ALASKA SENSITIVE AREAS COMPENDIUM

August 2019

Composed of the Sensitive Areas Sections developed for the ten superseded Subarea Contingency Plans

Please note that this is a draft compilation of the 10 Geographic Zone Sensitive Areas Sections. Additional formatting and content review and revision is planned, but not yet scheduled. The purpose of this draft is to present all of the Sensitive Areas content within a single reference to simply the necessary response reference and to streamline review and revision.

Descriptions of the Sensitive Areas are a required element of Area Contingency Plans.

Record of Changes

Subarea Contingency Plan	Original Date	Last Revision Date
Aleutians Subarea	September 1999	May 2015
Bristol Bay	June 2001	February 2013
Cook Inlet	July 1997	January 2017
Interior Alaska Subarea	June 2000	March 2015
Kodiak Subarea	July 1998	August 2010
North Slope	December 1999	May 2012
Northwest Arctic	June 2001	March 2018
Prince William Sound	July 1997	October 2014
Southeast Alaska	July 1997	August 2012
Western Alaska	June 2001	February 2013

MASTER TABLE OF CONTENTS

Aleutian Islands

Bristol Bay

Cook Inlet

Interior Alaska

Kodiak Island

North Slope

Northwest Arctic

Prince William Sound

Southeast Alaska

Western Alaska

ALEUTIANS SUBAREA CONTINGENCY PLAN
SENSITIVE AREAS
SECTION

i. 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. Residents from the local community are often knowledgeable sources for information related to local oceanographic or weather conditions that may be beneficial during a response.

The Alaska Regional Response Team (ARRT) has adopted several documents (see the *Alaska Federal/State Contingency 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 locations) include:

- ARRT 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, Appendix 1)
- 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 (NMFS) 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 cleanup options by shoreline type.

Section G of this Subarea Contingency Plan contains site-specific Geographic Response Strategies (GRSs) for use by responders in protecting key sensitive areas.

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 the subarea contingency plan.

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 fieldwork. 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 online at:
www.asgdc.alaska.gov/maps/cplans/subareas.html.

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

Scientific Support Coordinator
NOAA Emergency Response Division
49000 Army Guard Road
G Wind, Room 216
JBER, Alaska 99505
Phone: 428-4143

Alaska Department of Fish and Game
Division of Habitat
333 Raspberry Road
Anchorage, Alaska 99518
Phone: 267-2342
Fax: 267-2499

ii. 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 Anchorage - 267-2342
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 - 271-5011
U.S. Department of Commerce, National Marine Fisheries Service	Sea lions, seals, whales, endangered marine species and listed anadromous fish in marine waters	Protected Resources Division Juneau - 586-7235
U.S. Department of Commerce, National Marine Fisheries Service	Essential fish habitat	Habitat Conservation Division Juneau - 586-7636
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 - 789-6000
University of Alaska	Rare and endangered plants	Alaska Natural Heritage Program Anchorage - 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 - 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 - 271-5011
Shoreline Types		
U.S. Department of Commerce, National Oceanic & Atmospheric Administration	Shoreline types, environmental sensitivity index maps	Scientific Support Coordinator Anchorage - 428-4160 or 428-4131
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 - 269-8565
Alaska Department of Fish and Game	State game refuges, state critical habitats	Division of Habitat Anchorage - 267-2342
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 - 271-5011
U.S. Department of Defense	Military installations and reservations	Alaska Command Anchorage - 552-3944
Local Governments: –Aleutians East Borough –Aleutians West Coastal Resource Service Area	Municipal and private lands, and rights-of-way Coastal program special areas, plans, policies	For the current local government and tribal contact information, go to *B. Resources Section, Part One Community Profiles*

AGENCY	RESOURCES	POINT OF CONTACT
Commercial Harvest		
Alaska Department of Fish and Game	Fishing permits, seasons	Division of Commercial Fisheries Kodiak - 486-1825
Alaska Department of Natural Resources	Tideland leases	Division of Mining, Land, and Water Anchorage - 269-8565
Alaska Department of Environmental Conservation	Seafood processing	Division of Environmental Health Anchorage - 269-7644
U.S. Department of Commerce National Marine Fisheries Service	Fishing permits, seasons	Protected Resources Division Anchorage - 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	Division of Sport Fish Kodiak - 486-1880
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 - 271-5011
U.S. Department of Commerce	Subsistence use of: whales, porpoises, seals, sea lions	Protected Resources Division Anchorage - 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 - 451-2695
Alaska Department of Fish and Game	Sport hunting and fishing	Division of Wildlife Conservation Kodiak - 486-1880
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 - 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 - 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 - 269-7601
Alaska Department of Fish and Game	Hatcheries, ocean net pens and release sites, aquaculture	Division of Habitat Anchorage - 267-2342
Alaska Department of Natural Resources	Tidelands leases, aquaculture sites, private logging camps and log transfer facilities	Division of Mining, Land, and Water Juneau - 465-3400
U.S. Coast Guard	Marinas and docks, mooring buoys	Sector Anchorage 428-4200

iii. 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 cleanup 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 OSCs for protecting cultural resources is contained in *Unified Plan, Annex M.*

The following criteria were developed as a tool 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 (number potentially killed in relation to abundance)
- Animal displacement and sensitivity to displacement
- Aesthetic degradation
- Habitat availability and rarity
- Sub-lethal 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 re-colonizing potential
- Relative importance to ecosystem
- Potential for physical contact with spill--pathway of oil or hazardous substances
- Resource sensitivity to response countermeasures

B. AREAS OF MAJOR CONCERN

- Threatened or Endangered Species Habitats:
  - Sea Otter Concentration Areas (> 20) and General Distribution
  - Steller Sea Lion Rookeries or Haul-outs
  - Steller's eiders overwintering sites
  - North Pacific Right Whale Critical Habitat
- Geomorphology - Coastal Habitat Types:
  - Marshes
  - Eelgrass Beds
  - Sheltered Tidal Flats
  - Sheltered Rocky Shores
- Geomorphology - Upland Habitat Types:
  - Streams and Lakes
  - Riparian Habitats
- Harbor Seal Haul-out Areas (> 10)
- Northern Fur Seal Rookeries

- Walrus Haul-out/Concentration Areas
- Caribou Calving and Insect Relief Areas
- Seabird Colonies (> 5,000)
- Waterfowl and Shorebird Spring, Fall, or Winter Concentration Areas
- Eagle Nest Sites
- Large Anadromous Fish Streams:
  - > 500 Chinook salmon
  - > 5,000 sockeye salmon
  - > 2,500 coho salmon
  - > 25,000 pink salmon
  - > 15,000 chum salmon
- Subsistence Harvest Areas
- High Commercial Use Areas
- High Recreational Use Areas
- Land Management Designations:
  - Federal:
    - Wilderness
    - Wild and Scenic Rivers
    - National Natural Landmarks
  - State:
    - Refuges (Izembek State Refuge)
    - Sanctuaries
    - Critical Habitat Areas (Port Moller and Port Heiden Critical Habitats)
- Cultural Resources/Archaeological Sites:
  - National Historic Landmarks
  - Burial Sites
  - National Register Eligible Village Sites
  - Intertidal Sites

C. AREAS OF MODERATE CONCERN

- Species of Concern Habitats (Potential Threatened or Endangered)
- Geomorphology - Coastal Habitat Types:
  - Gravel Beaches
  - Mixed Sand and Gravel Beaches
  - Exposed Tidal Flats
  - RIPRAP
  - Coarse Grained Sand Beaches
- Sea Otter General Distribution Areas (<20)
- Foraging/Transit Habitat for Minke Whales, Killer Whales, Dall's Porpoise, and Harbor Porpoise
- Harbor Seal Haul-out Areas (5-10)
- Northern Fur Seal Offshore Concentration Areas
- Seabird Colonies (1, 000 – 5,000)
- Waterfowl and Shorebird Nesting or Molting Concentration Areas
- Bear Concentration Areas
- Anadromous Fish Streams:
  - 100-500 Chinook salmon
  - 1,000-5,000 sockeye salmon

    - 500-2,500 coho salmon
    - 5,000-25,000 pink salmon
    - 5,000-15,000 chum salmon
- Moderately Sized Freshwater Fish Systems
- Clam Beds
- Caribou Migration Routes
- Other Subsistence Harvest Areas
- Other Commercial Harvest Areas
- Other Recreational Use Areas
- Land Management Designations:
    - Federal: National Wildlife Refuges (Izembek and Alaska Maritime)
    - State: State Parks
- Native Allotments
- Cultural Resources/Archaeological Sites:
    - National Register Eligible Sites (Other Than Village Sites)
    - Sites Adjacent To Shorelines

D. AREAS OF LESSER CONCERN

- Geomorphology - Coastal Habitat Types:
    - Fine-Grained Sand Beaches
    - Exposed Wave-Cut Platforms
    - Exposed Rocky Shores
- Harbor Seal Haulouts (< 5)
- Walrus General Distribution Areas
- Seabird Colonies (< 1,000)
- Waterfowl and Shorebird General Distribution Areas
- Anadromous Fish Streams:
    - < 100 Chinook salmon
    - < 1,000 sockeye salmon
    - < 500 coho salmon
    - < 5,000 pink salmon
    - < 5,000 chum salmon
- General Freshwater Fish Habitats
- Land Management Designations:
    - Federal: Public Lands
    - State: General Public Lands
- Other Cultural Resources

