unified Plan*, Annex K). The following species[1] and critical habitat occur in this subarea:

Table 1: Endangered Species Act of 1973 Protected species and critical habitat

Listed species	Stock	Latin Name	Status
Bowhead whale*		*Balaena mysticetus*	Endangered
Humpback whale*		*Megaptera novaeangliae*	Endangered
North Pacific right whale*		*Eubalaena glacialis*	Endangered
Steller sea lion*	Western	*Eumetopias jubatus*	Endangered
Polar bear**		*Ursus maritimus*	Threatened
Spectacled eider**		*Somateria fischeri*	Threatened
Steller's eider**	Alaska breeding	*Polysticta stelleri*	Threatened
Short-tailed albatross**		*Diomedea albatrus*	Endangered
Eskimo curlew**		*Numenius borealis*	Endangered
Yellow-billed loon**		*Gavia adamsii*	Candidate
Pacific walrus**		*Odobenus rosmarus divergens*	Candidate

Designated Critical Habitat	
Species Group	**General Reference Area**
Spectacled eider	Part of Norton Sound and south of St. Lawrence island are designated as critical habitat (see map below)
Steller's eider	Along Yukon-Kuskokwim seacoast (see map below)
Polar bear	Selected coastal areas are designated as critical habitat (see maps below)
North Pacific right whale	Central Bering Sea, east and southeast of the Pribilof Islands

*Managed by the National Marine Fisheries Service
**Managed by the U.S. Fish and Wildlife Service

Candidates are species for which there is enough information on their biological status and threats to

[1] In its definition of species, the Endangered Species Act of 1973, as amended, includes the traditional biological species concept of the biological sciences and "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature" (16 U.S.C. 1532). The National Marine Fisheries Service uses the term *evolutionarily significant unit* as synonymous with *distinct population segment* and lists Pacific salmon accordingly. For the purposes of section 7 consultations, these are all "species."

propose them as endangered or threatened, but for which development of a proposed listing regulation is precluded by other higher priority listing activities.

For updated information on the internet:

U.S. Fish and Wildlife Service Regional Threatened and Endangered Species web site:
http://alaska.fws.gov/fisheries/endangered/index.htm

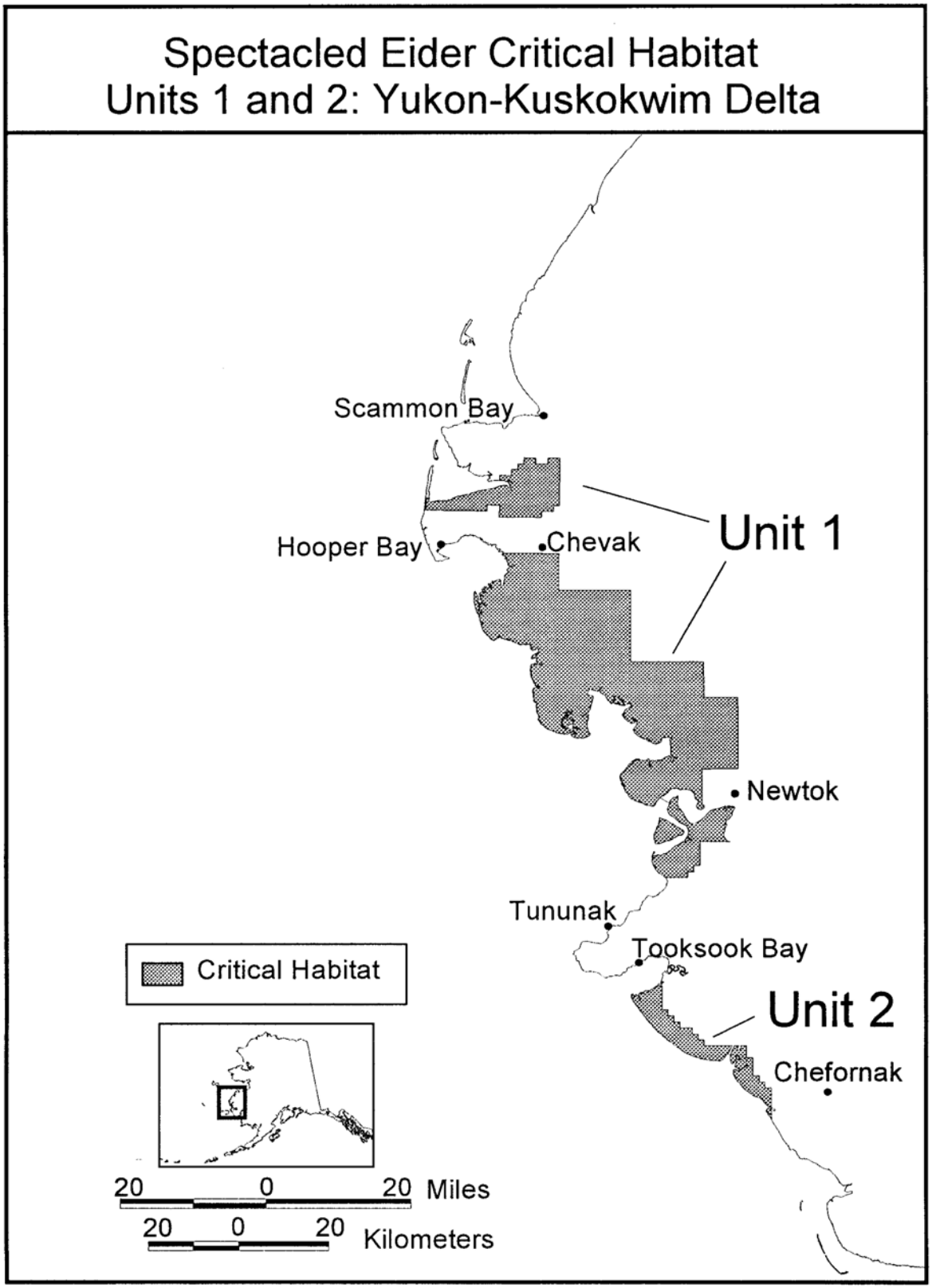
The National Marine Fisheries Service Regional Threatened and Endangered Species web site:
http://www.fakr.noaa.gov/protectedresources/esa/ak_specieslst.pdf

Alaska Department of Fish and Game Threatened and Endangered Species web site:
http://www.wildlife.alaska.gov/index.cfm?adfg=endangered.main

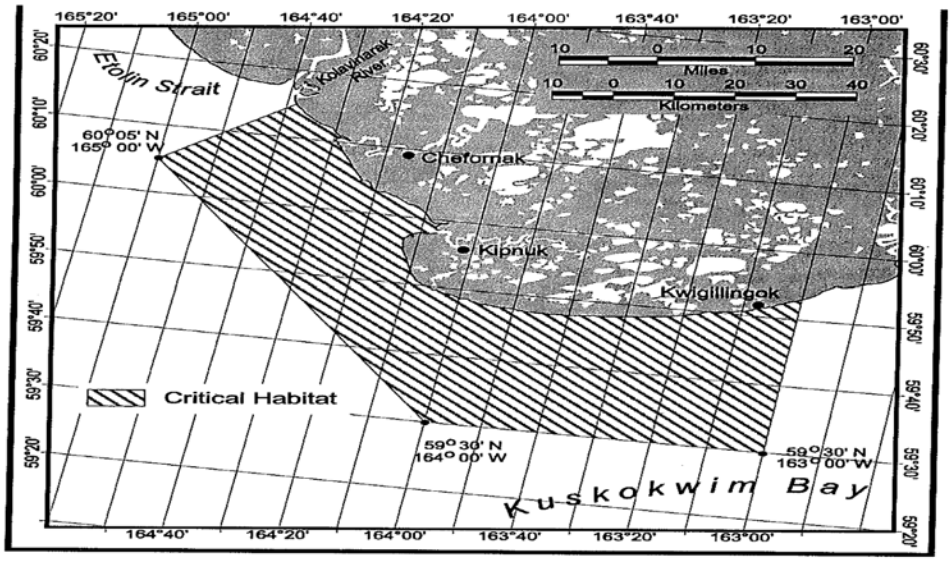
Steller's eider range map:
http://alaska.fws.gov/fisheries/endangered/StellEider_RangeMap.htm

Steller's eider critical habitat map:
http://alaska.fws.gov/fisheries/endangered/StellEider_CHMap.htm

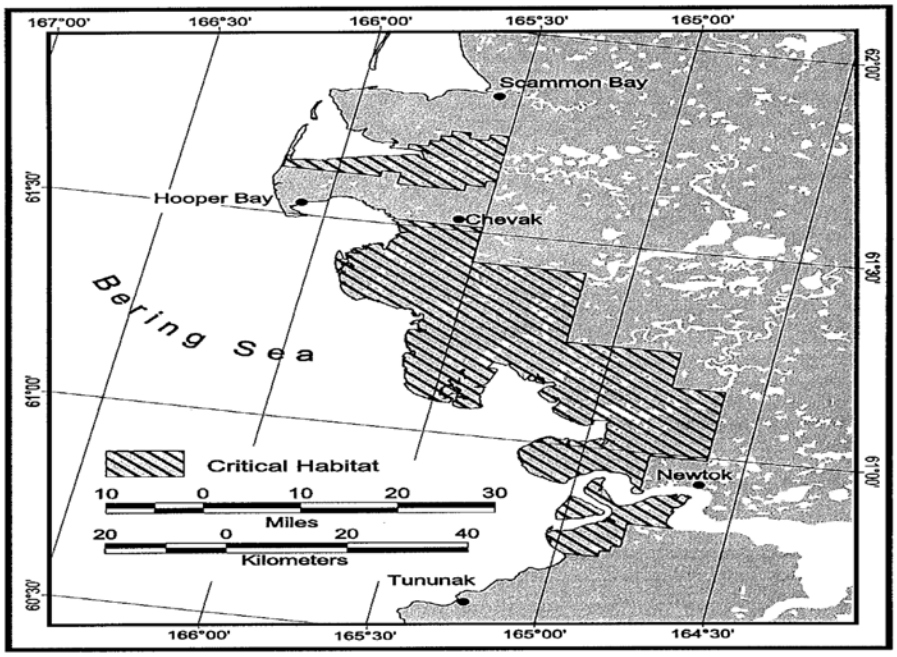
Steller sea lion critical habitat map:
http://alaskafisheries.noaa.gov/protectedresources/stellers/maps/criticalhabitat_map.pdf


Spectacled Eider Critical Habitat
Units 1 and 2: Yukon-Kuskokwim Delta
Scammon Bay
Hooper Bay
Chevak
Unit 1
Newtok
Tununak
Tooksook Bay
Unit 2
Chefornak
Critical Habitat
20 0 20 Miles
20 0 20 Kilometers

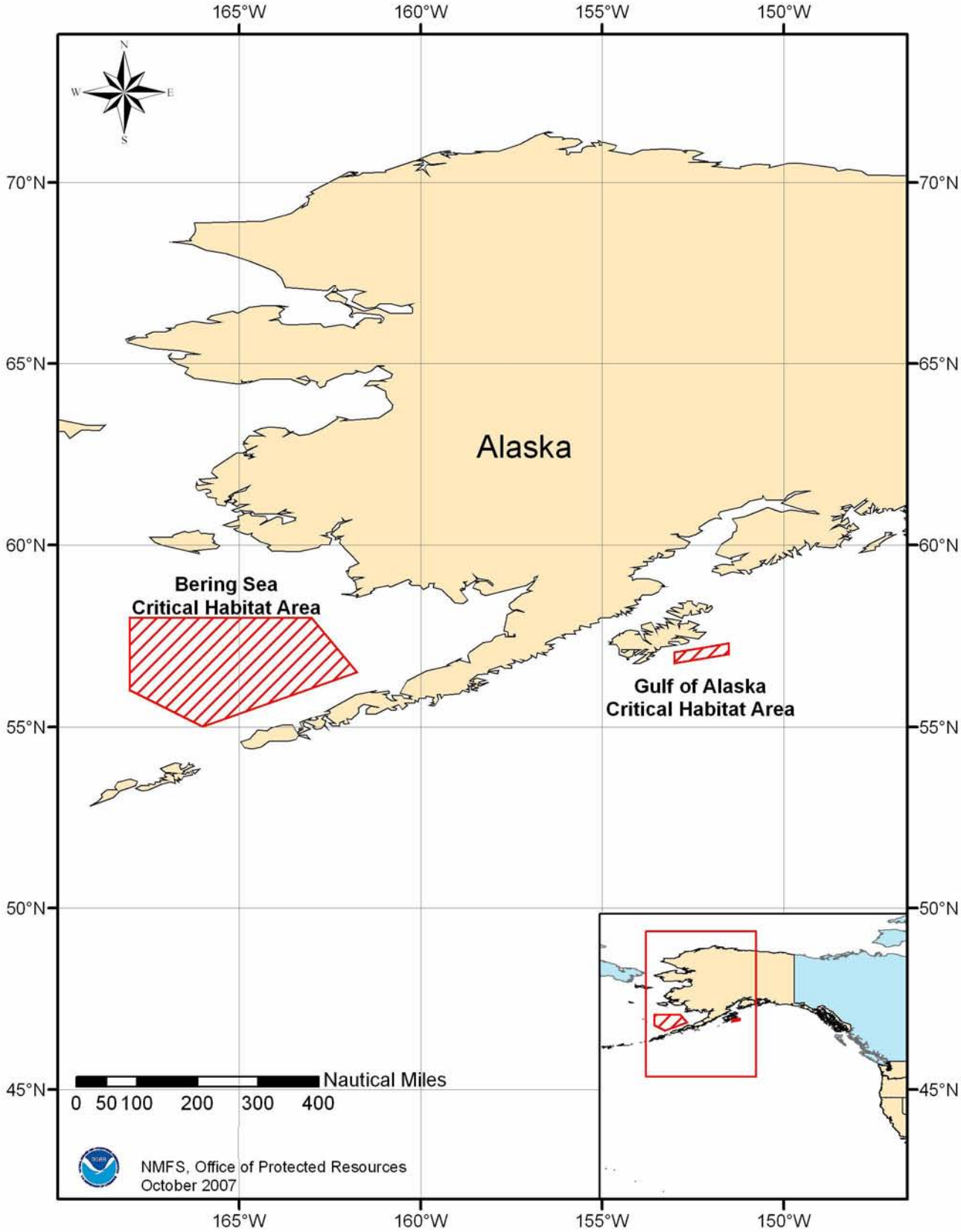
Steller's Eiders Critical Habitat: map 1 of 2



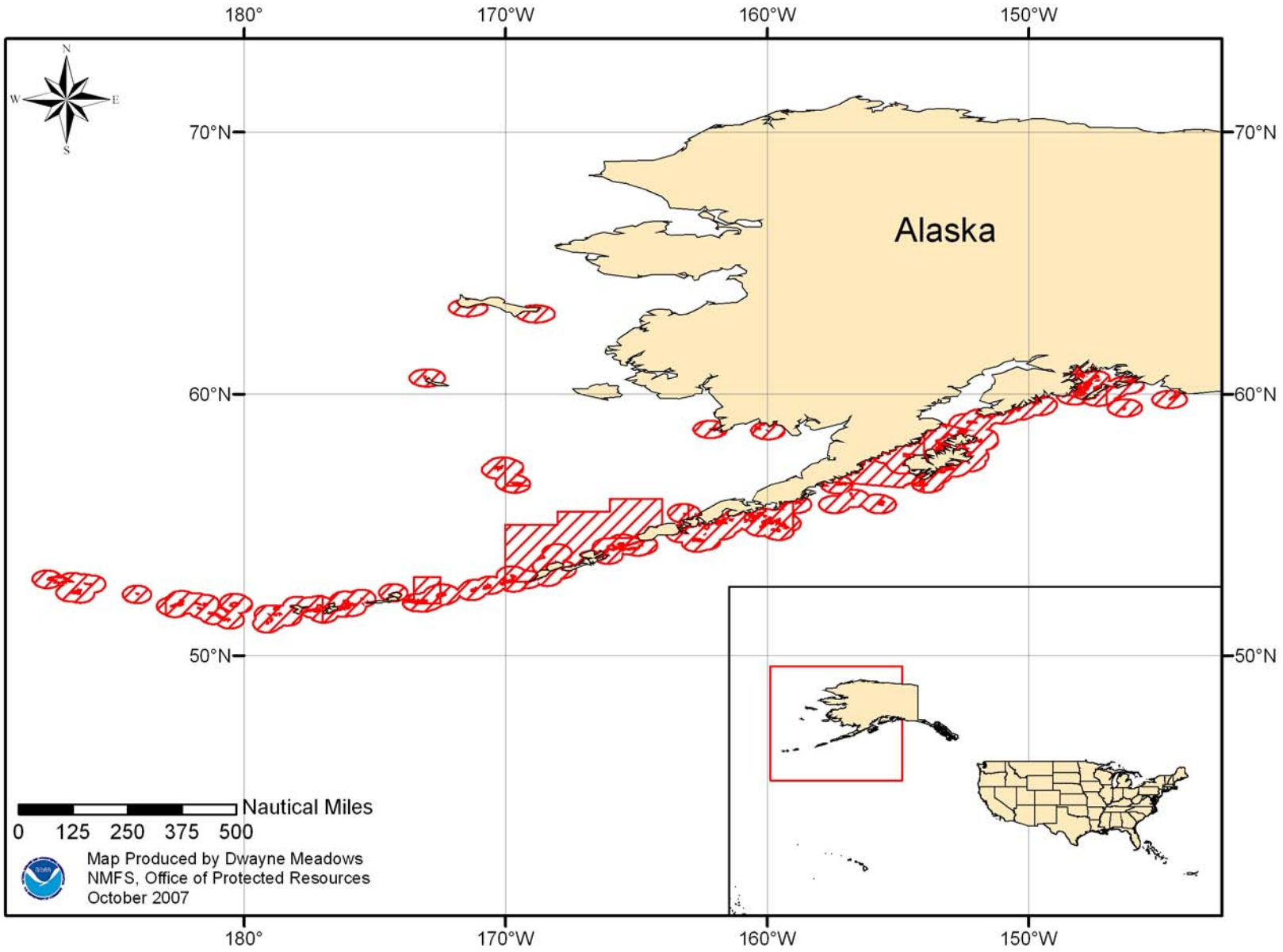
Steller's Eiders Critical Habitat: map 2 of 2



North Pacific Right Whale Critical Habitat



Steller Sea Lion Critical Habitat: Alaska



2. Fish and Wildlife

(a) Fish

The Western Alaska Subarea is drained by a number of major rivers, including the Kuskokwim, Yukon, Innoko, Goodnews, Kwethluk, and Kanektok rivers. Most of the flowing waters and many of the lakes support populations of anadromous or resident species of fish. Lagoons and estuarine areas are important rearing and overwintering areas for anadromous fish. River deltas are particularly important areas for fish throughout the year. Shallow lakes, oxbows, and seasonally-flooded wetlands connected to streams or rivers may support fish during the summer but may freeze to the bottom in winter. If the depth of the water exceeds that of the seasonal ice thickness, fish may be found in a particular waterbody year-round. Deep lakes and rivers, and spring-fed stream systems serve as overwintering areas for fish.

Fish may use shallow lakes (< 2-3 m deep) in summer if the lakes are connected to a stream system (i.e., tapped lakes) and sufficient water exists in late summer for fish to leave the lake and move to overwintering areas. Shallow tundra beaded streams (< 2-3 m deep) freeze solid in winter and thus can be used by fish only for summer rearing. River deltas are particularly important areas for fish throughout the year. Although many rivers have not been examined for overwintering fish, those portions of rivers with depths greater than 2-3 m should be considered potential fish overwintering habitat and protected accordingly.

ESSENTIAL FISH HABITAT (EFH)

In 1996 Congress added new habitat provisions to the Magnuson-Stevens Fishery Conservation and Management Act, the federal law that governs U.S. marine fisheries management. Under the Magnuson-Stevens Act, each fishery management plan must describe and identify EFH for the fishery, minimize to the extent practicable the adverse effects of fishing on EFH, and identify other actions to encourage the conservation and enhancement of EFH. Federal agencies must consult with the National Marine Fisheries Service on any action they authorize, fund, or undertake that may adversely affect EFH, and the National Marine Fisheries Service must provide conservation recommendations to federal and state agencies regarding any action that would adversely affect EFH. Reference information for EFH in the subarea as identified by the National Marine Fisheries Service, can be found on their internet site at:

http://alaskafisheries.noaa.gov/habitat/efh.htm .

An additional EFH resource is their interactive mapping internet site:

http://mapping.fakr.noaa.gov/Website/EFH/viewer.htm?simple

RESIDENT FISH

The most common resident fish found in rivers and lakes in the subarea include arctic grayling, northern pike, burbot, and whitefishes. Whitefish species include humpback,

round, and broad whitefish; and least and Bering cisco. Other species that occur include lake trout, rainbow trout, slimy sculpin, Dolly Varden, longnose sucker, Alaska blackfish, and arctic lamprey. Resident species found on Nunivak Island include Arctic grayling, Alaska blackfish, Arctic char/Dolly Varden, threespine stickleback, and ninespine stickleback.

Arctic grayling are distributed widely in most clearwater streams and some of the deeper lakes. Arctic grayling spawn in May and June over substrates ranging from silt to gravel in small streams or in lakes. Arctic grayling often feed in shallow streams throughout the summer that may freeze solid in winter. Arctic grayling winter in deep, large rivers or lakes, or in smaller streams if adequate water quality and flow exists throughout the winter.

Whitefish Broad and humpback whitefish, and least cisco are found commonly in summer in slow-moving waters of sloughs, and interconnected lakes, the lower reaches of large rivers, and in nearshore marine waters. Round whitefish are found more commonly in streams or lakes. Bering cisco are found in the Yukon and Kuskokwim river drainages. These five species of whitefish spawn in late September and early October over sand and gravel bottoms of streams and lakes. These whitefish generally overwinter in deep, large rivers or lakes, although some may overwinter in estuarine areas.

Northern pike are found commonly in summer in slow-moving waters of sloughs and interconnected lakes, in larger rivers and some of the large lakes throughout the subarea. Northern pike spawn in the spring shortly after breakup in shallow water with emergent vegetation and little current. Northern pike overwinter in deep, large rivers or lakes, or in smaller tributary streams if adequate water quality and flow exists.

Dolly Varden Stream-resident Dolly Varden occur in headwaters or in clearwater tributaries of major rivers. Stream resident Dolly Varden in the Kuskokwim and Yukon river drainages congregate in areas where salmon spawn to feed on salmon eggs. Stream-resident Dolly Varden spawn in late September or October.

Burbot are found in portions of the subarea, in both rivers and in deep lakes. They also are found in summer in interconnected lakes and sloughs in lowland areas. Burbot overwinter in deep, large rivers or lakes, or in smaller tributary streams if adequate water quality and flow exists.

Lake trout are found in the large deep lakes along the Alaska Range at the eastern margin of the subarea. Lake trout also are found in Kagati and Goodnews lakes and probably other large deep lakes in the Togiak National Wildlife Refuge. Lake trout occur in lakes in the Kuskokwim River drainage including, Aniak, Kisaralik, and Whitefish lakes. Lake trout spawn in September.

Rainbow trout occur in some drainages in the subarea. The Kuskokwim River drainage is the northwestern limit of its natural range in Alaska. Rainbow trout are found in the Kwethluk, Kasigluk, Kisaralik, and Aniak rivers, tributaries of the lower Kuskokwim River. Rainbow trout are also reported in the Eek River. Major concentrations are found in the Togiak, Kanektok, Arolik, and Goodnews rivers, as well as in most drainages of the

Togiak National Wildlife Refuge. The rainbow trout in the subarea are not known to be anadromous. Spawning occurs in spring (late May or June).

ANADROMOUS FISH

The Alaska Department of Fish and Game Anadromous Waters Catalog Maps may be found at the following web site:

http://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=maps.selectMap&Region=ARC

Additional information on anadromous fish may be found at:

http://gis.sf.adfg.state.ak.us/FlexMaps/FishResourceMonitor.html

Sheefish The Yukon and Kuskokwim rivers support populations of anadromous sheefish that spawn in the upper reaches of these rivers. These anadromous sheefish overwinter in the lower rivers. Immature fish use and the lower rivers during summer. Fish that will spawn in the current year begin an upstream migration from estuarine areas at breakup. Sheefish enter spawning areas August and early September and spawn in late September and early October. The two known spawning areas for Kuskokwim River sheefish are Big River and Highpower Creek. Yukon River anadromous sheefish spawn upstream of the boundaries of the subarea.

Whitefishes Anadromous whitefish (broad and humpback whitefish, least and Bering cisco) migrate from overwintering areas to estuarine and nearshore brackish marine waters at breakup - mid May to early July. The whitefish remain in the nearshore marine and estuarine environment for several weeks to several months. Whitefish return to overwinter and spawn in major rivers in September and October. Some may overwinter in estuarine areas.

Dolly Varden Juvenile Dolly Varden spend up to their first five years in freshwater streams before migrating to marine summer feeding areas. Immature and mature Dolly Varden migrate from overwintering areas to marine feeding areas following breakup - mid May to early July. Fish begin returning to freshwater spawning and overwintering areas from July through October. Spawning occurs from September through December. Fry emerge from the streambed gravels between April and early June. Spawning and overwintering areas are restricted to streams with perennial springs and groundwater sources. Dolly Varden inhabit nearly all of the subarea drainages, including those on Nunivak, St. Matthew, and Nelson islands.

Salmon Chinook, coho, sockeye, pink, and chum salmon occur within the subarea. Coho and chum are the most common and widely distributed species. Pink salmon are moderately abundant in the lower reaches of the major rivers. Sockeye salmon are least abundant. Salmon are present in estuaries and bays three to four weeks before spawning (see below). Pink, chum, coho, and sockeye salmon occur on Nunivak Island. Salmon eggs incubate in the stream gravels over the winter, fry hatch in mid or late winter, and

migrate to sea following breakup in early May to late June (for chum and pink salmon fry; chinook, sockeye, and coho fry will remain in fresh water from one to four years before migrating to sea).

MARINE FISH

The National Marine Fisheries Service's Essential Fish Habitat interactive mapping tool may be found on the web at: http://www.fakr.noaa.gov/maps/default.htm

Pacific herring Known herring spawning concentration areas occur along the coast from Cape Newenham to and in Goodnews Bay, near Kwigillingok, in Kinak Bay, along portions of Nelson Island and Hazen Bay, in Kokechik Bay, and in Scammon Bay. Herring spawn in shallow bays, inlets, lagoons, rocky shorelines, and on rocky headlands from early May through mid June.

Pacific herring arrive at the Security Cove and Goodnews Bay districts in early to mid May. Pacific herring spawn in the Nelson and Nunivak Island areas between early May and early June. They spawn in the Kokechik Bay area from mid May to mid June. Major herring spawning areas occur along portions of the southern coast, most of the east and northeast coast, and portions of the northern coast of Nunivak Island.

(b) Birds

The Western Alaska subarea provides important wetland areas for nesting waterfowl (ducks, geese, and swans) and other birds, and serves as an important spring and fall staging area and migratory route for those birds headed to and returning from more northerly feeding and nesting areas. Waterfowl are concentrated on areas of open water along the major rivers in spring before wetland areas thaw. Important nesting, molting, and spring and fall staging areas include: the wetlands of the entire Yukon-Kuskokwim River Delta, the coastal wetland lakes and bays of the Togiak National Wildlife Refuge, the wetlands in and around the Innoko National Wildlife Refuge, and wetlands associated with the inland river systems found in the subarea.