E. AREAS OF CONCERN FOR INVASIVE RATS

All islands within the scope of this plan were originally rat-free, but accidental introductions have had major adverse impacts to island wildlife, birds, and humans which can last much longer than the effects of a spill. Shipwrecks and the well-intentioned transport of spill response material can be a primary means of introducing cargo-riding rats to pristine settings which can forever alter islands. Responders should be aware of this possibility and be prepared to take defensive measures to prevent accidental introductions. All of the islands within the Aleutians subarea are rat-free, with the exception of:

- Attu
- Shemya
- Kiska
- Amchitka
- Adak
- Great Sitkin
- Kagalaska
- Atka
- Unalaska
- Sedanka
- Amaknak
- Akutan

F. AREAS OF LOCAL CONCERN

The Aleutians East Borough, has identified several Special Use Areas based on unique, environmentally vulnerable, or commercially important fish and wildlife resources and habitats (see the following maps). Commercial fishing is a key use in many of these areas. These include:

Designation Area	Reason for Designation
Port Moller/Herendeen Bay and Bear River Special Use Area	Five species of salmon are found in this area; sockeye and chum are the most important. Large numbers of herring and other forage fish pass through the area, and this is a major herring spawning area. Red king and Dungeness crab are in the area, and this is an important nursery for halibut and sole. The area contains several seabird colonies. Shorebirds and waterfowl migrate through the area in spring and fall. Harbor seals haul-out in the area, as do walrus on Walrus Island. Sea otters are present. Gray whales migrate through the area.
Nelson Lagoon Special Use Area	Significant numbers of Chinook, coho, chum and sockeye salmon are found here. Dungeness and red king crab are here, and clams are harvested for subsistence use. A large seabird colony is on the Kudobin Island. This is a major staging area for fall shorebird migration, and for waterfowl migration staging and feeding. Harbor seals, sea otters and gray whales are found here.
Izembek Lagoon Special Use Area	This large estuarine system supports one of the largest eelgrass beds in the world. This is a major chum and sockeye salmon area and a rearing area for red king crab. This is a major staging, feeding, molting, nesting and wintering area for shorebirds and waterfowl. The world's population of black brant stage here, as do most of the emperor geese, cackling geese, and female Steller's eider. This is a key haul-out and breeding area for harbor seals. Sea otters frequent the area.
Bechevin Bay Special Use Area	The area contains king crab spawning grounds and sees substantial use by waterfowl and shorebirds for migration staging, feeding molting nesting and wintering. This is a key haul-out and breeding area for harbor seals. Sea otters frequent the area. The area is also important for spring feeding by brown bears.
Unimak Pass Special Use Area	This area sees large numbers of adult salmon pass through as they migrate to streams in Bristol Bay and Western Alaska. Juvenile salmon migrate through the area to the north Pacific. The area is also a major migration route for ducks, geese, seabirds and marine birds. Humpback, fin, and gray whales, as well as northern fur seals use the area in spring and fall.
Pavlof/Canoe Bay Special Use Area	This is a key salmon and herring spawning area. King, tanner, and Dungeness crabs are present, as are shrimp and groundfish. Seabirds nest here and waterfowl also use the area. Brown bears concentrate here.

Designation Area	Reason for Designation
Anadromous Fish Stream Special Use Area	Anadromous fish streams support spawning populations of fish, which are essential for the region's commercial fisheries. Associated lakes and tributaries are also important fish habitat. This area includes all streams identified in the Anadromous Waters Catalog produced by the Alaska Department of Fish and Game an interactive map is available on the Internet at www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=main.interactive.
Unalaska Bay	This is a traditional use area of the Aleuts and contains numerous archaeological and historic sites, including Amaknak Island, which is a National Historic Landmark for World War II military activities. The recent commercial growth in the area during recent years has put pressures on local recreational, subsistence and personal uses of resources in the area.
Chernofski Harbor	This is an important fish and wildlife habitat area, which contains archaeological and historic sites. The area has been studied for possible commercial development.

iv. 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: NMFS, U.S. Fish and Wildlife Service (USFWS), National Park Service, Bureau of Land Management, Alaska Department of Fish and Game (ADF&G), 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. Susceptibility for each group of animals is year round unless otherwise noted in the Seasonal Sensitivity row that is added for the appropriate animal group.

Geomorphology

Category	Low	Medium	High
Coastal Habitat Types	• Fine-Grained Sand • Exposed Wave-cut Platforms • Exposed Rocky Shores	• Gravel Beaches • Mixed Sand & Gravel Beaches • Exposed Tidal Flats • Coarse Grained Sand Beaches	• Marshes • Eelgrass Beds • Sheltered Tidal Flats • Sheltered Rocky Shores
Lake and River Habitat Types	• Exposed Rocky Cliffs & Banks • Bedrock Shores & Ledges, Rocky Shoals • Eroding Scarps/Banks in Unconsolidated Sediment • Exposed Man-Made Structures	• Sand Beaches & Bars • Mixed Sand & Gravel Beaches/Bars • Gravel Beaches/Bars • Gently Sloping Banks • Exposed Flats • Riprap	• Sheltered Scarps in Bedrock • Vegetated Steep Sloping Bluffs • Sheltered Man- Made Structures • Vegetated Low Banks • Sheltered Sand & Muddy Substrates • Marshes

Threatened or Endangered Species

Category	Low	Medium	High
Endangered Species			**Whales:** Fin, Blue, Sei, Humpback, Gray, Sperm, and North Pacific right **Pinnipeds**: Steller sea lion **Birds:** Short-tailed albatross, Eskimo curlew **Plant:** Aleutian shield fern
Threatened Species			**Marine mammals:** Northern sea otter **Birds:** Steller's eider, Spectacled eider
Species of Concern			**Birds**: Kittlitz's murrelet
Protected Species			Bald eagles, Golden eagles, All marine mammals and migratory birds

Steller's Eider Critical Life Periods

Winter Resident	Oct 1 – July 31

Spectacled Eider Critical Life Periods

Winter Resident	Nov 1 – June 30

Sea Otters

Category	Low	Medium	High
Abundance			> 20 and general distribution
Human Harvest	Year round		

Sea Otter Critical Life Periods

Present Nearshore	Year Round
Pupping	May 1 – June 30

Harbor Seals

Category	Low	Medium	High
Abundance	< 5	5 - 10	> 10
Human Harvest		May 1 - June 30	Jan 1 - Apr 30 July 1 - Dec 31

Harbor Seal Critical Life Periods

Pupping	May 15 – June 30
Molting	Aug 1 – Sept 15
On Haul-outs	Year Round

Steller Sea Lions

Category	Low	Medium	High
Abundance (on haul-out)	< 15	15 - 30	> 30
Human Harvest	June 1 - Aug 31	Apr 1 - May 31 Sept 1 - Sept 30	Oct 1 - Mar 31

Stellar Sea Lion Critical Life Periods

Pupping	May 15 – July 31
Molting	Aug 1 – Sept 30
On Rookeries	May 1 – Sept 30
On Haul-outs	Year Round

Northern Fur Seal

Category	Low	Medium	High
Human Harvest	Sept 1 - May 31		June 1 - Aug 31

Northern Fur Seal Critical Life Periods

Pupping	June 15 – July 31
On Rookeries	June 1 – Nov 30

Walrus

Category	Low	Medium	High
Human Harvest	No to little human use		

Walrus Critical Life Periods

Molting	**March-August**
Calving Period	**April-July**
On Haul-outs	**June-October**

Whales and Porpoises ask NMFS—susceptibility useful? Year round most species

Category	Low	Medium	High
Abundance	< 10	10 - 50	> 50
Seasonal Sensitivity	Oct 1-May 1	Aug 1-Sept 30	May 1-July 31
Human Harvest	Year around (salvage)		

Whale and Porpoises Critical Life Periods

Presents Nearshore	Year round
Calving	May 1 – July 31

Brown Bears

Category	Low	Medium	High
Seasonal Sensitivity	Nov 1 - Apr 30	May 1 - June 30 Sept 1 - Oct 31	July 1 - Aug 31
Human Harvest*	Closed except by limited permit only (See Annual ADF&G report for specific harvest information)		

* Open season fall of odd years and spring of even years (i.e., fall '95, spring '96). No known subsistence harvest.

Brown Bear Critical Life Periods

Denning	Jan 1 – March 31
Feeding in Coastal Area	April 15 – June 30
Feeding along Salmon Streams	Aug 1 – Oct 31

Caribou/Reindeer

Category	Low	Medium	High
Abundance[1]	Year round		
Seasonal Sensitivity	Sept 1 - May 15		May 16 - Aug 31
Human Harvest	Apr 1 - July 31 (Caribou)	Feb 1 - Mar 31 Oct 1 - Oct 31(Caribou) Mar 1 - Aug 31 Nov 1 - Dec 31(Reindeer)	Aug 1 - Sept 30 Nov 1 - Jan 31(Caribou) Jan 1 - Feb 28 Sep 1 - Oct 31 (Reindeer)

1 There are three caribou herds (i.e., North Alaska Peninsula Herd, South Alaska Peninsula Herd, and the Adak Herd) that inhabit portions of this region, while reindeer are found on Atka, Unimak and the Pribilof islands. Depending on the herd abundance may vary widely. As a result, specific abundance figures have not been established for use in prioritizing protection sites.

Caribou and Reindeer Critical Life Periods

Calving	May 15 – June 30

Moose

Category	Low	Medium	High
Abundance	Very few, if any, moose are present in GMU 9D and 10, which represent this area. Therefore their abundance and susceptibility would be low.		
Human Harvest	No Open Season. No Subsistence Use.		

Moose Critical Life Periods

Calving	May 1 – June 30

Loons and Grebes

Category	Low	Medium	High
Abundance	< 10	10-100	> 10
Seasonal Sensitivity	May 16 – Aug 14	April 15 – May 15 Aug 15 – Oct 31	Nov 1 – April 14

Loon and Grebe Critical Life Periods

Spring Migration	April 15–May 15
Fall Migration	Aug 15– Oct 31
Winter Concentrations	Jan 1 – April 30 Oct 15 – Dec 31

Waterfowl (Ducks and Geese)

Category	Low	Medium	High
Abundance	Abundance figures are not available		
Seasonal Sensitivity	Nov 1 - Jan 31[5]	Feb 1 - April 14 May 16 - Aug 14	April 15 - May 15 Aug 15 - Oct 31
Species Diversity	1 – 3	4 – 6	> 6
Human Harvest	June 1 - Aug 31	Dec 1 - Dec 31	Jan 1 - May 31 Sept 1 - Nov 30

In Areas of Local Concern, (e.g. Izembeck lagoon) where waterfowl concentrate in the winter, their susceptibility would be high.

Waterfowl Critical Life Periods

Spring Migration	April 15 – May 15
Nesting/Rearing	April 15 –July 15
Fall Migration	Aug 15 – Oct 31
Winter Concentrations	Oct 15 – April 30

Migrating Shorebirds (Sandpipers, Surfbirds, Dunlins, and Plovers)

Category	Low	Medium	High
Abundance	Abundance figures are not available		
Seasonal Sensitivity	Nov 1 - Jan 31 May 16 - Aug 14	Feb 1 - April 14	April 15 - May 15 Aug 15 - Oct 31
++Species Diversity	1	2-4	> 4

Shorebirds Critical Life Periods

Spring Migration	Apr 15 – May 15
Fall Migration	Aug 15 – Oct 31

Colonial Seabirds (Cormorants, Murres, Auklets, Puffins, Kittiwakes, Gulls, and Terns)

Category	Low	Medium	High
Abundance	< 10,000	10,000 – 100,000	> 100,000
Seasonal Sensitivity	Oct 1 - Jan 31	Feb 1 - March 31	April 1 - Sept 30
Species Diversity	1 – 3	4 – 6	> 6
Human Harvest[7]	June 1 - April 19		April 20 - May 31

Some species such as the Common murre become more abundant in winter months. Seabird eggs utilized by Native communities.

Other Seabirds (Pigeon guillemots, Murrelets, and others)

Category	Low	Medium	High
Abundance	< 10	10-20	> 20
Seasonal Sensitivity	Nov 1 - Jan 31	Feb 1 - March 31	April 1 - Oct 31
Species Diversity	1	2-3	>3

Seabirds Critical Life Periods

On Colonies	May 1 – Sept 30
Feeding near Colonies	April 1 - Oct 31

Raptors (Generally Bald Eagles)

Category	Low	Medium	High
Abundance	< 1 nest/10 coastal miles	1 nest/5-10 coastal miles	> 1 nest/ 5 coastal mile

Raptors (Generally Eagles) Critical Life Periods

Nesting/Rearing	April 1 – Aug 31
Present near Coast	Year Round

Salmonids

Category	Low	Medium	High
Abundance	< 100 (Chinook) < 1,500 (Sockeye) < 500 (Coho) < 5,000 (Pinks) < 5,000 (Chum)	100-500 (Chinook) 1,500-5,000 (Sockeye) 500-2,500 (Coho) 5,000-25,000 (Pinks) 5,000-15,000 (Chum)	> 500 (Chinook) > 5,000 (Sockeye) > 2,500 (Coho) > 25,000 (Pinks) > 15,000 (Chum)
Seasonal Sensitivity	Dec 1 – Feb 28	Mar 1 - Apr 30 Oct 1 - Nov 30	May 1 - Sept 30
Human Harvest	Mar 1 – Apr 30	Oct 1 - Feb 28	May 1 - Sept 30

Salmon Critical Life Periods

Adults near Shore	May 15 – Sept 30
Spawning in Streams	July 1 – Dec 31
Spawning Inter tidally	June 15 – Sept 31
Eggs/Young Development	Year Round
Smolt Outmigration	April 15 – July 15
Adults Return	May 1 – Oct 31

Herring

Category	Low	Medium	High
Abundance	Abundance data not available		
Seasonal Sensitivity	Oct 1 – Feb 28	Mar 1 - Mar 31	April 1 - Sept 30
Human Harvest	Aug 1 – Feb 28	Mar 1 - Apr 30	May 1 - July 31

Herring Critical Life Periods

Spawning	April 1 – May 31
Present near Shore	April 1 – Oct 31

Clams and Other Marine Invertebrates (Chitons)

Category	Low	Medium	High
Seasonal Sensitivity		Jan 1 - May 19	May 20 - Dec 31
Human Harvest		May 1 - Aug 31	Sept 1 - Apr 30

Clams and Other Marine Invertebrates Critical Life Periods

Spawning	July 1- Sept 30
Planktonic Larvae	July 1 – Dec 31

Legislatively Designated Land Status

Category	Low	Medium	High
Federal Lands			National Parks Wildlife Refuges Public Lands Wilderness Areas Native Allotments and Town Sites[2]
State Lands	Public Lands[1]		• Izembek State Game Refuge • Port Moller Critical Habitat Area • Port Heiden Critical • Habitat Area

[1] Includes submerged lands out to 3 miles, and historic bays and inlets

[2] Allotments are privately owned, however access should be coordinated through the Department of the Interior, Bureau of Indian Affairs

Cultural Resources/Archeological Sites

Category	Low	Medium	High
Historic properties, 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 Historic Landmarks • National Natural Landmarks • Burial sites • National Register-eligible village sites • Intertidal sites

v. SENSITIVE AREAS: PART FOUR – BIOLOGICAL AND HUMAN USE RESOURCES

A. INTRODUCTION

The Aleutian Islands are a biologically diverse and productive ecosystem valuable for commercial and subsistence fishing as well as for supporting large seabird and marine mammal populations. The Aleutian Islands combined with the Bering Sea and Gulf of Alaska support the world's largest groundfish fisheries. Additional marine species such as salmon, halibut, scallop, king and tanner crab are important for commercial and subsistence fisheries. The Alaska Maritime National Wildlife Refuge, established by the Alaska National Interest Lands Conservation Act of 1980, includes most of the Aleutian Islands within its boundary. More than 10 million seabirds of 26 species breed in the Aleutian Archipelago (USFWS 2000). The Aleutian Islands provide residence or seasonal habitat for a variety of marine mammals including Steller sea lions, northern fur seals, harbor seals, sea otters, and various cetacean species (NPFMC 2007).

Human factors that have shaped the Aleutian Islands marine ecosystem include fishing, hunting of marine mammals and seabirds, shipping, and military activities. Changes in marine mammal populations include the extinction of the Steller's sea cow *(Hydrodamalis gigas),* near extirpation, recovery and recent declines of northern sea otters *(Enhydra lutris)* (Doroff et al. 2003), and substantial declines in the western distinct population segment of Steller sea lions *(Eumetopias jubatus)* (Braham et al. 1980, NMFS 2010). Changes in commercially fished species include the depletion of economically valuable species such as Pacific Ocean perch *(Sebastes alutus)* and red king crab *(Paralithodes camtschaticus)* (Schumacher and Kruse 2005, NPFMC 2007). Unangan (i.e., Aleut) people have inhabited the Aleutian Islands for over 9,000 years (Veltre and Smith 2010). Cultural influences on the Unangan people occurred in the mid-1700s with Russian occupation for fur trade purposes, and later with US military presence, beginning in World War II. Today, thirteen communities in the Aleutian Islands are inhabited, with a total population level of approximately 8,352 individuals. Communities are heavily dependent on commercial and subsistence fishing (Sepez et al. 2005).

There are many national and international protected areas within the Aleutian Islands subarea. These areas have been designated to protect the components of both the marine and terrestrial environment. The background information contained in this section is a mixture of references to readily available documents, knowledgeable contacts, and data not readily available elsewhere. Industry or local government-generated references that have had agency input and review are incorporated by reference.

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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: www.asgdc.alaska.gov/maps/cplans/subareas.html. NOAA has an online ESI Data Viewer to access these maps at www.response.restoration.noaa.gov/maps-and-spatial-data/download-esi-maps-and-gis-data.html.

1. *Benthic Habitats*

Oil vulnerability is lower in benthic (near bottom) 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 ranks, 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 and coral reefs.

2. *Shoreline Habitat*

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 between 5 and 15 degrees, rate of sediment mobility i 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.

ESI Habitat Ranking

ESI	Estuarine (Marine)	Lacustrine (Lake)	Riverine (Large Rivers)
1 A	Exposed rocky shores	Exposed rocky shores	Exposed rocky banks
1 B	Exposed, solid man-made structures	Exposed, solid man-made structures	Exposed, solid man-made structures
1C	Exposed rocky cliffs with boulder talus base	Exposed rocky cliffs with boulder talus base	Exposed rocky cliffs with boulder talus base
2A	Exposed wave-cut platforms in bedrock, mud, or clay	Shelving bedrock shores	Rock shoals; bedrock ledges
2B	Exposed scarps and steep slopes in clay		
3A	Fine to medium-grained sand beaches		
3B	Scarps and steep slopes in sand	Eroding scarps in unconsolidated sediments	Exposed, eroding banks in unconsolidated sediments
3C	Tundra cliffs		
4	Course-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
6A	Gravel beaches	Gravel beaches	Gravel bars and gently sloping

ESI	Estuarine (Marine)	Lacustrine (Lake)	Riverine (Large Rivers)
			banks
6B	Riprap	Riprap	Riprap
7	Exposed tidal flats	Exposed flats	
8A	Sheltered scarps in bedrock, mud, or clay; Sheltered rocky shores (impermeable)*	Sheltered scarps in bedrock, mud, or clay	
8B	Sheltered, solid man-made structures; Sheltered rocky shores (permeable)*	Sheltered, solid man-made structures	Sheltered, solid man-made structures
8C	Sheltered riprap	Sheltered riprap	Sheltered riprap
8D	Sheltered rocky rubble shores		
8E	Peat shorelines		
8F			Vegetated, steeply-sloping bluffs
9A	Sheltered tidal flats	Sheltered sand/mud flats	
9B	Vegetated low banks	Vegetated low banks	Vegetated low banks
9	Hypersaline tidal flats		
10A	Salt- and brackish-water marshes		
10B	Freshwater marshes	Freshwater marshes	Freshwater marshes
10C	Swamps	Swamps	Swamps
10D	Scrub-shrub wetlands; Mangroves	Scrub-shrub wetlands	Scrub-shrub wetlands
10E	Inundated low-lying tundra		

* A category or definition that applies on in Southeast Alaska.
Table from www.response.restoration.noaa.gov/maps-and-spatial-data/shoreline-sensitivity-rankings-list.html.