Lower Kuskokwim River Area Salmon Run Timing

Species	Migration Through Lower River	Spawning
Chinook	May 20 to June 30	July 10 to August 1
Pink	June 20 to July 20	July 1 to August 1
Chum	June 1 to Aug 15	July 15 to August 15
Sockeye	June 1 to July 15	July 20 to August 15
Coho	July 15 to October 1	Sept 15 to October 30

Quinhagak and Goodnews Districts

Species	Present in Bays and Estuaries	Spawning
Chinook	June 1 to July 1	July 15 to July 30
Chum	June 15 to August 1	July 15 to August 15
Sockeye	June 15 to August 1	August 15 to Sept 30
Pink	June 15 to August 1	July 1 to July 30
Coho	August 1 to Sept 30	Sept 15 to October 30

Lower Yukon River Area Salmon Run Timing

Species	Migration into Lower River	Spawning
Chinook	May 15 to July 15	July 1 to August 1
Pink	June 20 to July 15	---
Summer Chum	May 25 to July 15	July 1 to Aug 5
Fall Chum	July 15 to Sept 10	---
Coho	July 20 to Sept 10	---

Ducks begin arriving in the subarea in early April and continue to arrive through the end of May, although most ducks have arrived by mid May. Nesting begins in mid May, with most eggs hatching from mid June through mid July. Broods are reared on lakes, ponds, flooded wetlands, coastal lagoons, and rivers. Some ducks begin molting in mid June, most during July, and a few are still in molt condition in early September. Large numbers of scoters and eiders molt in lagoons and sheltered bays. Important feeding and fall staging areas for ducks include river deltas, lagoons, salt marshes, mudflats, and coastal tundra areas. Some ducks begin their fall migration in mid July, although most leave the mainland areas from late August through early October. Some ducks remain until late October before leaving at freeze-up. Eiders and some sea ducks may winter in recurring polynyas near St. Matthew and Nunivak islands.

Geese Canada, emperor, and white-fronted geese and brant nest, molt and stage along lakes, coastal lagoons, wetlands, and rivers within the subarea. Snow geese stage within the region during spring and fall migrations, but do not breed in the region. Birds arrive from early April through mid May; nest, molt, and rear young from mid May through the end of August; and undertake fall staging and migration during September through October.

Swans The largest nesting population of tundra swans occurs within the Yukon-Kuskokwim river delta. A few trumpeter swans also occur in the area. Swans arrive in the region from mid April through May. Swans begin nesting around mid May, and eggs hatch from mid-to-late June. Molting occurs from mid July through late August. Young swans are unable to fly until September. Fall staging and migration occurs in September and October.

For more information on waterfowl in Alaska, see the U.S. Fish and Wildlife Service web site at: http://alaska.fws.gov/mbsp/mbm/waterfowl/waterfowl.htm

Birds of prey occurring in the Western Alaska subarea include golden and bald eagles; osprey**;** gyrfalcon, peregrine, and other falcons; goshawks and other hawks; and owls. Golden eagles, peregrine falcons, gyrfalcons, and rough-legged hawks nest on coastal or inland cliffs, bluffs, or other steep terrain. Snowy and short-eared owls nest on the tundra. Hawks and other owls commonly use woodlands, forests, and forested wetland areas for nesting. Prime feeding areas for many raptors include wetlands containing waterfowl, seabirds, shorebirds, and other small birds. For more information on landbirds and raptors, see the U.S. Fish and Wildlife Service web site at:
http://alaska.fws.gov/mbsp/mbm/landbirds/landbirds.htm

Seabirds (northern fulmars, murres, auklets, puffins, kittiwakes) are most abundant in the Cape Newenham area, at Cape Peirce, at St. Matthew, Hall, and Pinnacle Islands. Cape Mohican and Ingri Butte on Nunivak Island also have relatively large seabird colonies. A few smaller colonies occur at scattered locations along the region's rocky coastline. Seabirds arrive at breeding colonies in April, nest and rear chicks from May through mid August, and continue to occupy the colonies through September. Some birds may remain in the area until the formation of sea ice forces them to more southerly areas. A large scattered population of gulls and terns also nest in widely-scattered locations along

lowland coastal habitat throughout the coastal portion of the subarea.

The Alaskan Seabird Colony Catalog is an automated database that contains the distributions of breeding seabirds and the relative size of all the colonies in Alaska. The data reports indicating estimated species composition and numbers for seabird colonies of the subarea are summarized from the catalog. The maps display colony locations. The Catalog is maintained by the U.S. Fish and Wildlife Service. Access the web site at:
http://alaska.fws.gov/mbsp/mbm/northpacificseabirds/colonies/default.htm

Shorebirds (sandpipers, plovers, phalaropes) arrive in the region beginning in mid May, using most of areas identified as concentration areas for waterfowl. They begin nesting on tundra wetland habitat by mid June. Most eggs hatch from late June to mid July. Shorebirds congregate along the barrier islands, coastal lagoons, bays, salt marshes, river deltas, and mudflats from mid July through September to feed before beginning their fall migration in August or September (some may begin their fall migration in July). For more information on shorebirds, see the U.S. Fish and Wildlife Service web site at:
http://alaska.fws.gov/mbsp/mbm/shorebirds/shorebirds.htm

The seabird summary map may be viewed at:

http://www.asgdc.state.ak.us/maps/cplans/western/wak5seabird.pdf

(c) Marine Mammals

Polar Bears may occur as far south as St. Matthew Island in the eastern Bering Sea during winter when the seasonal ice front moves southward. In winter, most polar bears are found along the pack ice edge north of the region. During heavy ice years, polar bears have been seen near Nunivak Island. On rare occasions, polar bears may be found along the Yukon River delta coastline during summer. For more information on polar bears, see the U.S. fish and Wildlife Service web site at: http://alaska.fws.gov/fisheries/mmm/polarbear/pbmain.htm

Seals Four species of seal commonly occur in the nearshore waters of the Western Alaska subarea: ringed seal, bearded seal, harbor seal, and spotted seal. A fifth species, the northern fur seal, may occur in waters surrounding St. Matthew Island during ice-free periods. For more information on seals, see the National Marine Fisheries Service web site at: http://www.fakr.noaa.gov/protectedresources/seals/default.htm

Ringed seals are found in subarea waters from September through May. During summer, most ringed seals are found along the edge of the fast ice, although a few may remain in ice-free areas. They return to nearshore areas in late fall and early winter as the shorefast ice reforms in October and November. Most ringed seal pups are born in March or April in birthing lairs constructed on shorefast ice with adequate snow cover. The seal pups remain in the lairs for four to six weeks until they are weaned. Ringed seals molt on shorefast ice and on large flat ice flows in the pack from late March until July, with peak molting occurring in June.

Spotted seals occur in Western Alaska subarea waters year-round. Spotted seals occur at the sea ice-front in winter and have pups, breed, and molt at the ice front. Pupping occurs in April and May. Molting occurs from May until mid July. Spotted seals move toward the coast as the sea ice melts, and feed in nearshore areas and haul out on land during the ice-free months. They move out of the coastal zone when the sea ice begins to form.

During the winter and spring, spotted seals are associated with seasonal sea-ice that forms in the Bering Sea and their range extends east to Nunivak Island. During the ice-free summer and fall seasons, spotted seals are found along the coast of the Yukon-Kuskokwim Delta. There are no major haulouts along the Yukon River delta, although spotted seals are common there in summer and autumn. They occur in the distributaries of the Yukon River from mid-July to early October.

Spotted seals are present along the mainland coast from Kipnuk to the mouths of the Yukon River. At Tununak and Scammon Bay, spotted seals arrive during the herring runs and remain through the summer. At Hooper Bay, spotted seals are hunted in all months of the year but are taken in greatest abundance July through October. Spotted seals are present on the ice around Nunivak Island in spring. Seals are most abundant at the southwest end of the island near Cape Mendenhall and the northwest end from Cape Mohican to Kigoumiut Bay.

Harbor seals are resident in coastal waters of the southeastern Bering Sea throughout the year. The usual, northernmost limit of harbor seals is about Kuskokwim Bay and Nunivak Island; the usual southernmost limit of spotted seals is about Nanvak Bay. Harbor seals and spotted seals are found in mixed haul-outs south of Nunivak and into northern Bristol Bay . The only major haulout location for harbor seals in the subarea is in Nanvak Bay. Some pups are born in Nanvak Bay in

June and July, but peak numbers of animals occur during the molt in August and September (up to 3,000 seals). Other haulout areas with smaller numbers of seals from late April to October are at Kongiganak, Chagvan Bay, Goodnews Bay, the Cape Pierce area, Cape Newenham, and Security Cove. Harbor seals may be present in small numbers, year-round on Nunivak Island. There are no confirmed sightings of harbor seals at St. Matthew Island.

Bearded seals are associated primarily with the pack ice-edge, and in association with leads, flaws, and polynyas. Consequently, they are not found as frequently in nearshore waters as are spotted or harbor seals. Bearded seals occur in the Western Alaska area year-round, and may be found in the lower reaches of the Yukon and Kuskokwim rivers. Pupping occurs from mid March to early May. Molting occurs in May and June.

Ribbon seals are generally found along the Bering Sea ice front from November through mid July. From July through October, ribbon seals do not usually occur in nearshore waters, but frequent ice-free waters of the Bering Sea.

Beluga whales are present along the mainland coast from Kuskokwim Bay to the mouths of the Yukon River from April through November. Belugas are present around Nunivak Island during the ice free months. Belugas have been sighted around St. Matthew Island in April.

Belugas concentrate off the mouths of the Yukon River from May or June to about early October, feeding on salmon, herring, and saffron cod. The earliest sighting off the Yukon River delta was May 20, 1978, near Cape Romanzof and the latest at about freezeup in early to mid November at Hooper Bay. Belugas generally return to wintering areas in the Bering Sea in October and November. Some may winter in the vicinity of St. Matthew Island. Calving may occur in this area during June and July.

Other whales Gray whales are seen from May to July off Capes Peirce and Newenham. They are commonly seen along the southern coast of Nunivak Island in May and June, and occasionally seen on the north and east sides in June. Occasional sightings have been made in Kuskokwim Bay. Gray whales have been seen in June-August near St. Matthew Island and Hall Island. Minke whales and harbor porpoises have been seen off the south and east sides of Nunivak Island. Occasional use of the St. Matthew Island area by North Pacific right whales during the open water period may occur. Harbor porpoises are seen along the south and east sides of Nunivak Island, and occasionally along the coast north of Kuskokwim Bay. Humpback and fin whales occur in the marine waters of the Subarea. For more information on whales, see the National Marine Fisheries Service web site at: http://www.fakr.noaa.gov/protectedresources/whales/default.htm

Walrus use haulouts occasionally around Cape Newenham (Cape Peirce to Security Cove) from April to June. Walruses occasionally haulout in Kuskokwim Bay. Walruses haul out on both St. Matthew and Hall Islands in summer and autumn. Virtually all walruses in the found in these areas in summer are males.

Kuskokwim Bay is a major winter concentration area; most walruses arrive in the wintering area from October to December or January. Large numbers of breeding walruses frequently gather on the ice north and west of St. Matthew Island during winter. Walruses, primarily females and juveniles, begin migrating north out of the area in March and April. Calves are born in June.

Steller Sea Lions Generally, sightings of Steller sea lions occur from April through November in the Western Alaska Subarea. It is usually male and subadult Steller sea lions that are found in the Western Alaska subarea haulouts. Steller sea lions haul out on Cape Peirce and Cape Newenham from May to August, and are occasionally seen in Chagvan Bay and Security Cove during this same period. Cape Newenham is a major non breeding haulout in the area and is designated as critical habitat, which includes a 3000 foot terrestrial zone and a 20 nm aquatic zone around the base point (58°39'N, 162°10.5'W). Smaller groups of males regularly haul out on St. Matthew Island, Hall Island (also critical habitat: 60°37'N, 173°W), Pinnacle Island, and Nunivak Island from May through early August. There are no major hauling areas on the mainland coast north of Cape Newenham and no sea lion rookeries (where the vast majority of pups are born and breeding takes place during May-July) in the Western Alaska sub-area.

Northern fur seals inhabit the eastern Bering Sea during their breeding season in summer and early fall (May-October). They breed on the Pribilof Islands and on Bogoslof Island in Alaska do not generally haul-out on land in the Western Alaska subarea. However, some foraging trips of Pribilof fur seals extend into the Western Alaska subarea, particularly seals from rookeries on the northern sides of St Paul and St George Islands.

(d) Terrestrial Mammals

Caribou Seven caribou herds use habitat within the subarea: the Mulchatna Herd; the Kilbuck-Kuskokwim Mountains Herd; the Beaver Mountains Herd; the Sunshine Mountain Herd; the Big River Herd (Farewell Herd); the Rainy Pass Herd; and the Tonzona Herd. Calving occurs from mid May to early June. During the peak insect harassment season (mid June to late August), caribou seek insect relief along gravel bars, snow and aufeis fields, glaciers, and on windy mountain slopes and ridges. Summer habitat includes primarily treeless uplands where heath tundra, alpine tundra, and sedge wetlands predominate. Winter habitat includes spruce forests and bog wetlands, ridges, and high plateaus.

Reindeer grazing occurs on Nunivak Island. Reindeer calving occurs in April.

Black Bears are most common in forested river floodplains and lowlands, although they occasionally may occur in alpine areas. Black bears are largely absent from the Yukon - Kuskokwim Delta. Important summer habitats include sedge meadows, and areas of shrubs and forest containing berries. Black bears also may feed at salmon spawning areas. Black bears begin entering dens for the winter in early October and emerge from dens in the spring from mid April through mid May.

Brown Bears (grizzly bears) primarily occur in upland and mountainous areas, but may occur in lowland and coastal areas. Concentrations of bears may be found along rivers when spawning salmon are present; at beached marine mammal carcasses along the coastline, and in caribou calving grounds and migration corridors. Brown bears enter dens from mid October through November and emerge from their dens from early April through late May. Concentrations of bears are attracted to spawning salmon on the lower Goodnews, Eek, Kisaralik, Tuluksak, Aniak, Kogrukluk, Holitna, South Fork Kuskokwim, Andreafsky, East Fork Andreafsky, Atchuelinguk, and Anvik rivers.

Moose occur in habitats throughout the subarea, ranging from aquatic and riparian floodplain areas to sub-alpine willow-dominated areas. Sedge meadows, ponds and lakes with extensive aquatic vegetation, riparian and subalpine willow stands, and forested areas provide important summer habitat for moose. Important winter habitat includes shrub-dominated alpine and riparian areas, and forested areas. Riparian areas along the major rivers and tributary streams are particularly important during winter. Known winter concentration areas include the mainstem Yukon River and its major tributaries downstream to Mountain Village, and the Kuskokwim River and its major tributaries downstream to Napakiak. The Eek, Holitna, and Hoholitna rivers support winter concentrations of moose. Calving occurs in late May and early June.