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 sub-tidal 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 NOAA, NMFS, Alaska Regional Office hosts the Alaska ShoreZone web portal at: www.alaskafisheries.noaa.gov/shorezone/.

3. *Upland Habitat*

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 USFWS, National Wetlands Inventory, in Anchorage. Considerable mapping of wetlands has been completed, some of which are available in a GIS database (see the following figure). Updated map data is being placed on the National Wetlands Inventory Internet web site at: www.fws.gov/wetlands.

C. BIOLOGICAL RESOURCES

1. *Threatened and Endangered Species*

Federally listed threatened and endangered species are protected under the Endangered Species Act of 1973, as amended (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 OSC will need to immediately consult with the USFWS and NMFS (as appropriate) regarding the proposed strategies, in accordance with the Endangered Species Act Memorandum of Understanding (see *Unified Plan, Annex K*). The northern right whale, humpback whale, blue whale and short-tailed albatross are also on the State of Alaska's endangered species list. The following species and critical habitat occur in this subarea:

Protected Species under Endangered Species Act of 1973 in the Aleutian Subarea

Listed Species	Latin Name	Status
Short-tailed albatross	*Diomedea albatrus*	Endangered
Steller's eider	*Polysticta stelleri*	Threatened
Spectacled eider	*Somateria fischeri*	Threatened
Blue whale	*Balaenoptera musculus*	Endangered
Humpback whale	*Megaptera novaeangliae*	Endangered
Fin whale	*Balaenoptera physalus*	Endangered
Sei whale	*Balaena borealis*	Endangered
Sperm whale	*Physeter macrocephalus*	Endangered
North Pacific right whale	*Eubalaena glacialis*	Endangered
Northern sea otter	*Enhydra lutris kenyoni*	Threatened
Steller sea lion (Western population)	*Eumetopius jubatus*	Endangered

Designated Critical Habitat

Species Group	General Reference Area
Whales	North Pacific right whale in Bering Sea waters north of False Pass (see map below)
Birds	Spectacled eider critical habitat has been designated at Nelson and Izembek Lagoons (see map below)
Sea otters	No critical habitat has been designate in the subarea
Sea Lions	20 miles seaward around each major haul-out (see map below)

NOTE: 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 USC 1532). NMFS 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."

The short-tailed albatross, northern sea otters, spectacled eider, Steller's eiders, Eskimo curlew and Aleutian Shield Fern are under the jurisdiction of USFWS. All salmon species are under the jurisdiction of NMFS, Northwest Regional Office in Seattle, Washington. Salmon species are not listed in table above because they are lower-48 populations that are ESA-listed and spend time in Alaska marine waters.

The Alaskan bald and golden eagles, though not on the endangered species list, are fully protected (including their nests and nest trees) under the Bald Eagle Protection Act of 1940 and the Migratory Bird Treaty Act. Spill response activities that could affect these species should be coordinated with the USFWS.

While NMFS has determined the gray whale is no longer a threatened or endangered species, monitoring of the species has continued since the 1994 delisting. All marine mammals, whether or not they are on the endangered species list, are protected by the Marine Mammal Protection Act of 1972.

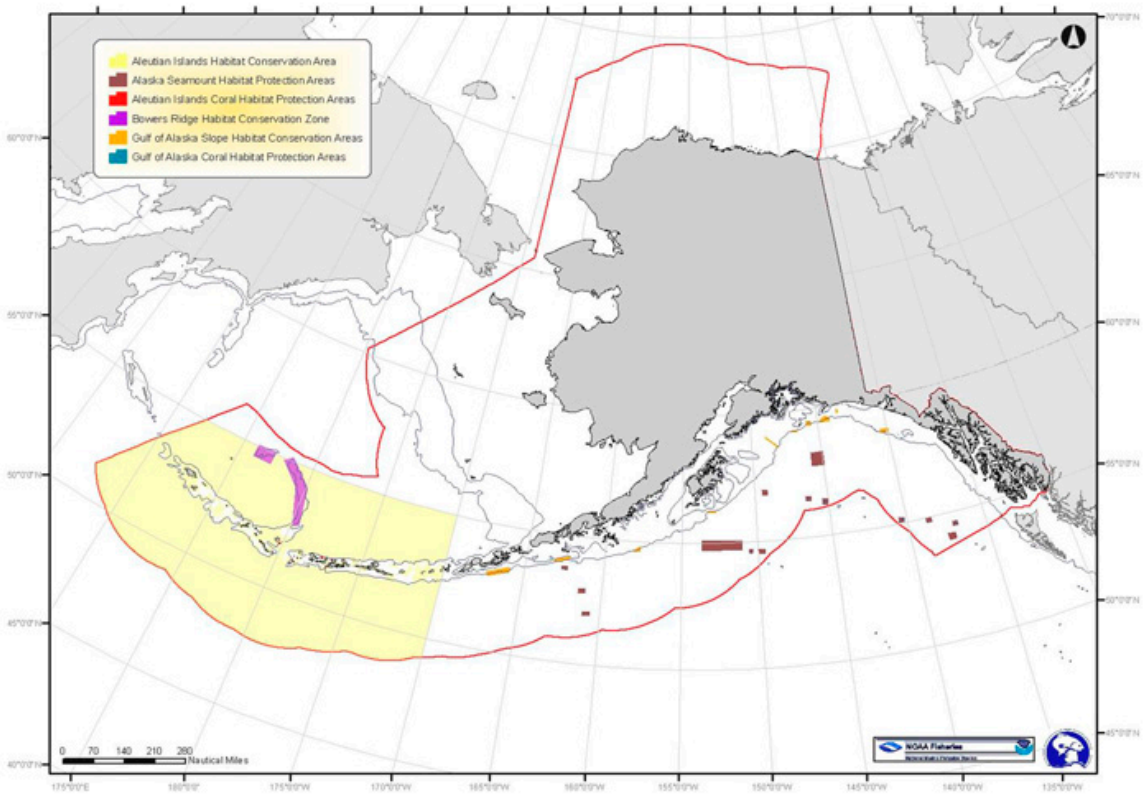
Any spill response activities, which could affect marine mammals, should be coordinated with USFWS and NMFS.

For updated information on the Internet:
USFWS National Threatened and Endangered Species web site: www.fws.gov/endangered/

USFWS Regional Threatened and Endangered Species web site:
www.fws.gov/alaska/fisheries/endangered

ADF&G Threatened and Endangered Species web site:
www.adfg.alaska.gov/index.cfm?adfg=specialstatus.akendangered

The following figure illustrates locations for essential fish habitat areas within the Aleutian Island subarea.



Three species of seabirds found within the Aleutian Islands are listed as either endangered or threatened under the Endangered Species Act (ESA).

These include:

- Short-tailed albatross (*Phoebastria albatrus*) (endangered);
- Spectacled eider (*Somateria fischeri*) (threatened); and
- Steller's eider (*Polysticta stelleri*) (threatened).

The population of short-tailed albatross is estimated to be 1,200 worldwide and they are only known to breed in Japan; however, they forage on the outer shelf across the Aleutian Islands outside of their breeding season (Alaska Fish and Wildlife Service). Numerous spectacled eiders and Steller's eiders moult and over-winter primarily in the eastern Aleutian Islands.

Steller's eider critical habitat Map
Source: http://www.adfg.alaska.gov/index.cfm?adfg=stellerseider.rangemap

Short-tailed Albatross Range in Alaska
Source: http://www.adfg.alaska.gov/index.cfm?adfg=shorttailedalbatross.rangemap

The Steller Sea Lion Protection Areas, Gulf of Alaska – Groundfish, Pollock, and Pacific Cod Closures are Federal Threatened/Endangered Species Protected Area. This area was designated in 1990. Steller sea lion critical habitat includes a 20-nautical-mile buffer around all major haul-outs and rookeries, as well as associated terrestrial, air, and aquatic zones, and three large offshore foraging areas. There are 33 recognized rookery sites for this species across the Aleutian Islands and most of the islands are designated critical habitat for this species (NMFS 2010a).

Steller Sea Lion Critical Habitat Map
Source: www.alaskafisheries.noaa.gov/protectedresources/stellers/maps/criticalhabitat_map.pdf

Interactive mapping of essential fish habitat is provided by the NMFS. To do interactive mapping, go to the following website: http://alaskafisheries.noaa.gov/mapping/esa/

2. *Fish and Wildlife*

(a) Fish

The Aleutians Subarea is rich in biological resources. In addition to supporting a commercial fishing industry, the area is also utilized by subsistence users. Fish species most vulnerable to an oil spill are those with life stages that use intertidal habitat and more than 100 species of fish were identified in recent nearshore habitat surveys. Those species include: anadromous fish, such as salmon, trout, Dolly Varden char, and eulachon; groundfish such as walleye pollock, Pacific cod, rock sole, yellowfin sole, starry flounder, English sole, butter sole, and copper, dusky, brown, black, dark, and quillback rockfish; and forage fish such as Pacific herring, Pacific sandlance, capelin, eulachon, shiner perch, Pacific sandfish, and surf smelt.

Salmon produced in the Aleutians support important commercial fisheries ranging from stock specific nearshore fisheries to mixed stock fisheries offshore. Adult salmon are in freshwater from mid-April through early December, depending on the species of salmon and the stream system. Salmon eggs

incubate in stream gravels over the winter. Juvenile salmon emerge from the gravel in spring and may rear in fresh water for up to four years before migrating to sea.

Pink and chum salmon fry have only a brief period of freshwater residence and enter salt water soon after emergence from the spawning beds. The fry reside in nearshore areas for several weeks before migrating offshore. Pink salmon spend one year at sea and chum salmon spend three or four years at sea before returning to spawn. They feed primarily on zooplankton. Sockeye salmon are most often present in stream systems with lakes that they can access from salt water. Juveniles usually spend one to three years rearing in lakes before migrating to sea in the spring as smolts. Sockeye salmon spend one to four years at sea before returning to their natal stream to spawn. Sockeye salmon feed primarily on zooplankton throughout their life history.

The Chinook salmon is Alaska's state fish and is the largest of all Pacific Salmon, with weights of individual fish commonly exceeding 30 pounds. Adult Chinook salmon enter fresh water from July to September and juveniles spend one year in fresh water before going to sea. Only a few spawning populations of Chinook salmon occur in the Aleutians, but many rear for two to five years in inshore marine waters of the subarea. In fresh water they feed on plankton and insects while at sea they eat relatively large prey such as fish and squid. Unlike other salmon species, they are available to commercial and sport fishers all year which also makes them vulnerable to inshore marine pollutants year round.

Coho salmon occur in nearly all-accessible bodies of fresh water, from large watersheds to small tributaries throughout the Aleutians. Coho salmon enter spawning streams from July to November, usually during periods of high run off. Juvenile coho salmon rear from one to four years in freshwater and may spend summers in estuaries. Coho salmon go to sea between March and June and spend eighteen months at sea before returning to natal streams to spawn. Coho feed primarily on insects in freshwater and on fish in marine areas.

Rainbow trout, Steelhead and Dolly Varden char have both resident and anadromous life history forms. Resident fish complete their entire life cycle in fresh water and anadromous fish return to freshwater spawning and wintering areas from April through December. Resident rainbow trout generally spawn during May and June. The anadromous form (steelhead) spawn from mid-April to June and adults that survive spawning return to the ocean in mid-May to June. Fry emerge several weeks to months later. Dolly Varden char spawn from September to October, fry emerge in April and May. All but the smallest streams provide habitat for resident and rearing Dolly Varden, which feed primarily on insects. After several years in fresh water Dolly Varden may become anadromous. Anadromous fish reside in nearshore marine areas during the summer feeding on small fish and invertebrates, but spend winter in lakes after spawning.

Forage Fish: Fish considered forage species are typically small schooling fish found in open waters. However, juveniles of many forage fish species spend part of their lives in the shallow vegetated nearshore areas and there would be more vulnerable to effects of an oil spill. Forage fish are critically important in the subarea food web as many seabirds, fish, and marine mammals rely on them as prey. These fish feed primarily on plankton and provide the trophic link between primary production (plankton) and the apex predator species (e.g., salmon and groundfish) that commercial fisheries rely on. Some of these species also support important commercial fisheries. *Eulachon* are among the most common forage fish in the Gulf of Alaska and are also anadromous, migrating to streams throughout the

subarea to spawn in April or May. Spawning eulachon provide a spring feast for bears, eagles, killer whales, seals, sea lions, gulls, and humans.

Pacific Herring occur widely across the subarea in water depths from 50 to 100 meters. In Alaska, spawning is first observed in the Aleutians during mid-March. Spawning is confined to shallow, vegetated areas in the intertidal and subtidal zones. Juvenile herring hatch in about two weeks and may rear in nearshore areas for several months before moving offshore. Herring are an important food source for many marine mammals in the Aleutians. Steller sea lions, humpback whales, gray whales, and killer whales are all known to forage on herring. Steller sea lions, and probably harbor seals, aggregate at herring spawning areas to feed. *Capelin* are not as numerous in the Aleutians as other areas of the State, but are important forage for higher trophic predators such as seabirds and marine mammals because of their high oil content. They spawn on sandy to small gravel beaches, but the timing and location of spawning varies considerably from year to year.

Pacific Sand Lance is another forage species in the Aleutians. Sand lance generally spawn from mid-November to mid-December along sandy shorelines.

Other Forage Fish: Other species in nearshore areas that contribute to the forage base include Pacific sandfish and smelt. Adult Pacific sandfish generally occur at depths of 100 to 200 meters over sand or mud bottoms but enter nearshore areas to spawn among algae and may school in bays throughout the subarea. Smelt, including surf smelt and longfin smelt are common but not abundant throughout the subarea and enter nearshore areas to spawn along sandy shorelines at widely varying times and locations. Krill are a very important source of food for marine mammals and birds in the Aleutians, including Endangered Species Act-listed species. Krill are also an important source of food for other forage fish upon which marine mammals and birds rely.

Groundfish are defined for the purpose of management by the State of Alaska as any marine finfish except halibut, osmerids, herring, and salmonids. Several species in this group support important commercial sport and subsistence fisheries in the subarea and juveniles rearing in the Aleutians also contribute to offshore fisheries. Juvenile pollock, greenling, and sculpin make up a significant portion of the diet of species such as salmon and marine mammals.

Pacific Halibut are not considered groundfish because they are managed exclusively by the International Pacific Halibut Commission. For the purpose of this discussion, however, we include Pacific halibut with groundfish. Groundfish species common in the Aleutians include: Pacific halibut, arrowtooth flounder, flathead sole, yellowfin sole, flounder, rock sole, Pacific cod, Pacific tomcod, walleye pollock, copper rockfish, dusky rockfish, quillback rockfish, yelloweye rockfish, sablefish, kelp greenling, rock greenling, whitespotted greenling, lingcod, and sculpin.

Flatfish such as flounder, sole, and halibut live on low gradient bottoms throughout the subarea. Large species such as Pacific halibut and arrowtooth flounder generally inhabit deeper more open water areas while smaller flatfish species are more likely to inhabit shallow bays. Pacific halibut are found throughout the Aleutians and support important commercial, sport, and subsistence fisheries. They spawn in deep water from 180 to 460 meters from November to January. Older halibut spend winters in deep water along the continental shelf. In summer, adult halibut move to shallow coastal waters (depths of 30 to 300 meters) to forage on fish and invertebrates.

Yellowfin sole and starry flounder spawn and rear in shallow subtidal areas of bays and estuaries. Yellowfin sole juveniles stay in the nearshore area for 3 to 5 years. Starry flounder are resident in shallow flats, estuaries, and lagoons throughout their life. These fish feed intertidally on clam siphons, small fish, and invertebrates. Rock sole and flathead sole inhabit deeper areas of bays; often move into nearshore areas to forage.

Pacific cod and walleye pollock are common in the subarea, primarily inhabiting straits, channels, and deep bays in the region. Adults are pelagic and are most abundant in water depths from 100 to 300 meters, but commonly occupy a much larger depth range. Juveniles are also pelagic and generally occupy the upper 60 meters of the water column. They feed primarily on pelagic invertebrates (e.g., euphasids) and small fish. These fish spawn in late winter or early spring and due to their abundance, they are extremely important to the ocean's food web. Rockfish in the subarea are most abundant along the outer Pacific coast, but also inhabit nearshore reefs and high current areas in inside waters. There are about 30 different species of rockfish in the subarea. Rockfish are long-lived, ovoviparous fish, which become sexually mature between 5 and 15 years of age. Copper rockfish commonly inhabit shallow bays and often feed and rear in eelgrass. Quillback, black, dark and dusky rockfish inhabit nearshore areas characterized by kelp beds, but may also be found with yelloweye rockfish on deeper reefs. The juveniles of many rockfish that as adults live in deep offshore waters are found on nearshore reefs. These fish feed on small fish and invertebrates.

Adult sablefish are demersal species that generally inhabit depths greater than 200 meters. Adult sablefish inhabit some of the deeper straits in the subarea. Sablefish spawn at depth in late winter and the pelagic larvae and juveniles migrate in shore over the next few months. Juvenile sablefish rear for 2 to 3 years in nearshore waters, including the bay and channels in the Aleutians. Adults feed opportunistically on live prey or as scavengers, while juveniles feed on pelagic invertebrates and small fish.

Greenlings are generally abundant in the subarea and the common species are generally separated by habitat. As you might expect, Kelp greenling are abundant in kelp and algae beds and rock greenling are most common adjacent to nearshore reefs. Whitespotted greenlings are most common in bays and estuaries. Juvenile greenlings are pelagic and are important as forage in some areas.

Lingcod typically inhabit nearshore rocky reefs and high current areas from 10 to 100 meters in depth. They migrate inshore to spawn in the fall and return to areas farther offshore in winters. Along the Pacific coast juvenile lingcod are common in shallow bays, but they rarely use such areas in inside waters.