Dall Sheep Within the easternmost portion of the subarea, Dall sheep are found along Alaska Range headwater drainages, including the Stoney, Big, Swift, South Fork Kuskokwim, and Tonzona rivers. Sheep often are concentrated during winter on windblown slopes and ridges along major river valleys. During summer, sheep disperse to smaller valleys, mountain peaks, and other areas. Mineral licks are important habitat that sheep use primarily from late May through mid July, although sheep may be seen at these sites from April through October. Lambing occurs from mid May through mid June.

Muskoxen Most of the muskoxen in the subarea are found on Nunivak Island. Additional muskoxen occur on Nelson Island and a few are found adjacent favorable areas on the mainland. Riparian vegetation associated with river floodplains and terraces in these drainages, particularly willow thickets during summer, serves as major feeding habitat for muskoxen. Windblown ridges, bluffs, and slopes that remain partially or completely snow-free are preferred habitats in winter and during the calving period (late April to mid June).

Bison The Farewell Herd of bison uses range along the South Fork Kuskokwim River and nearby drainages. In summer bison use bars and islands in rivers and adjacent riparian habitats. Bison winter in uplands and areas where wind frees the area of snow, allowing access to forage.

Wolves and Foxes are found throughout the subarea. Arctic foxes occupy Nunivak and St. Matthew islands, and coastal areas, whereas red foxes generally occupy inland areas. Some red foxes do occur and den near the coast. Wolves and foxes select den sites where unfrozen, well-drained soils occur (e.g., dunes, river banks, moraines, pingos). Wolves may initiate den construction in mid-April. Pups are born from mid May through early June, and generally leave the den by mid July, although dens may be occupied until August. Arctic and red foxes have a reproductive pattern similar to that of wolves.

Aquatic Furbearers Beaver, mink, muskrat, and river otter are common inhabitants of aquatic and riparian floodplain and wetland areas, including marshes, ponds, lakes, streams, and rivers in the Western Alaska subarea.

For more information on terrestrial mammals, see the Alaska Department of Fish and Game web site at: http://www.adfg.alaska.gov/index.cfm?adfg=animals.listmammals

3. Vegetation

Rare plant species are identified below, as documented by the Alaska Natural Heritage Program. The map on the following page identifies the general locations of these rare plants.

RARE PLANTS KNOWN FROM THE WESTERN ALASKA SUBAREA

Global Rank	State Rank	Scientific Name	Common Name	Federal Status
G3	S3	*Aphragmus Eschscholtzianus*		
G5T2Q	S2	*Arnica Lessingii Ssp Norbergii*	Norberg Arnica	
G4T1T2Q	S1S2	*Artemisia Globularia Var Lutea*		
G5T2T3	S2S3	*Astragalus Harringtonii*		
G4	S3S4	*Astragalus Polaris*	a Milk-vetch	
G4G5	S3S4	*Carex Eleusinoides*	a Sedge	
G4	S2	*Carex Heleonastes*	Hudson Bay Sedge	
G4	S2S3	*Cerastium Regelii*	Regel's Chickweed	
G3G4	S3S4	*Claytonia Scammaniana*	Scamman's Springbeauty	
G5	S2S3	Cryptogramma Stelleri	Slender Cliff-brake	
G2G3	S2S3	*Douglasia Alaskana*	Alaska Rock Jasmine	
G4	S3S4	*Draba Lactea*	Milky Whitlow-grass, Milky Rockcress	
G4G5T	5S3S4	*Eritrichium Aretioides*	Pale Alpine Forget-me-not	
G3	S3	*Festuca Brevissima*		
G4G5Q	S3S4	*Festuca Vivipara*	Viviparous Fescue	
G5T5	S1S2	*Geum Aleppicum Var Strictum*		
G4G5	S2S3	*Oxygraphis Glacialis*		
G4	S3S4	*Oxytropis Mertensiana*	Merten's Crazy-weed	
G3	S3	*Papaver Walpolei*	Walpole Poppy	
G4	S3S4	*Poa Pseudoabbreviata*	Polar Bluegrass	
G3	S3	*Potamogeton Subsibiricus*	Yenisei River Pondweed	
G3	S2S3	*Primula Tschuktschorum*	Chuckchi Primrose	
G2	S2	*Smelowskia Pyriformis*	Pear-fruit Smelowski	
G3Q	S3	*Taraxacum Carneocoloratum*	Pink-flower Dandelion	
G3	S3	*Thlaspi Arcticum*	Arctic Pennycress	
G5	S3	*Zannichellia Palustris*	Horned Pondweed	

Species Ranks used by The Alaska Natural Heritage Program:

Species Global Rankings

G1: Critically imperiled globally. (typically 5 or fewer occurrences)

G2: Imperiled globally. (6-20 occurrences)

G3: Rare or uncommon globally. (21-100 occurrences)

G4: Apparently secure globally, but cause for long-term concern

(usually more than 100 occurrences)

G5: Demonstrably secure globally.

G#G#: Rank of species uncertain, best described as a range between the two ranks.

G#Q: Taxonomically questionable.

G#T#: Global rank of species and global rank of the described variety or subspecies of the species.

Species State Rankings

S1: Critically imperiled in state. (usually 5 or fewer occurrences)

S2: Imperiled in state. (6-20 occurrences)

S3: Rare or uncommon in state. (21-100 occurrences)

S4: Apparently secure in state, but with cause for long-term concern

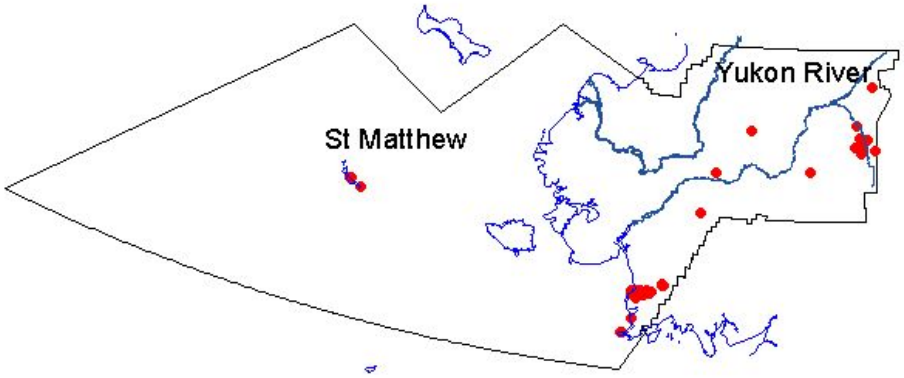
(usually more than 100 occurences)

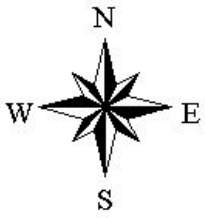
S5: Demonstrably secure in state.

S#S#: State rank of species uncertain, best described as a range between the two ranks.

The map may be viewed at:
http://www.asgdc.state.ak.us/maps/cplans/subareas.html#western

Known Rare Plant Locations for the Western Alaska Subarea Contingency Plan





Source Data: University of Alaska
Alaska Natural Heritage Program
Biological Conservation Database

D. HUMAN USE RESOURCES

1. Fish Hatcheries and Associated Ocean Net Pens

There are no hatcheries or pens operating in this subarea.

2. Aquaculture Sites

There are no aquaculture sites in this subarea.

3. Cultural Resources

The subarea contains a multitude of known and unidentified archaeological and historic sites. Oil spills and hazardous substance releases may result in direct and/or indirect impacts to those cultural resources. Federal On-Scene Coordinators are responsible for ensuring that response actions take the protection of cultural resources into account and that the statutory requirements for protecting cultural resources are met. Annex M of the *Unified Plan* outlines Federal On-Scene Coordinators responsibilities for protecting cultural resources and provides an expedited process for compliance with Section 106 of the National Historic Preservation Act during the emergency phase of a response.

4. Subsistence and Personal Use Harvest

Subsistence-related uses of natural resources play an important role in the economy and culture of many communities in the subarea. A subsistence economy may be defined as follows:

> ...an economy in which the customary and traditional uses of fish, wildlife and plant resources contribute substantially to the social, cultural and economic welfare of families in the form of food, clothing, transportation and handicrafts. Sharing of resources, kinship-based production, small scale technology and the dissemination of information about subsistence across generational lines are additional characteristics.

Before 1990, the State of Alaska made all decisions regarding the management of fish and wildlife resources and harvest allocations. In 1990, however, the Federal government became responsible for managing subsistence resources on Federal public lands and in 1999 in Federal reserved waters. The Federal Subsistence Board adopts subsistence regulations which are administered by the various Federal agencies on Federal public lands. State regulations still apply on all lands, and the State is still the manager of fish and wildlife on all lands and waters in Alaska. As a consequence, the number of agencies involved in managing subsistence uses has increased. Therefore, in the event of a spill, extensive coordination will be required in order to address subsistence resources. Regulations regarding subsistence harvest can also be expected to undergo further regular modification. Current information on harvest regulations can be obtained from the Alaska Department of Fish and Game, Subsistence Division at Anchorage, and from the U.S. Fish and Wildlife Service, Office of Subsistence Management at Anchorage, or see their web

site at: http://alaska.fws.gov/asm/index.cfml.

Local communities can provide the most detailed and accurate information regarding current subsistence and personal use harvest. Contacts for potentially affected communities are identified in the Response Section, Part One.

5. Commercial Fishing

Commercial fishing in the Western Alaska subarea focuses primarily on salmon and herring. Herring fishing occurs in May and the first part of June. Fishing periods are opened and closed by emergency orders by the Alaska Department of Fish and Game.

Commercial salmon fishing (set gill nets and drift nets) within the Western Alaska subarea is also regulated by emergency orders by the Alaska Department of Fish and Game. Fishing periods within the Kuskokwim Bay, and the mainstream portions of the Kuskokwim and Yukon Rivers within the Western Alaska subarea generally occur from early June through August. The upstream limit for commercial salmon fishing on the Kuskokwim River is approximately Chuathbaluk. Contact the Alaska Department of Fish and Game for information regarding commercial and subsistence salmon fishing periods within the Yukon River drainage. Contact the Alaska Department of Fish and Game in Bethel for information regarding commercial and subsistence salmon fishing periods within the Kuskokwim River drainage; and in Anchorage for the Yukon River drainage. Updated information may be found at their Commercial Fisheries Arctic Management Area web site:

http://www.cf.adfg.state.ak.us/region3/nomehome.php

6. Sport Fishing and Hunting

Sport fishing and hunting occurs at a wide variety of locations in the Western Alaska subarea throughout the year. Seasons and harvest regulations vary depending on the species and the area, and may be changed from year to year. Contact the Alaska Department of Fish and Game for current seasons within the area of the spill. Updated information may be found at their Sport Fish web site:
http://www.adfg.alaska.gov/index.cfm?adfg=fishingSport.main

7. Recreational Sites and Facilities (TO BE DEVELOPED)

8. Commercial Tourism

The travel to the Western Alaska subarea is dictated by seasonal changes and should be noted that the majority of the tourism occurs in the summer months. For additional information contact:

Alaska Office of Tourism Development	465-2012
Alaska State Chamber of Commerce	586-2323
Alaska Native Tourism Council	274-5400
Alaska Wilderness Recreation & Tourism Assoc.	463-3038

9. Marinas and Ports (See the Resources Section)

10. Fish Processing

Fish processing (salmon) within the Western Alaska subarea occurs onshore at Emmonak and Anvik within the Yukon River drainage. Within the Kuskokwim River drainage, salmon processing occurs at Bethel and to a limited extent Akiachak. An inoperative facility is at Aniak and the processing facility at Quinhagak provides only ice. The communities of Toksook Bay. Mekoryuk, and Tununak process halibut. Herring is processed on floating processors.

The seafood processing companies with permits from the Alaska Department of Environmental Conservation are listed on the web pages below. See also:
http://alaska.state.gegov.com/alaska/seafood_listing.cfm

Retort Processors (Cannery): Processors approved to produce shelf-stable, non-refrigerated seafood product in cans, jars, or retort plastic pouches.

Land-based Processors: Processors approved to produce fresh, frozen, salted, or formulated seafood products at a land based facility.

Vessel Processors: Processors approved to produce fresh, frozen, salted, or formulated seafood products onboard a large floating vessel facility.

Direct Market Fishing Vessels: Processors approved to produce fresh and frozen seafood products of their own catch onboard a small floating boat facility.

Shellfish Dealers: Processors approved to grow, harvest, or buy shellstock (oysters, clams, or mussels) and can pack the shellstock or shuck and pack the shellfish (without shell) for sale.

Shellfish Harvesters: Harvests shellstock and delivers to processor or shipper.

Geoduck Dive Vessel: A vessel approved by the Department for the harvest of geoducks.

11. Logging Facilities

There are no known commercial logging activities in this subarea.

12. Water Intake/Use

The following information was generated by the Alaska Department of Environmental Conservation. Included are permitted water use facilities by index number, facility name, and facility location. The Alaska Division of Water's web site is:
http://dec.alaska.gov/water/index.htm

Name of Facility	Location	State ID #	Source

Napakiak Water System	Napakiak	260121		Groundwater
LKSD Napakiak HS & Elem.	Napakiak	271253		Groundwater
Napakiak W.S. Central Well	Napakiak	262319		Groundwater
Napakiak Well #3 Hud Well	Napakiak	263002		Groundwater
Napaskiak East Water Point	Napaskiak	271952		Groundwater
LKSD Napaskiak Z J Williams	Napaskiak	270980		Groundwater
Napaskiak Water System	Napaskiak	260139		Groundwater
LKSD Nunapitchuk Elem.	Nunapitchuk	260155		Groundwater
Nunapitchuk Water System	Nunapitchuk	260820		Groundwater
LYSD Pilot Station High School	Pilot Station	271415		Groundwater
Pilot Station Water System (2)	Pilot Station	260163		Groundwater
USAF Cape Newenham	Cape Newenham	260480		Surface
LKSD Kwethluk Housing	Kwethluk	270647		Groundwater
LKSD Kwethluk HS and Elem.	Kwethluk	270956		Groundwater
Kwethluk Washeteria	Kwethluk	261371		Groundwater
Oscarville Watering Point	Oscarville	270061		Groundwater
Mountain Village Water System (4)	Mountain Village	270150		Groundwater
Russian Mission Water System	Russian Mission	270168		Groundwater
Saint Mary's Water System	Andrefsky	270176		Groundwater
Scammon Bay Water System	Scammon Bay	270184		Groundwater
Sheldon Point Water System	Sheldon Point	270207		Surface
Toksook Bay Water Syestem	Toksook Bay	270215		Groundwater
Tuluksak Water System	Tuluksak	270223		Groundwater
LKSD Tununak Paul Albert HS	Tununak	270613		Groundwater
Kasigluk Washeteria	Kasigluk		270794	Groundwater
LKSD Kasigluk Akula HS & Elem	Kasigluk		270948	Groundwater
LKSD Akiuk Kasigluk Plant Fac	Kasigluk		270621	Groundwater
Tununak Water System	Tununak	270231		Surface
LKSD Goodnews Bay Rocky MTN	Goodnews Bay	270930		Groundwater
Goodnews Bay	Goodnews Bay	270257		Groundwater
City of Marshall (3)	Marshall	270273		Groundwater
Eek Water System	Eek	270281		Surface
Emmonak Water System	Emmonak	270299		Surface
LYSD Hooper Bay School	Hooper Bay	270540		Groundwater
Hooper Bay Washeteria	Hooper Bay	271279		Groundwater
Hooper Bay Old Town Site #1	Hooper Bay	270312		Groundwater
Kashunamiut SD Chevak School	Chevak	270582		Groundwater
Chevak Water System	Chevak Village	270320		Groundwater
LKSD Chefornak Amakigchuk TC	Chefornak	270590		Groundwater
Chefornak Water System	Chefornak	270338		Groundwater
Alakanuk Water System	Alakanuk	270362		Surface
State of AK Aniak AST	Aniak	270651		Groundwater
Aniak Lodge	Aniak	270809		Groundwater
A & G Acre Plus	Aniak	271287		Groundwater
Anyaraqmuite Office Building	Aniak	271554		Groundwater
Sackett Center	Aniak	271643		Groundwater
Hound House	Aniak	271978		Groundwater
Alaska Pacific Caviar	Aniak	271774		Groundwater
YKHC Aniak Subregional Clinic	Aniak	271928		Groundwater
FAA Aniak Facility	Aniak	270388		Groundwater
Bethel Heights Water System	Bethel Heights	270346		Groundwater
Northern Lights Water	Bethel	271979		Groundwater
Alaska Airlines	Bethel	271980		Groundwater/Purchased
Pacifica House & Diane's Restaurant	Bethel	271982		Groundwater
Nunapitchuk Apartments	Bethel	271588		Groundwater
YKHC Hospital 800 Bldg	Bethel	271300		Groundwater

U.S. Army National Guard	Bethel	270419	Groundwater
Shea Apartments	Bethel	271782	Groundwater
Brass Buckle Roadhouse	Bethel	271790	Groundwater
Kreiders Water Service/Water Haulers	Bethel	271830	Groundwater/Purchased
City of Bethel (8)	Bethel	271848	Groundwater/Purchased
Bethel Native Corporation	Bethel	270469	Groundwater
LKSD Kilbuck Elementary	Bethel	270493	Groundwater
Bethel Water Complex	Bethel	271075	Groundwater
YKHC Hospital (2)	Bethel	271083	Groundwater
Bethel Community Services	Bethel	271091	Groundwater
Bethel Native Corp. Offices	Bethel	271106	Groundwater
Tundra Women's Coalition	Bethel	271114	Groundwater
Bethel Trailer Court (3)	Bethel	271148	Groundwater
Bautista House	Bethel	271156	Groundwater
Timberline Apts.	Bethel	271164	Groundwater
Lakeview Apt Water System	Bethel	271172	Groundwater
Inlet Fish Producers	Bethel	270524	Groundwater
Tundra Center Water System	Bethel	271473	Groundwater
SOA Bethel Trooper Bldg	Bethel	271740	Groundwater
Yukon Kuskokwim Correctional Fac	Bethel	271334	Groundwater
Bethel Youth Facility	Bethel	271889	Groundwater/Purchased
Swanson's Store	Bethel	271902	Groundwater
Bethel Utilities Well #1	Bethel	271936	Groundwater
USFWS Yukon Delta NWR Hdqtrs	Bethel	271538	Groundwater
Tuntutuliak Washeteria	Tuntutuliak	271211	Groundwater
LKSD Tuntutuliak Angapak SC	Tuntutuliak	271017	Groundwater
Lower Kalskag Water System	Lower Kalskag	270697	Groundwater
KSD George Morgan HS	Kalskag	270833	Groundwater
Newtok Water System	Newtok	271431	Surface
LKSD Newtok Ayaprun Elementary	Newtok	270710	Groundwater
LKSD Kipnuk HS	Kipnuk	270728	Surface
Kipnuk Water System	Kipnuk	270736	Surface
LKSD Oscarville HS and Elem.	Oscarville	270744	Groundwater
Quinhagak Water System	Quinhagak	271041	Surface
LKSD Quinhagak & Teacher Hsng	Quinhagak	270752	Surface/Purchased
Akiakchak Water System	Akiachak	270786	Groundwater
Sleetmute Watering Point	Sleetmute	271874	Groundwater
Sleetmute Well and Washeteria	Sleetmute	270825	Groundwater
SOA Employee Housing	McGrath	270891	Groundwater
McGrath Water System	McGrath	280155	Surface
IASD Takotna School	McGrath	280252	Groundwater
IASD Telida School	McGrath	280260	Groundwater
Kwigillinok Washeteria	Kwigillinok	271700	Surface
LKSD Kwigillinok HS and Elem.	Kwigillinok	270964	Surface
Mekoryuk Washeteria	Mekoryuk	271562	Surface
LKSD Mekoryuk Nunivaarmiut	Mekoryuk	270972	Groundwater
LKSD Kongiganak HS & Elem.	Kongiganak	271245	Surface
Kongiganak Water System	Kongiganak	271025	Surface
Atmautlak Water System	Atmautlak	271033	Groundwater
Platinum City Water System	Platinum	271059	Groundwater
LKSD Nightmute HS & Elem.	Nightmute	271261	Groundwater
Kotlik Washeteria	Kotlik	271342	Surface
LYSD Kotlik Community System	Kotlik	271407	Surface
Akiak Community Water System	Akiak	271520	Groundwater

SENSITIVE AREAS: PART FIVE – LAND MANAGEMENT

A. LAND MANAGEMENT DESIGNATIONS

1. Access to Lands

Land ownership must be determined and landowners contacted to evaluate incident-specific protection priorities, obtain land-use permitting requirements, and obtain permission to access lands. Native corporation lands, as well as local, State, and Federal government lands often require special use permits. If an incident affects private lands or Native Allotments, permission to enter lands should be sought from the landowner. The local Borough government is often the best source of private land ownership records.

2. State

Cape Newenham State Game Refuge is the only State legislatively-designated area for special uses in the Western Alaska Subarea. The 13,952 acre refuge encompasses Chagvan Bay, a large shallow estuarine embayment know for its vast eelgrass beds. In the spring and fall, hundreds of thousands of ducks, geese, and shorebirds stop at Chagvan Bay to rest and feed on their way to and from nesting grounds to the north. The bay is especially critical to brant which stop in spring to feed on eelgrass. Web page: http://www.adfg.alaska.gov/index.cfm?adfg=capenewenham.main

3. Federal

Yukon Delta National Wildlife Refuge, the largest of Alaska's 16 refuges, encompasses over 26 million acres of land and water on the Yukon-Kuskokwim Delta (including Nelson and Nunivak Islands). The Yukon-Kuskokwim Delta contains the termini of the two largest rivers, in length and discharge, in Alaska, as well as innumerable lakes and ponds, and forms the dominant landscape of the refuge. Upland areas, the southern Nulato Hills in the northern part of the refuge and the Kilbuck Mountains along the refuge's eastern boundary, contain peaks of 2,000 to 3,000 foot elevation. The abundance of water in the lakes, ponds, streams, inlets, bays, and coastal areas provides important habitat for waterbirds. Although the refuge supports a varied population of mammals, fish, and birds which are important to maintaining the traditional subsistence lifestyle of local residents, it is the nesting and rearing habitat of four geese species (cackling Canada geese, Pacific flyway white-fronted geese, emperor gees, and brant) and other waterfowl, shorebirds, and seabirds which are of national significance. Web page: http://alaska.fws.gov/nwr/yukondelta/index.htm

Togiak National Wildlife Refuge encompasses about 4.3 million acres of land between Kuskokwim Bay and Bristol Bay in southwestern Alaska. The refuge is bordered on the north by the Yukon Delta National Wildlife Refuge. Five species of salmon and several species of resident fish occur in the streams and lakes of the refuge. Over 30 species of mammals are present, including brown and black bear, moose, caribou, wolves, and wolverine. Sea lions, walrus, and harbor seal inhabit coastal areas. The refuge's coastal lakes, bays, and wetlands also are heavily used by migrating waterfowl in spring and fall. Seabirds occupy rugged coastal cliffs along the refuge's coastline. Web page: http://alaska.fws.gov/nwr/togiak/index.htm

Innoko National Wildlife Refuge - Southern Unit encompasses about 3.8 million acres of land. The

western boundary of the refuge is formed by the Yukon River. The Innoko River flows through the heart of the refuge. Nearby communities include Grayling on the Yukon River and Shageluk just south of the refuge on the Innoko River. Extensive wetlands with abundant small lakes and streams occur over much of the refuge and are particularly abundant on the southern portion of the refuge. The extensive wetlands support large numbers of nesting waterfowl, furbearers, and moose. Black and grizzly bear, and caribou also occur on the refuge. The extensive streams and wetland complexes support abundant fish, particularly northern pike and whitefish. Chinook, chum , and coho salmon also occur on the refuge. Web page: http://alaska.fws.gov/nwr/innoko/index.htm

Alaska Maritime National Wildlife Refuge Public lands on islands, barrier islands, islets, rocks, reefs, and spires in the Bering Sea make up the Bering Sea Unit of the Refuge. St. Matthew Island is the largest island in the refuge within the Western Alaska area. The Alaska Maritime Refuge consists of over 2,400 islands, headlands, rocks, islets, spires, and reefs along the Alaskan coast, stretching from Southeast Alaska to Cape Lisburne on the Chukchi Sea. The Refuge is synonymous with seabirds. About 75 percent of Alaska's marine birds (15 to 30 million of 55 species) use the Refuge. The Refuge also is home to thousands of sea lions, seals, walrus, and sea otters. Wildlife viewing, photography and backpacking are primary uses of the Refuge. Web page: http://alaska.fws.gov/nwr/akmar/index.htm

Lake Clark National Park and Preserve The northern portions of Lake Clark National Park and Preserve are contained within the boundaries of the Western Alaska Subarea. The Park and Preserve encompasses approximately 4 million acres and provides habitat for Dall sheep, moose, caribou, brown and black bear, wolves, foxes, beaver, and other furbearers. Raptors are common, as are waterfowl and songbirds. Fish are abundant in lakes and streams of the area, and include salmon, whitefish, Dolly Varden, Arctic grayling, and lake trout. Web page: http://www.nps.gov/lacl/index.htm

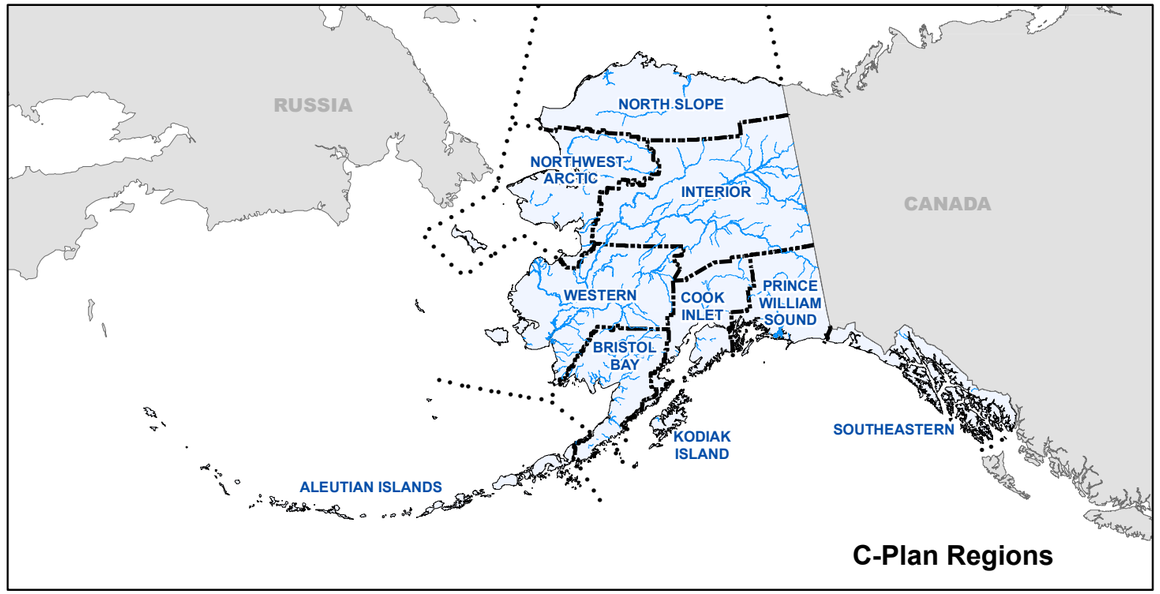
B. LAND MANAGEMENT MAPS

The Alaska Department of Natural Resources, under agreement with the Alaska Department of Environmental Conservation, produced digital base and land management maps for each of the subareas using their ARC-INFO based Geographic Information System. The following land management maps provide an index to the Public Land Record and should not be viewed as legal documents. These maps are available on the internet at: http://www.asgdc.state.ak.us/maps/cplans/subareas.html

For more current detailed information on land status, go to the Bureau of Land Management's Spatial Data Management System web site at: http://sdms.ak.blm.gov/isdms/imf.jsp?site=sdms
and click on the Generalized Land Status layer.