Literally dozens of sculpin species are abundant in the Aleutians. Most are benthic, inhabiting bottoms ranging from vertical rock faces to mud bottom bays. Some, such as the crested sculpin, are pelagic. Nearly all feed on invertebrates and small fish. Their abundance makes them important as forage for some commercially harvested species.

Sharks and Skates: Species in the subarea include the spiny dogfish shark, Pacific sleeper shark, salmon shark, Alaska skate, big skate, and longnose skate. Spiny dogfish are common throughout the subarea and are locally abundant in water less than 150 meters deep over soft bottoms near current junctions. Spiny dogfish are opportunistic feeders and will scavenge or eat many kinds of live prey. The Pacific sleeper shark may grow to 10 meters in length and is one of the largest sharks in the world. Generally considered a scavenger, the sleeper is often one of the first animals to show up at sunken whale

carcasses. Salmon sharks are often found near the surface and feed mostly on fish. Skates are common in bays and shallow flats where there is not too much current. Skates feed primarily on clams and other infauna.

Interactive mapping of essential fish habitat is provided by the NMFS. To do interactive mapping, go to the following website: http://alaskafisheries.noaa.gov/mapping/esa/

For further information, contact the NMFS at: www.alaskafisheries.noaa.gov/.

(b) Shellfish

Dungeness Crabs are found from the intertidal region to a depth of 230 meters in the Aleutians. Dungeness crabs are most common on sand or muddy-sand bottoms in the subtidal region, and are often found in or near eelgrass beds. However, they can also be found on a number of other substrata including various mixtures of silt, sand, pebble, cobble, and shell. Juvenile Dungeness crabs are found in similar habitats to adults, but they generally occupy shallower depths than adults. Juvenile crabs can be very abundant in the intertidal zone, but also occur in shallow subtidal areas. Survival of young crabs is greatest in habitats such as intertidal zones and eelgrass beds, where they can gain refuge from predators.

Three species of *King Crab* are currently harvested in the Aleutians: red, blue, and golden. Red king crab larvae generally exhibit a diel movement being most abundant in the upper water column during the day and deeper at night. Young of the year crab occur at a depth of 50 meters or less. They are solitary and need high relief habitat or coarse substrate such as boulders, cobble, shell hash, and living substances such as bryozoans and stalked ascidians. Between the ages of two and four years, there is a change in habitat needs and a tendency for the crab to form pods consisting of thousands of crabs. Podding generally continues until four years of age (about 6.5 centimeters), when the crabs move to deeper water and join adults in the spring migration to shallow water for spawning. Adult red king crabs occur to a depth of 365 meters; preferred habitat for reproduction is water less than 90 meters. Red and blue kings can occur from the intertidal zone to 180 meters or more. Golden king crabs live mostly between 180-730 meters, but can occur from 90-900 meters.

Tanner Crab larvae are strong swimmers and perform diel vertical migrations in the water column (down at night). They usually stay near the depth of the chlorophyll maximum during the days. The length of time larvae take to develop is unknown, although it has been estimated at only 12 to 14 days. After setting to the bottom, Tanner crabs are widely distributed at depths up to 473 meters. Females are known to form high density mating aggregations consisting of hundreds of crab per mound at depths less than 30 meters. The mounds likely form in the same general location each year, but the location of the mounds is largely undocumented. They form the basis of a thriving domestic fishery from Southeastern Alaska north through the Bering Sea. The peak hatching period for Tanner crabs is usually between April and June.

Pacific Weathervane Scallops are found on sand, gravel, and rock bottoms from 45-180 meters. Sexual maturity occurs at age 3 or 4 and scallops are of commercially harvestable size at 6 to 8 years. Scallops are found in beds (areas of abundant numbers). Scallops are dioecious and they spawn in June and July where the spermatozoa and ova are released into the water. Around one month later, hatching occurs and the larvae drift with the tides and currents. After two or three weeks the larvae will have gained shell weight, settled to the bottom, and attached to seaweed. Scallops may live to age 18 and they feed by filtering microscopic plankton from the water. They have been commercially harvested throughout

Alaska on a sporadic basis due to overharvesting of scallop beds, more lucrative fisheries, and market conditions. Bay scallops occur shallower than weathervane scallops (15-60 meters). They are more easily collected by divers and are frequently harvested in the summer. They are more vulnerable to oil exposure than weathervane scallops as adults.

Shrimp: Pandalid shrimp (northern pink shrimp, humpy/flexed shrimp, coonstripe shrimp, spot shrimp and sidestripe/grant red shrimp) are distributed throughout most major bays and certain nearshore and offshore areas in the Aleutians. Coonstripes and spot shrimp are generally associated with rock piles, coral, and debris-covered bottoms, whereas pink, sidestripes, and humpies typically occur over muddy bottom. Pink shrimp occur over the widest depth range (18 -1500 meters). Humpies and coonstripes usually inhabit shallower waters (5-370 meters). Spot shrimp seem to be caught in the greatest concentrations around 110 meters, but range from 3 to 460 meters. Sidestripes are typically found from 45 to 640 meters, but most concentrations occur in waters deeper than 73 meters. Most shrimp migrate seasonally from deep to shallow waters.

Razor Clams are filter feeders subsisting on plankton. They live in surf-swept and somewhat protected sand beaches of the open ocean. They are found from approximately 1 meter above the mean low water level down to depths of 55 meters.

Blue Mussels are found throughout the Aleutians and are found through the intertidal zone up to a depth of five meters densely packed around rock, wood, or other solid structures.

(c) Birds

All migratory birds are protected under the Migratory Bird Treaty Act. Any spill response activities, which could affect migratory birds, should be coordinated with the USFWS. There are 39 Important Bird Areas (IBAs) designated across the Aleutian Islands. An IBA is an area designated as being globally important habitat for the conservation of bird populations developed by BirdLife International. To qualify as an IBA, a site must regularly support significant numbers of species of conservation concern; attract large numbers of breeding, wintering, or migrating birds; or support species characteristic of a unique habitat.

Important Bird Areas in Alaska
Source: www.ak.audubon.org/sites/default/files/documents/alaska_ibas_june2013.pdf

Extensive breeding colonies containing millions of seabirds occur on the Aleutian Islands, the Pribilof Islands, and along portions of the Alaskan Peninsula. A Berengian endemic species, the whiskered auklet, only occurs on the Aleutian Islands within Alaska. Least auklets, red-legged kittiwakes, Aleutian terns and red-faced cormorants live and breed only in the Bering Sea-North Pacific Ocean zone. The overwhelming majority of fork-tailed storm-petrels and horned and tufted puffins breed in Alaska in the northern Pacific islands. Millions of shearwaters do not breed here, but spend the summer feeding in the waters of the Aleutian Island passes. The Aleutian cackling goose, one of the few species to be removed successfully from the Endangered Species List, is endemic to the Aleutian Islands, breeding here in the summer.

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 Norton and Kotzebue Sound are summarized from the catalog. The maps display colony locations. USFWS, Division of Migratory Bird

Management, Marine and Coastal Bird Project, in Anchorage, maintain the Alaska Seabird Colony Catalog www.axiom.seabirds.net/maps/north-pacific-seabirds/. Questions or comments regarding the information contained in the Alaska Seabird Colony Catalog should be directed to USFWS in Anchorage at 786-3444.

In addition, the Aleutians serve as a major spring and fall staging area for migrating waterfowl as well as a permanent residence for some species. Wintering and migrating birds concentrate in protected embayments and rocky, intertidal locations. Major staging areas include Izembek Lagoon, Port Heiden and Nelson Lagoon. The entire population of black brant (150,000 birds on average), Taverner's Canada geese (55,000), and emperor geese (6,000) stage at Izembek Lagoon and neighboring lagoons. Approximately 23,000 threatened Steller's eiders also molt, rest, and feed at Izembek each autumn.

A significant number of bald eagles nest on the many islands found in the Aleutians. Although bald eagles are not on the endangered species list, they are fully protected (including their nests and nest trees) under the Eagle Protection Act of 1940. Spill response activities that could affect bald eagles should be coordinated with USFWS.

Seabird Population-Aleutian Islands
Source: http://axiom.seabirds.net/maps/north-pacific-seabirds/

East Aleutians: http://www.asgdc.state.ak.us/maps/cplans/aleut/aie5seabird.pdf
West Aleutians: http://www.asgdc.state.ak.us/maps/cplans/aleut/aiw5seabird.pdf

(d) Marine Mammals

Steller Sea Lions are listed as endangered in the Aleutian Island region west of 140° and northern sea otters are listed as threatened, harbor seals, spotted seals, killer whales, and porpoises are present throughout the year. Several species of endangered baleen whales migrate through the area in the spring and summer. Northern fur seals seasonally inhabit the Bering Sea and the Gulf of Alaska. Major northern fur seal rookeries and haul-outs occur on the Pribilof Islands and on Bogoslof Island. Rookeries and haul-outs used by sea lions are also located on the Pribilof Islands and throughout the Aleutian Islands and Alaskan Peninsula. Pacific Walrus occur seasonally in the area of the Pribilof Islands and the northern Alaska Peninsula. Haul-outs on the Alaska Peninsula at Cape Seniavin and Port Moller, and on Amak and Walrus Islands, are used by mature bulls during spring and summer. Dense concentrations of marine organisms occur throughout the Aleutian Islands, including all five species of Pacific salmon, numerous groundfish, herring, crab, shrimp, clams, and a variety of intertidal organisms.

Northern Sea Otters are distributed at very low densities around most of the islands in the Aleutian chain and the islands of the lower Alaska Peninsula. Otters generally range from 5 to 16 kilometers offshore and feed in nearshore waters less than 35 meters deep. Breeding occurs year-round, with a peak in September and October. Pupping occurs year-round, with a peak in July.