CONTINGENCY PLANNING

Sensitive Areas
Land Management Maps



C-Plan Regions

Primary Data Sources

- Contingency Plan (C-Plan) Regional Boundaries: Alaska Department of Environmental Conservation (ADEC) (scale approximately 1:1 million; automated in 1995 by ADNR from 18AAC 75.495 specifications).

- State Land Ownership: Alaska Department of Natural Resources (ADNR), Land Administration System (section-level resolution; April 2012).

- State Legislatively Designated Areas: ADNR, Land Administration System (section-level resolution; April 2012).

- Alaska Native Claims Settlement Act, Bureau of Land Management (section-level resolution; April 2012).

- Native Allotments; Patented/Conveyed: Spatial data; Bureau of Land Management (SDMS: Spatial Data Management System (http://sdms.ak.blm.gov), March 30, 2005) Tabular data; Bureau of Land Management (ALIS: Alaska Land Information System, June 2012)

- Conservation System Units; Bureau of Land Management (1991) and ADNR edits since then (Februray 1998).

- Wilderness Designations:
  U.S. Geological Survey (1:2 million scale; May 1995).
  U.S. Fish & Wildlife Service (1:2 million scale; May 1995).
  U.S. Forest Service (1:63,360; May 1995).
  U.S. National Park Service (1:63,360; May 1995).
  Bureau of Land Management Wilderness Study Areas (2004)

- Military Lands; Bureau of Land Management (section-level resolution; April 2008)

- Coastline: ADNR, Land Records Informaion Section; US Geological Survey; US Forest Service, Chugach; US Forest Service, Tongass; EVOS Trustee Council, (February 1998).

- Streams and Lakes: Digital Chart of the World, Defense Mapping Agency 1:1 million scale; 1991 data released by Environmental Systems Research Institute.

- Roads & Railroads: Digital chart of the World, Defense Mapping Agency (1:1 million scale; 1991 data released by Environmental Systems Research Institute.

- Geographic Place Names: Dictionary of Alaska Place Names (1967) and U.S. Geological Survey Quadrangle Maps, (1:1 million scale; automated by U.S. Geological Survey, and annotated by ADNR, June 1996).

- Borough Boundaries: Alaska Department of Community & Regional Affairs (1997) (1:250,000 scale) and ADNR (1997).

- Native Corporation Boundaries: ADNR (approximately 1:1 million scale; automated from U.S. Census Bureau digital files, verified and updated by ADNR, July 1995.

Master Legend

Land Management

- National Forests, Monuments, Recreation, and Conservation Areas
- National Park System
- National Wildlife Refuges
- National Wild and Scenic Rivers Outside National Park System and Outside National Wildlife Refuges
- Bureau of Land Management Public Lands
- National Petroleum Reserve - Alaska (NPRA)
- Major Military
- State Patented Tentatively Approved or Other State Acquired Lands
- Both State and ANCSA Lands Within a Section
- ANCSA Patented or Interim Conveyed
- Federal Designated Wilderness Areas
- State Selected (ANILCA Topfilings included)
- State Wildlife, Park, Forest, and Other Multiple Use Areas
- ANCSA Selected
- Native Allotments

Other Map Features

- C-Plan Boundary (On land)
- C-Plan Boundary (Offshore)
- Borough Boundary
- Native Corporation Boundary
- Wilderness Study Area (BLM)
- main_roads Major Highways

To Re-Order Maps

This legend page and the Sensitive Areas Land management maps were produced using ArcGIS software and output as digital postscript files.

To purchase copies of the Sensitive Areas Land Management maps, please contact:

Alaska Department of Natural Resources
Division of Support Services
Information Resource Management
550 W. 7th Avenue, Suite 706
Anchorage, Alaska 99501
(907)269-8833

Hierarchy for Depicting Land Ownership

The land management maps in this C-Plan series depict ownership according to the following hierarchy (e.g., any portion of a section that is State Patented or Tentatively Approved causes the whole section to be depicted as State land):

1. State Municipal Entitlements or Land Exchanges or other Land Disposals.
2. Patented Disposed Federal Lands (Native Allotments or Private Parcels).
3. State Patented or Tentatively Approved (includes casetypes 101-114, 116-117, 128-129).
4. Alaska Native Claims Settlement Act (ANCSA) Patented or Interim Conveyed.
5. Major Military
6. National Wildlife Refuges, National Park System Units.
7. National WIld & Scenic Rivers outside National Park System Units and National Wildlife Refuges.
8. National Forests and Monuments, National Petroleum Reserve-Alaska, National Recreation Areas and National Conservation Areas.
9. Bureau of Land Management Public Lands.

Note: Cross-hatched areas indicate an overlay of State-Selected lands (including Alaska National Interest Lands Conservation Act topfilings) and Alaska Native Claims Settlement Act-Selected lands.

Note: The Alaska Maritime National Wildlife Refuge (NWR) is not completely depicted. Areas where it is depicted are shaded, however, they are not outlined. The Alaska Maritime NWR is described as follows:

The Alaska Maritime NWR consists of all public lands, including submerged waters and interests therein on islands, islets, rocks, reefs, spires, and designated capes and headlands in the coastal areas and adjacent seas of Alaska within five designated subunits: Chukchi Sea, Bering Sea, Aleutian Islands, Alaska Peninsula, and Gulf of Alaska Units; and includes an undetermined quantity of submerged land, if any, retained in Federal ownership at the time of statehood around Kodiak and Afognak Islands. The refuge is generally depicted on the USGS maps entitled, "Alaska Maritime National Wildlife Refuge" dated October 1979.

Background

The Alaska Department of Natural Resources (ADNR), under agreement with the Alaska Department of Environmental Conservation (ADEC), produced digital land management maps for each of the Contingency Plan (C-Plan) Region Subareas, using an ArcGIS based Geographic Informaion System (GIS). The following land management maps provide an index to the Public Land Record and should not be viewed as legal documents. More detailed State Status Plats portraying State land ownership by township are available at the Alaska Department of Natural Resources' Public Information Centers. To view the state's land records online, visit the following web address:http://plats.landrecords.info Master Title Plats portraying Federal and Alaska Native Claims Settlement Act land ownership are available at the Bureau of Land Managment's Public Room, Federal Building.

The land management maps summarize land ownership and represent a hierarchical, section-level index to the underlying detailed land ownership.

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LAND MANAGEMENT

WESTERN ALASKA REGION

Map 1 of 10

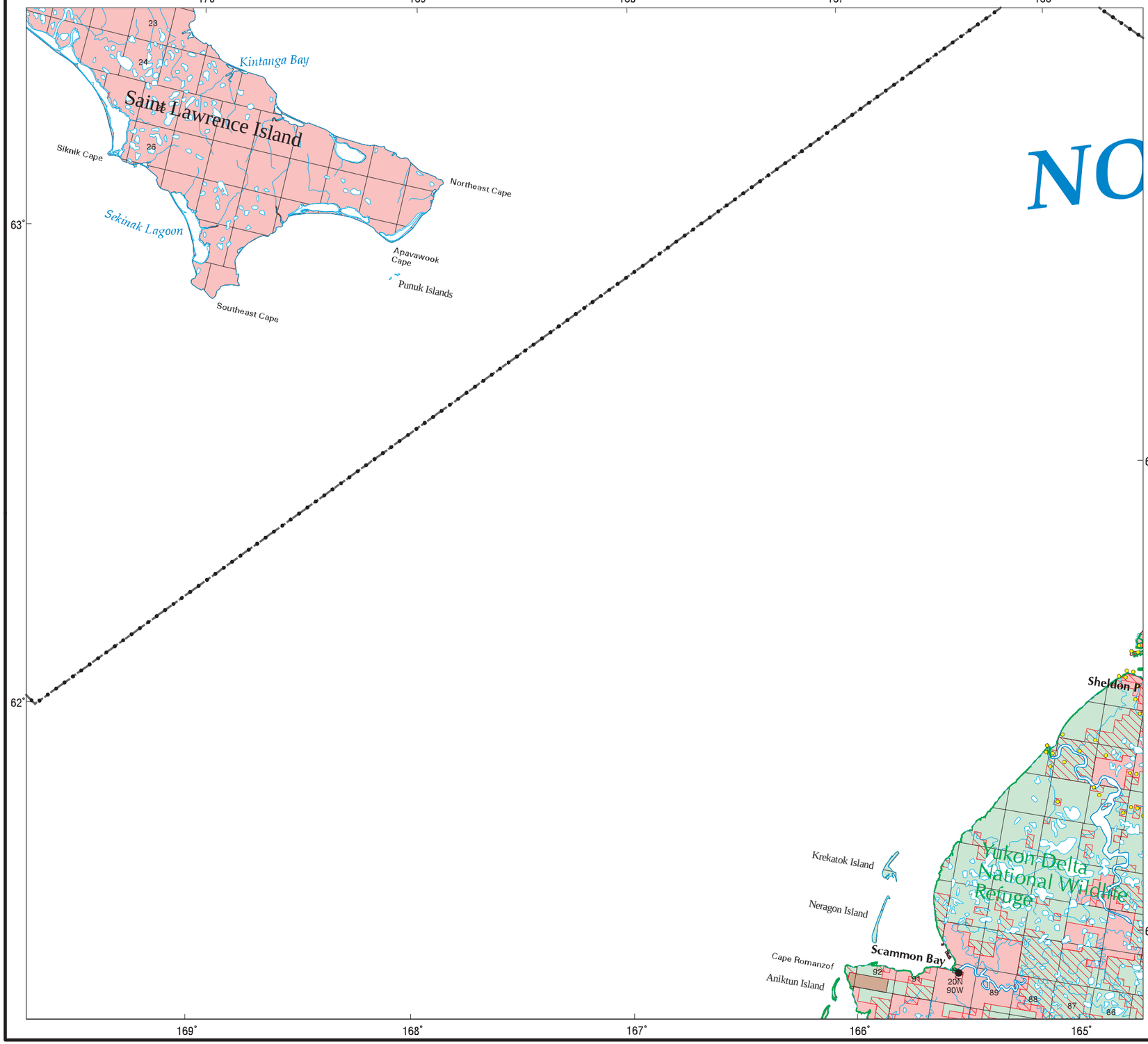
Albers Equal Area Projection

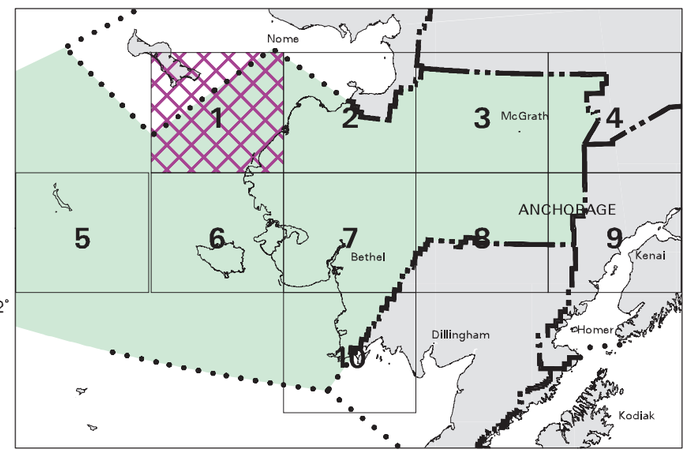
Scale 1:1,000,000

0 25 miles

LEGEND

- National Forest Service
- National Park Service
- National Wildlife Refuges
- Wild and Scenic Rivers outside of the National Wildlife Refuges or National Park Service
- Bureau of Land Management
- Military
- State Lands
- Both State and ANCSA Lands within section
- Alaska Native Claims Settlement Act (ANCSA) Lands
- Municipal or Other Private Parcels
- Federal Designated Wilderness Areas or Wilderness Study Areas
- State Selected
- State Wildlife, Park, Forest, and other Multiple Use Areas
- Native Selected
- Private Parcels (Disposed Federal Lands) or Native Allotments





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LAND MANAGEMENT

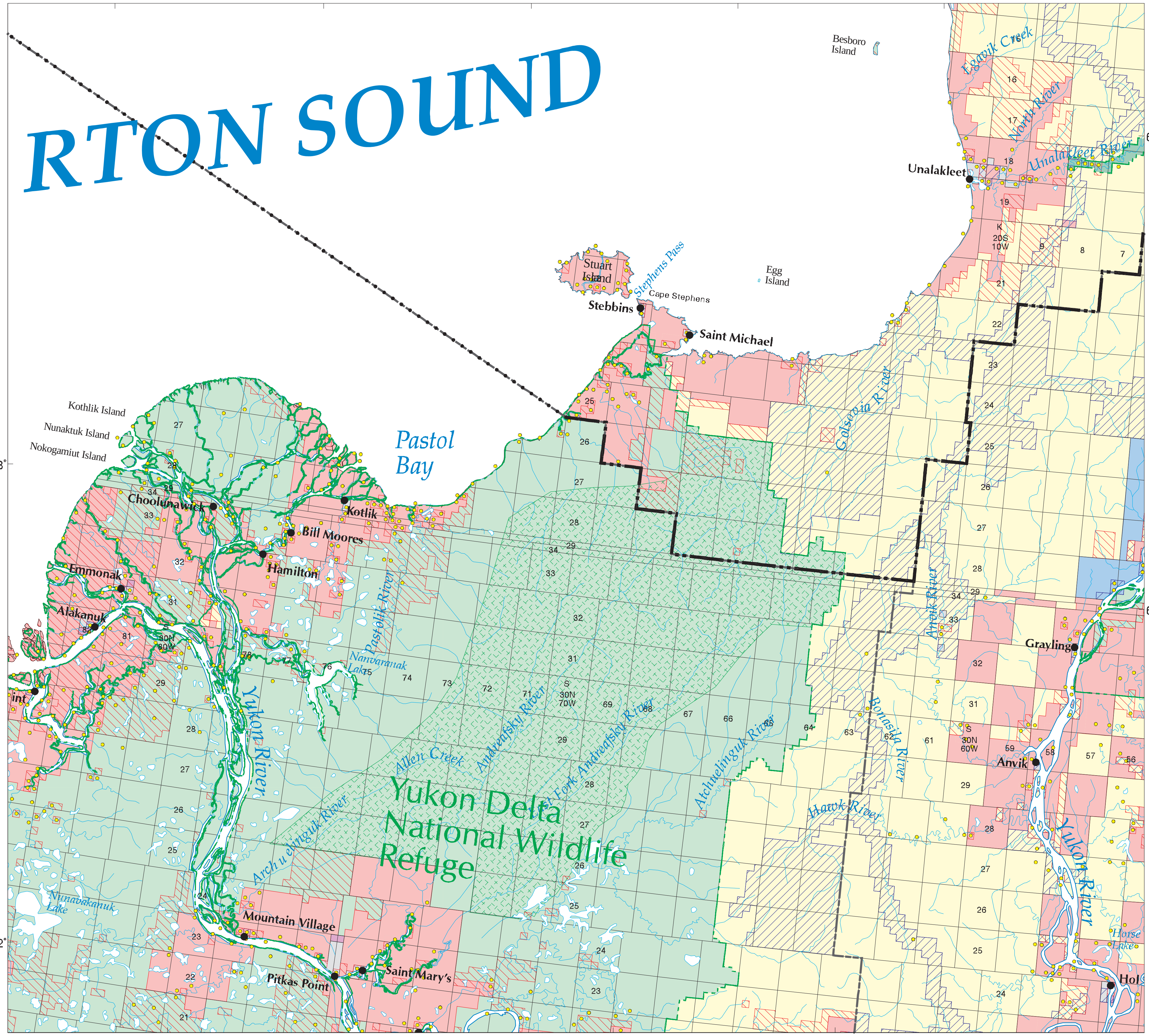
WESTERN ALASKA REGION

Map 2 of 10

Albers Equal Area Projection

Scale 1:1,000,000

0 25 miles



LEGEND

- National Forest Service
- National Park Service
- National Wildlife Refuges
- Wild and Scenic Rivers outside of the National Wildlife Refuges or National Park Service
- Bureau of Land Management
- Military
- State Lands
- Both State and ANCSA Lands within section
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- Municipal or Other Private Parcels
- Federal Designated Wilderness Areas or Wilderness Study Areas
- State Selected
- State Wildlife, Park, Forest, and other Multiple Use Areas
- Native Selected
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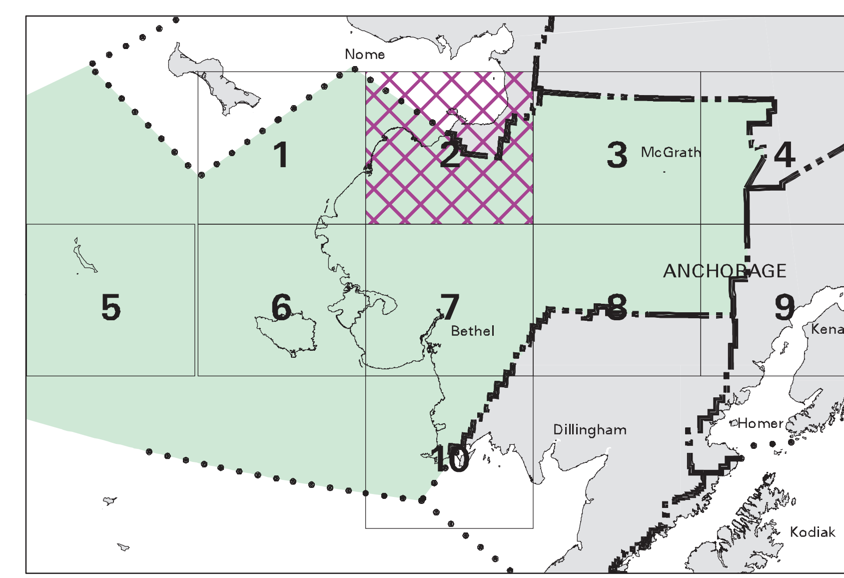

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LAND MANAGEMENT

WESTERN ALASKA REGION

Map 3 of 10

Albers Equal Area Projection

Scale 1:1,000,000

0 25 miles

LEGEND

- National Forest Service
- National Park Service
- National Wildlife Refuges
- Wild and Scenic Rivers outside of the National Wildlife Refuges or National Park Service
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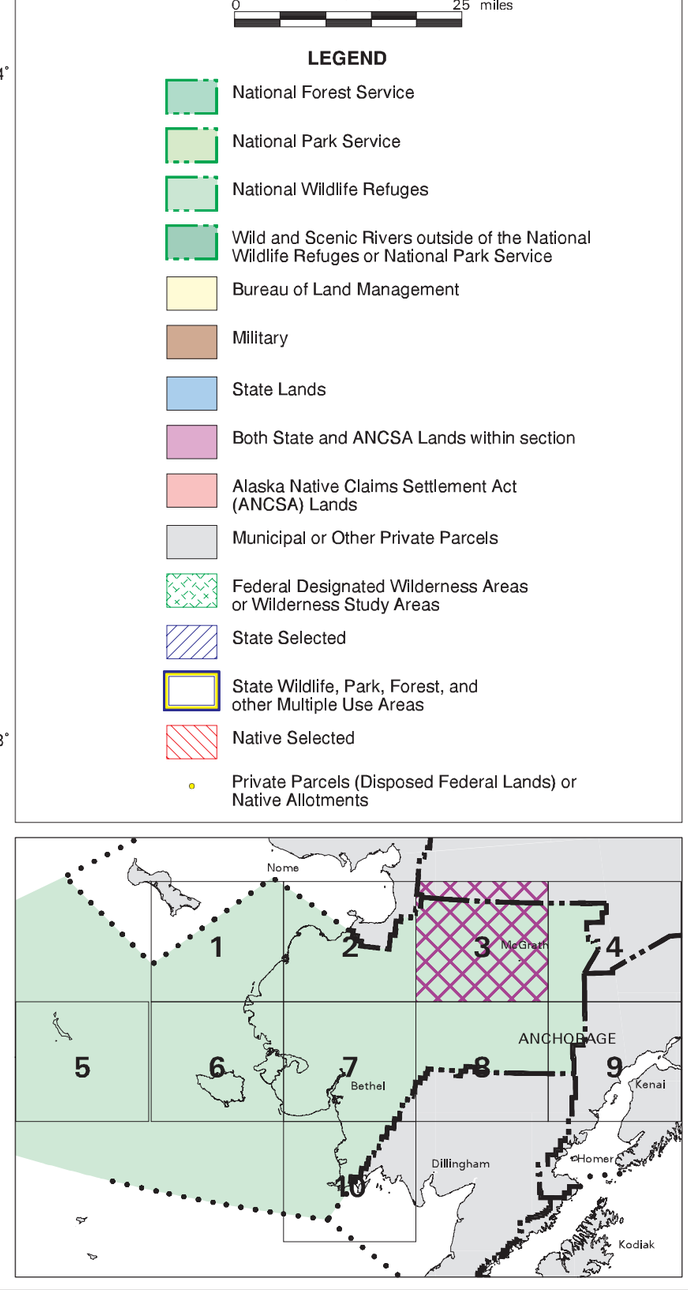

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LAND MANAGEMENT

WESTERN ALASKA REGION

Map 4 of 10

Albers Equal Area Projection

Scale 1:1,000,000

0 25 miles

LEGEND

- National Forest Service
- National Park Service
- National Wildlife Refuges
- Wild and Scenic Rivers outside of the National Wildlife Refuges or National Park Service
- Bureau of Land Management
- Military
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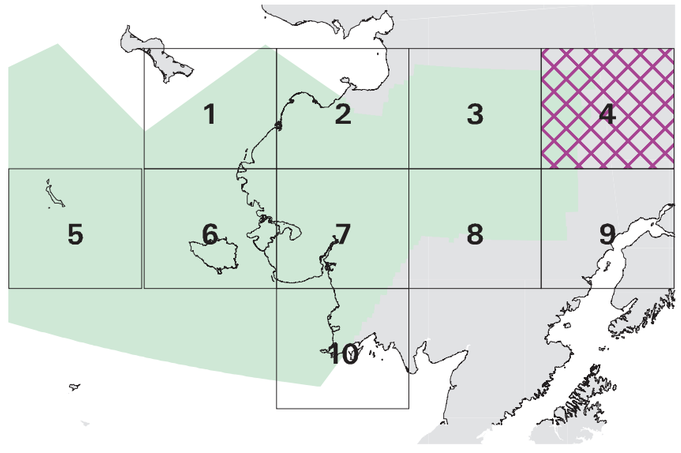

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LAND MANAGEMENT

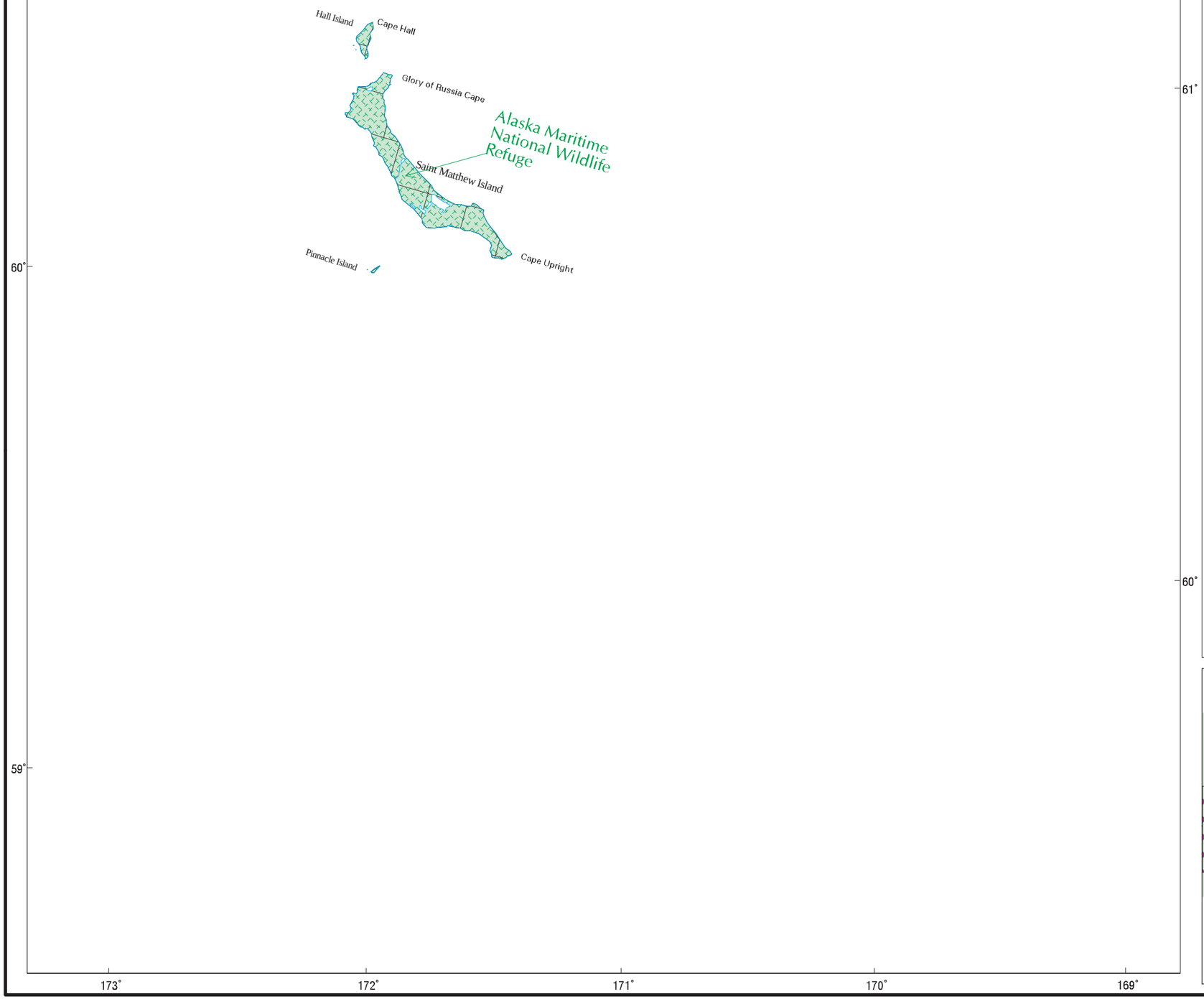
WESTERN ALASKA REGION

Map 5 of 10

Albers Equal Area Projection

Scale 1:1,000,000

0 25 miles



LEGEND

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- National Wildlife Refuges
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- Bureau of Land Management
- Military
- State Lands
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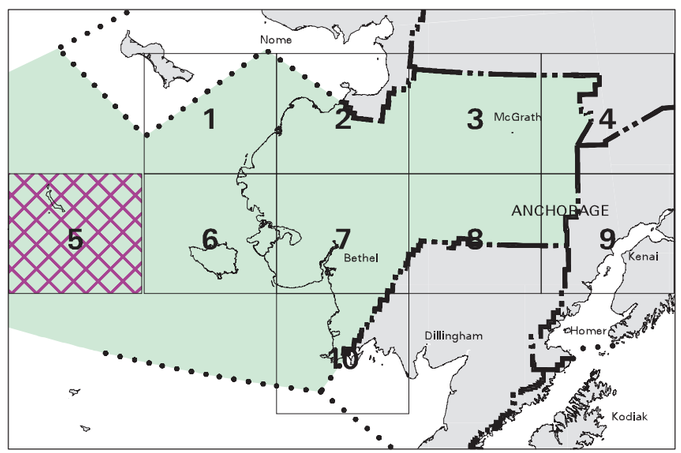