Harbor Seals are found year round in the Aleutian Islands in nearshore waters all the way out to the shelf break on the outer coast. Harbor seals tend to concentrate in estuaries, protected waters, and tidewater rocks and reefs. Harbor seals enter lakes and rivers on a seasonal basis. Harbor seal haul-outs are used for pupping, molting and resting, and may be used year round. Peak haul-out use occurs during June through early October. Pupping occurs between late May and early July; most pups are born during the first three weeks of June, and the pups nurse for about three weeks. Births of harbor seals are not restricted to a few major sites (as is the case for many other species of pinnipeds), but occur at many

haul-outs. Some areas or particular haul-out sites have disproportionately high numbers of pups, which may be especially vulnerable to the fouling effects of oil spills. The total Alaska harbor seal population is estimated at 150,000.

Fur Seals: There are more than one million northern fur seals in the Pacific Ocean. They range from Japan to Southern California and north throughout the Bering Sea. Fur seals will spend months at a time at sea. During breeding season, 3/4 of the total world population will be found on the Pribilof Islands. The bulls will normally stay for four months, the females for six months. The bulls vigorously protect their territory and can lose 1/4 of their body weight in doing so. A large bull Northern fur seal can weigh 600 pounds and a large female 110 pounds. The Northern fur seal can live for 25 years, but most females live to be 18-20 years old and the males to their low teens. Northern fur seals feed mainly at night and may dive to depths of 600 feet (180 m) in search of small schooling fish and squid and prey are typically eaten underwater. Larger fish are brought to the surface and eaten there. Northern fur seals are famous for the dense fur that that covers all but their flippers. That fur consists of approximately 46,500 hairs per square centimeter. Natural predators of the fur seals include sharks, foxes, killer whales and Steller sea lions.

Humpback Whales are the large whales most frequently observed swimming and feeding close to shore along the coast. 3,000 to 5,000 humpback whales can be found in the Aleutians, with higher numbers occurring between March to September. Although very few humpback whales skip annual winter migration, they are present in the Aleutians until early winter. The late season presence of humpback whales in the Aleutians is due to whales leaving late to migrate to the breeding grounds overlapping with whales returning early to Alaska from the breeding grounds. Winter aggregations of humpback whales in the Aleutians are related to the availability of krill and herring. Humpback whales feed primarily on krill. Fish such as herring, capelin, and sandlance are also important. To a lesser extent, other zooplankton, salmon fry, and juvenile Pollock are part of the diet.

Gray Whales feed predominately on infaunal invertebrates. They appear to feed by lying on their sides and suctioning sediment from the sea floor, which they then filter for invertebrates. The eastern North Pacific population of gray whale has been delisted, but the western North Pacific population is still listed as endangered under the Endangered Species Act.

(e) Terrestrial Mammals

The majority of large terrestrial animals that occur in the Aleutian Islands are found on the Alaska Peninsula as well as on some of the larger islands. Brown bear are found throughout the Alaska Peninsula and on Unimak Island, and in the Pribilof Islands. Caribou occur on the Alaska Peninsula, Unimak Island, and Adak Island. Reindeer occur on Atka, Umnak Island, and in the Pribilof Islands. Moose generally occur on the Alaska Peninsula as far west as Cold Bay, although they have been sighted as far west as Unimak Island.

3. *Vegetation*

Threatened and endangered plants in the subarea are identified below, along with other rare plant species, 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 in the Aleutians Subarea

Global Rank	State Rank	Scientific Name	Common Name	Federal Status
G1	S1	*Polysticum aleuticum*	Aleutian Shield Fern	Endangered
G1	S1	*Saxifraga aleutica*	Aleutian Saxifrage	
G1	S1	*Artemisia aleutica*	Aleutian Wormwood	
G4T1T2Q	S1S2	*Artemisia globularia var lutea*		
G2	S2	*Draba aleutica*	Aleutian Rockcress	
G2G3	S2S3	*Douglasia alaskana*	Alaska Rock Jasmine	
G3	S1	*Claytonia arctica*	Arctic Spring Beauty	
G5T3Q	S3	*Carex lenticularis var dolia*	Goose Grass Sedge	
G3G4	S2	*Eleocharis nitida*	Neat Spike Rush	

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.

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 occurrences)
S5: Demonstrably secure in state.
S#S#: State rank of species uncertain, best described as a range between the two ranks.

*The Aleutian shield-fern is a small, tufted fern, which grows to about 15 centimeters (6 inches) tall and may be confused with more common ferns occurring within its range. It is now known to exist only on Adak Island in the central Aleutian Islands. Three populations totaling approximately 130 "clumps" are located on a single mountain on east-facing slopes having steep cliffs, rock outcrops, and vegetated gullies and ledges. Historically, the Aleutian shield-fern also occurred on Atka Island, but has not been seen there since it was reported in 1932.

Rare Plants Locations in the Aleutian Subarea:
Source: http://www.asgdc.state.ak.us/maps/cplans/aleut/airplants.pdf

D. HUMAN RESOURCE USES

This sub-section includes an overview of the following socioeconomic resources within the subarea:

- Commercial and recreational fisheries;
- Subsistence;
- Historic preservation sites;
- Marine recreation and tourism; and
- Coastal development and coastal infrastructure.

The area includes western portions of the Aleutians East Borough (AEB) and extends through the Aleutian Chain, which is in the Aleutian West Coastal Resource Service Area (AWCRSA).

1. *Fish Hatcheries and Associated Ocean Net Pens*

There are no fish hatcheries or pens operating in the Aleutians Subarea.

2. *Aquaculture Sites*

At this time there are no aquaculture sites in the Aleutian Islands or the Pribilof Islands.

3. *Cultural Heritage and Historic Properties*

The people who settled along the Aleutian archipelago are often referred to as Aleuts. Russian fur traders gave this name to them, but they prefer to call themselves Unangan, or coastal people. It is believed that the Aleuts migrated across the Bering land bridge from Asia between 12,000 and 15,000 years ago.

The Unangan people lived underneath the earth in semi – subterranean houses called ulax and developed specialized skills to enable survival in the harsh climate. They hunted marine mammals from skin covered kayaks, or iqyax. The Unangan subsisted for centuries and thrived as a culture until the Russian fur traders discovered the Aleutian Islands around 1750. At this time, the Aleut population was estimated at 12,000 to 15,000.

The fur traders from Russia occupied the islands and their people in their quest to obtain sea otters and fur seals. The population of Unangan, or Aleut people was greatly reduced after Russian occupation due to disease, war and malnutrition.

The Aleut people also suffered tremendous loss during World War II (WW II) when the U.S. Government relocated most of the Aleutian Island residents to internment camps located in Southeast Alaska. Many Aleuts died in these camps further reducing their population. The U.S. Government eventually passed a Congressional Act in 1988 called the Aleut Restitution Act. The purpose of this act was to pay restitution to the victims of WWII internment.

Currently Aleut people still rely on the sea for their livelihood. Most live a subsistence lifestyle, which includes fishing and hunting. It is believed that today the population of Aleuts is approximately 2,000.

People had, and have, a maritime focused culture in the Aleutian Islands for 10,000 years. During this time every habitable stretch of the coastline was occupied. Sites here can be huge, covering hundreds of acres, or they may be isolated sea caves, dwellings, camps, or burials. The deposits may extend into the littoral zone. Sub-tidal cultural resources of the island chain have never been adequately inventoried but there are several hundred known shipwrecks along the archipelago. More recent historic properties,

from the Russian period through World War II and Cold War are also numerous but barely inventoried. Although Historic Properties do not have to be formally listed on the National Register to merit consideration, the following list is limited to places on the National Register of Historic Places (NPS 2013). There are 15 places on the registry in the proposal area, most located in upland areas:

- Adak Army Base and Adak Naval Operating Station –Roughly bounded by Cape Adagdak, Scabbard Bay, and Shagak Bay, Adak Station;
- Anangula Archeological District – Underwater Restricted location at Nikolski;
- Ananiuliak Island Archeological District—Prehistoric site 8000-8499 BC, 7500-7999 BC
- Cape Field at Fort Glenn (Umnak Island)-Military air facility from 1925-1949
- Dutch Harbor Naval Operating Base and Fort Mears, US Army;
- Attu Battlefield and US Army and Navy Airfields on Attu;
- Japanese Occupation Site, Kiska Island; and
- S.S. NORTHWESTERN Shipwreck Site – Unalaska.
- Atka B-24D Liberator Site on Atka Island
- Chaluka Site, Nikolski—Prehistoric 1500-1999 BC
- Church of Holy Ascension, Unalaska—Architecture/Engineering, Religious Structure
- Holy Resurrection Church, Belofski—Architecture/Engineering, Religious Structure
- St. Alexander Nevsky Chapel, Akutan—Architecture/Engineering, Religious Structure
- St. Nicholas Church, Nikolski—Architecture/Engineering, Religious Structure

The Aleutians 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. OSCs 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 OSC 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. The ADNR State Historic Preservation Office should be contacted at 269-8721 for information on archeological and historic sites.

4. *Subsistence and Personal Use Harvests*

Subsistence-related uses of natural resources play an important role in the economy and culture of many communities in the Aleutians 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 opportunities. In 1990, however, Federal agencies became responsible for assuring a federal subsistence priority on Federal public lands, and in 1999 on Federal reserved waters. The Federal Subsistence Board adopts subsistence regulations that are administered by 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 regulating subsistence uses has increased. Therefore, in the event of a spill, more extensive

coordination will be required in order to address subsistence resources. Regulations regarding subsistence harvest can also be expected to undergo regular modification. Current information on harvest regulations can be obtained from ADF&G www.adfg.alaska.gov/index.cfm?adfg=subsistence.main or the USFWS Office of Subsistence Management (www.Alaska.fws.gov/asm/index.htm).