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LAND MANAGEMENT

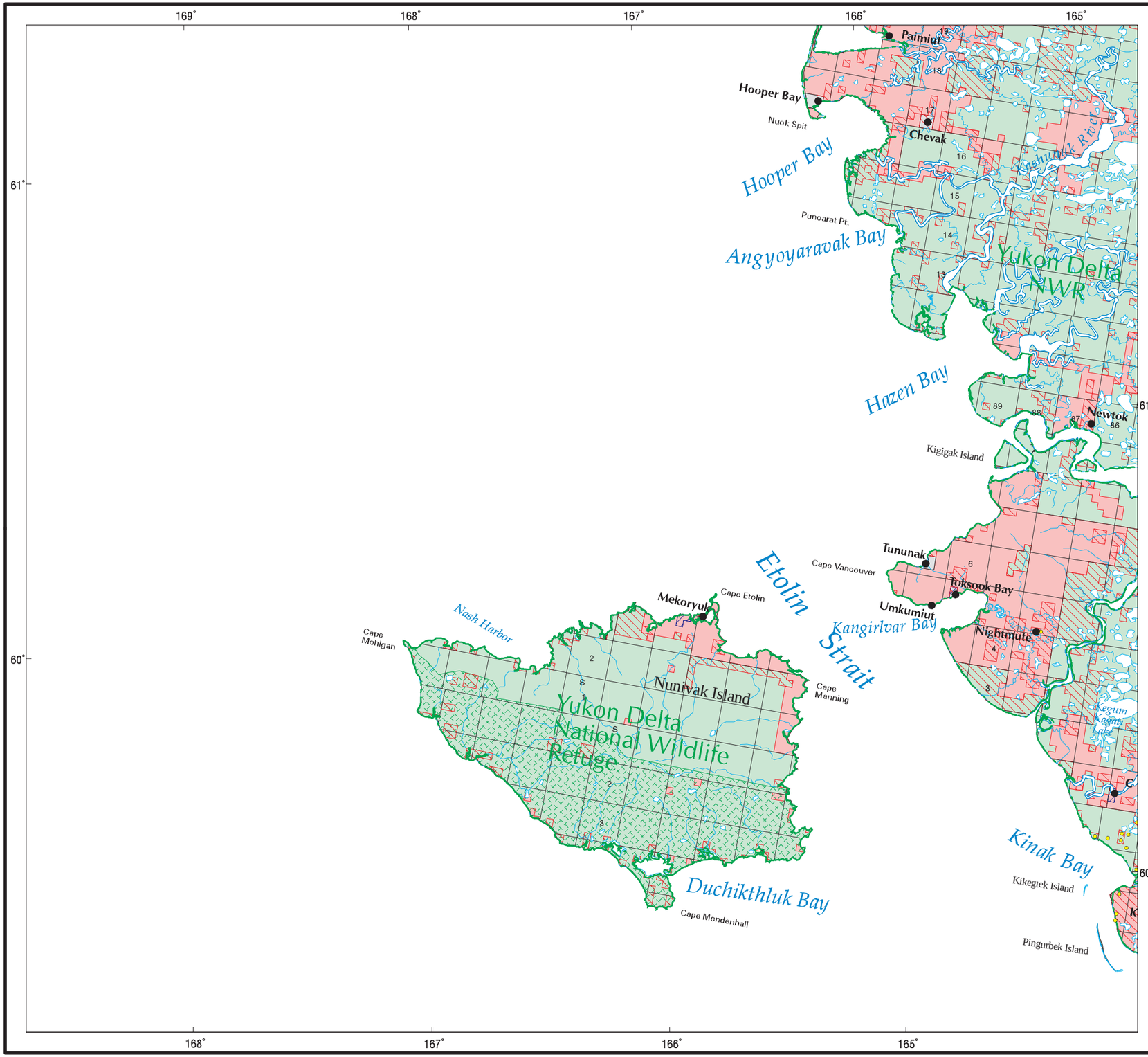
WESTERN ALASKA REGION

Map 6 of 10

Albers Equal Area Projection

Scale 1:1,000,000

0 25 miles



LEGEND

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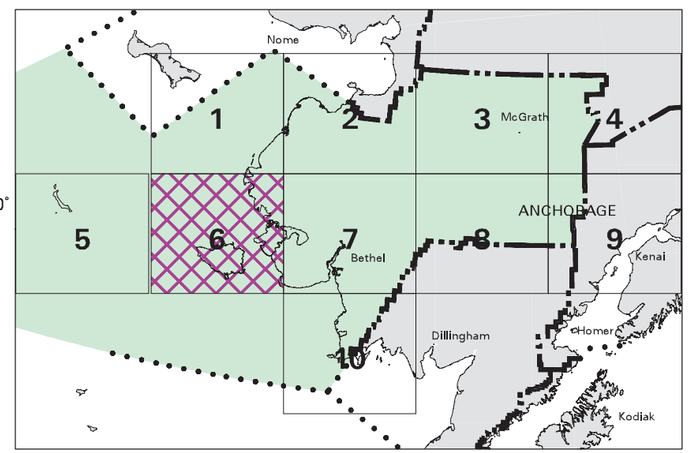

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LAND MANAGEMENT

WESTERN ALASKA REGION

Map 7 of 10

Albers Equal Area Projection

Scale 1:1,000,000

0 25 miles

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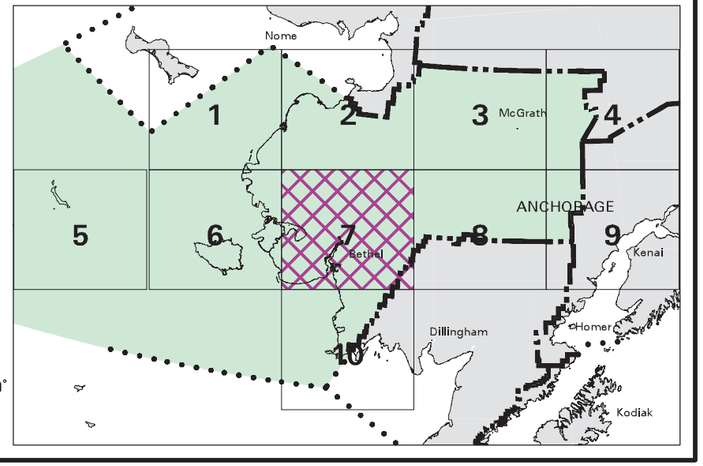

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LAND MANAGEMENT

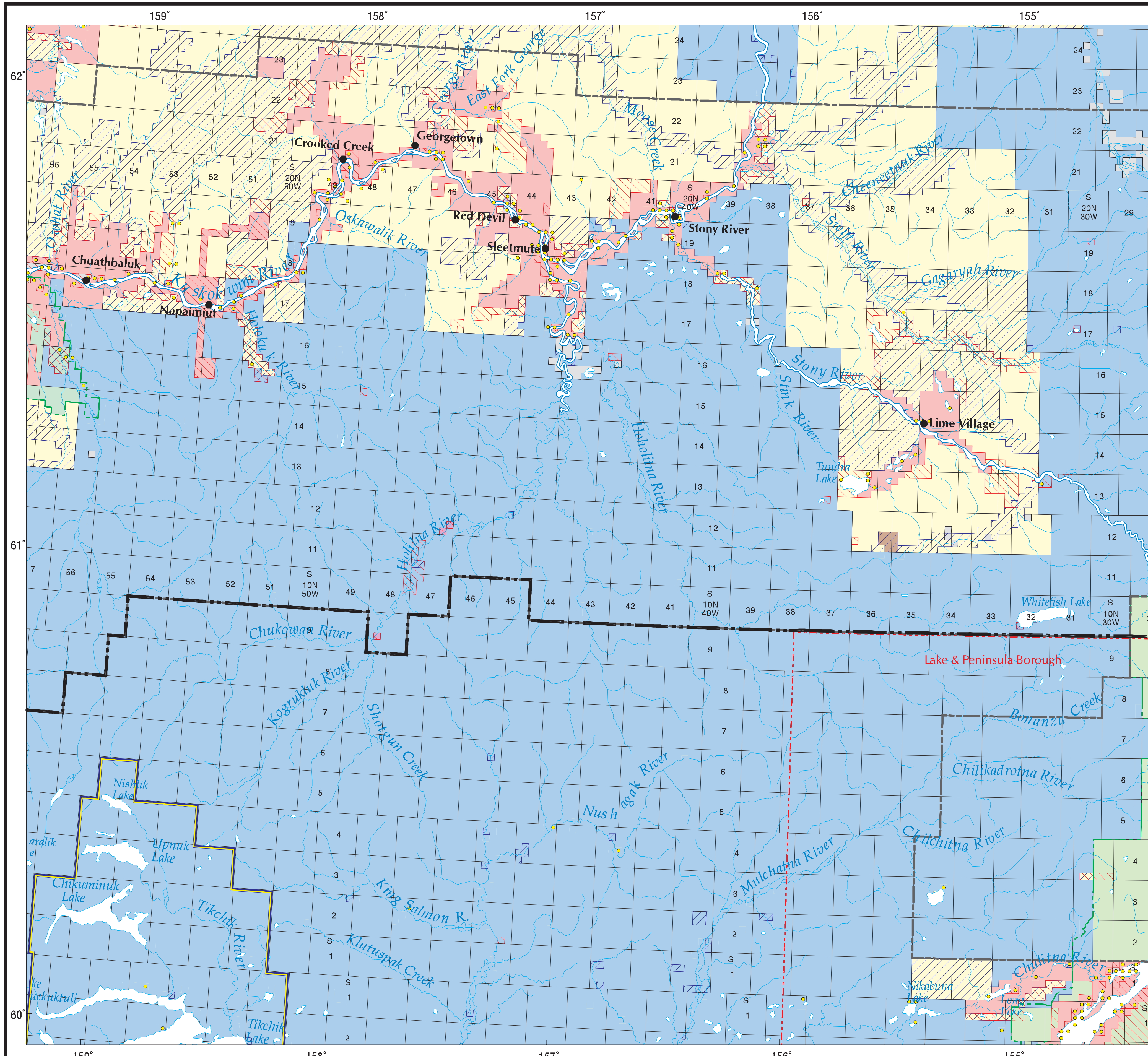
WESTERN ALASKA REGION

Map 8 of 10

Albers Equal Area Projection

Scale 1:1,000,000

0 25 miles



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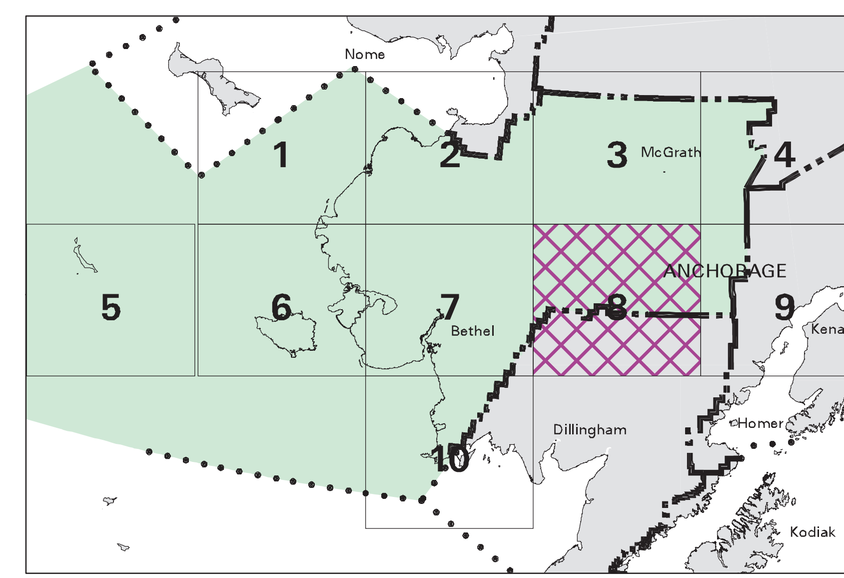

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LAND MANAGEMENT

WESTERN ALASKA REGION

Map 9 of 10

Albers Equal Area Projection

Scale 1:1,000,000

0 25 miles

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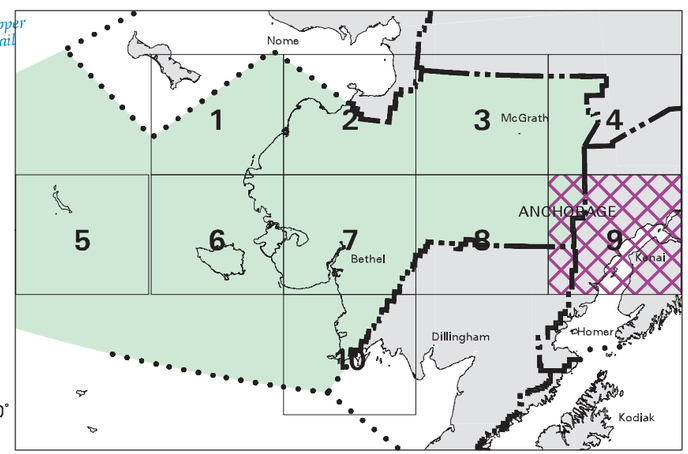

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LAND MANAGEMENT

WESTERN ALASKA REGION

Map 10 of 10

Albers Equal Area Projection

Scale 1:1,000,000

0 25 miles

LEGEND

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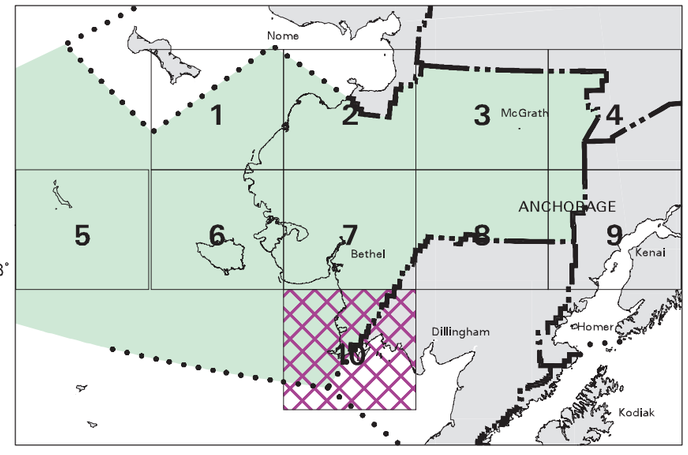

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