Subsistence uses in the area are extensive and vary by season, resource, and village. Some information about subsistence uses is community-sensitive. Contacts for potentially affected communities are identified in the *Response Section, Part One*.

Subsistence activities include harvesting, sharing, and consuming vegetative and terrestrial and aquatic animal resources. Nearly all the residents in each of the communities take part in subsistence activities (ADCED 2010; Sepez et al. 2005). The communities in the region depend heavily on subsistence resources such as (ADCED 2010):

- Salmon;
- Non-salmon fish species (e.g., cod, flounder, greenling, halibut, rockfish, sablefish, sculpin, sole, char, and trout);
- Shellfish;
- Marine mammals (e.g., seals);
- Land mammals (e.g., caribou, wild cattle, and reindeer);
- Birds and bird eggs (e.g., geese);
- Marine invertebrates; and
- Vegetation.

Federal subsistence fishery regulations require that a community be classified as rural "in order to harvest subsistence wildlife, fish, and shellfish on Federal lands" (Sepez et al. 2005, pg. 293). Designated subsistence use areas within the proposal area have been well documented (LaRoche and Associates 2005). In addition to the communities highlighted in Table 3-11, the following communities and areas are known subsistence harvest areas of importance in and adjacent to the study area: Port Moller, Nelson Lagoon, Sand Point, Squaw Harbor, Unga, Belkofski, King Cove, Cold Bay, Sanak Island, Pauloff Harbor, and Umiak Island. The extent of the subsistence use areas that have been documented include:

- Port Moller, Herendeen Bay, Bear River, Sandy River, Point Edward to Walrus Island and 3 miles offshore from Cape Kutuzof;
- Nelson Lagoon from Walrus Island to Spasuk River (and 3 miles offshore), including Kudobin Islands;
- Izembek Lagoon and Moffett Lagoon extending 3 miles offshore from the barrier islands;
- Pavlof Bay/Canoe Bay between Bluff Point and Cape Tolstoi;
- Bechevin Bay from the western boundary of Izembek Lagoon to the west of Swanson Lagoon including Cold Bay and offshore areas within a 3-mile limit including north of Bechevin Bay and Morzhovoi Bay;
- Unimak Pass from Seal Cape to Cape Sarichef and extending 3 miles offshore to the western boundary of the AEB and including the northern shore of Unimak Island and southern shore to False Pass and Deer Island;
- Sanak Islands and coastal waters;
- Krenitzin Islands including Hot Springs and Akutan Bays on Akutan Island, Lost Harbor, Surf Bay

on Akun Island;
- Unalaska Island including Wide Bay, Broad Bay, Nateekin Bay, Captains Bay, Iliuliuk Bay, Summer Bay and Hog Island in Unalaska Bay to Cape Wislow and Reese Bay;
- Umnak Island coastal waters including the Pancake and Adugak Islands;
- Samalga, Amutka, and Seguam islands and coastal waters;
- Atka and Amlia islands and coastal waters; and
- Adak Island and coastal waters.

5. *Commercial Fishing*

The U.S. has exclusive fishery management authority over all marine fishery resources in the Exclusive Economic Zone (EEZ), the area extending between 3 and 200 miles offshore as established under the Magnuson-Stevens Act (US Code Title 16, Section 1801 *et seq.*). The fisheries within the Bering Sea–Aleutian Islands (BSAI) ecosystem are managed under a sophisticated multispecies framework that is based on extensive monitoring by both fishers and managers.

The groundfish fishery in Alaska is the largest commercial fishery in the world. In addition to groundfish, other key species harvested include but are not limited to crab, salmon, and halibut. About 80 stocks of groundfish are recognized and managed in the BSAI ecosystem (NPFMC 2006); chief among these are stocks of walleye pollock, Pacific cod, and Atka mackerel. The federal groundfish fisheries extend southward in the Aleutian Islands west of 170ºW to the border of the EEZ. In addition, herring, crab, halibut and salmon are also fished. The ADF&G manages commercial fisheries near to shore, inside the 3-mile zone. Compared to the federal fisheries, the State-managed groundfish fisheries account for a small portion of the total and, in the subarea, consist primarily of Pacific cod and black rockfish.

Commercial fleets operate out of most of the communities within the subarea. Much of the seafood processing labor force comes from outside the region, although individual communities vary as to what portion of labor comes from local sources. The epicenter of commercial fishing in the region is Unalaska/Dutch Harbor, with its large commercial fleet and processors, as well as offshore floating processors (Sepez et al. 2005).

Some of the larger fishing ports in the subarea include Akutan, King Cove, Sand Point and Unalaska. Adak is also a major fish processing community, particularly for Pacific cod. For communities within the AEB, revenue from the groundfish fisheries is distributed throughout borough communities due to the tax structure.

Employment in the Aleutian Islands communities is closely related to the commercial fishery, particularly the groundfish fishery. Communities with sizeable seafood processing operations (Akutan, King Cove, Unalaska and Sand Point) typically have very low official unemployment rates. Seafood processing dominates employment in the manufacturing sector of this region.

Taxes from the fisheries are an important source of income for the region. Local raw fish taxes are collected in Akutan, King Cove, Sand Point, and Unalaska, and all but Unalaska are also subject to a borough raw fish landing tax. Processing is a major component of the economy in the Aleutian Islands. The Fisheries Resource Landing tax is considerably more important in the Aleutian Islands region. Pollock comprises the majority of fish processed in the region (often approximately >90 percent), followed by Pacific cod, and other species such as Atka mackerel, rockfish, sablefish and other groundfish.

The Aleutian Islands region does more inshore processing of groundfish (674,000 metric tons in 2001) than any other region (NMFS 2005). Washington state-based individuals or firms own most of the shore processing facilities in the region; none of the shore processing plants is owned by resident entities (NMFS 2004).

The Bering Sea/Aleutian Islands (BSAI) crab fishery includes king (*Paralithodes* and *lithodes spp*.) and Tanner crab (*Chionoecetes spp*.). These species are most commonly found along the continental shelf and slope to depths of approximately 1,000 m (NMFS 2004). There are four species of king crab that support the BSAI fisheries including red king crab, blue king crab, golden king crab, and scarlet king crab. This application focuses on the following crab species due to their significance as a commercial species within the project area:

- Aleutian Islands red king crab – Red king crabs are taken in areas of all sediment types at depths of 20 to 100 fathoms (120 to 600 feet).
- Aleutian Islands golden king crab – Golden king crabs are taken in areas consisting of rough, uneven bottom and in compacted sand cobble sediments at depths of 100 to 400 fathoms (600 to 2,400 feet). Fishery effort is concentrated at the entrances to passes between the islands, particularly in the eastern district. In the western district, the fishery occurs in steep rocky terrain, near passes between islands, and on moderately sloping mud/sand sediments in basins.
- Aleutian Islands Tanner crab – Tanner crabs are taken in areas of soft sediment types (silt and mud) at depths of 30 to 110 fathoms (180 to 660 feet) (NMFS 2004).

In 2005, the crab fishery was conducted under the newly implemented Crab Rationalization Program, which established a quota share system for allocating the harvest, including for Eastern Aleutian Islands golden king crab, Western Aleutian Islands golden king crab, and Western Aleutian Islands red king crab fisheries (NMFS 2007). The program also includes geographic landing requirements and transfer restrictions linking Processor Quota Shares (PQS) and Individual Processor Quota (IPQ) to specific fishery-dependent coastal communities with a history of participation in these fisheries. There are nine total Eligible Crab Communities, six of which are located within the proposed area or immediately adjacent to it including Adak, Akutan, Unalaska/Dutch Harbor, False Pass, King Cove, and Port Moller. Every community but Adak has a “Right of First Refusal” on proposed sales of PQS for use outside of the community.

Dutch Harbor/Unalaska has been one of the nation’s top fishing ports since 1992 (NMFS 2004). Compared to other ports in the Aleutian Islands, Unalaska provides substantial support services for the Bering Sea fisheries. Unalaska can support all range of services for any vessel class in the pollock, crab, and other groundfish fisheries and, for this reason, the support services are heavily dependent upon the success of the groundfish and crab fisheries.

According to EDAW, Inc. (2005), approximately 80 percent of the King Cove workforce is employed by the commercial fisheries. Several large processors are located in King Cove, with Peter Pan Seafoods being the only shore-based processor. Although King Cove once depended heavily on salmon, the community now processes groundfish, halibut, and crab from the Gulf of Alaska and BSAI. In addition, the community is home to several large crab vessels.

Akutan is a CDQ community, also heavily dependent on the commercial fisheries, that benefits from the allocation of BSAI groundfish and crab to the CDQ program. The largest shore-based processing plant in North America, operated by Trident Seafoods, is located in Akutan. The facility is self-sufficient (e.g.,

generates its own power) and can house as many as 825 Trident employees (Trident 2010). A floating processor is also based in Akutan. Fishing vessels delivering to Akutan focus primarily on pollock, crab, and Pacific cod.

Atka is considered the westernmost fishing community in the Aleutian Islands chain (Sepez et al. 2005). Atka Pride Seafoods, a small on-shore processing plant, services the local fleet. In 2008, Atka Pride Seafoods owned and operated by APICDA, accomplished 100 percent hire of local residents for the processing plant (Global Food Collaborative 2010). Despite its limited support services, a number of offshore fish processors carry out crew changes through Atka (Sepez et al. 2005).

False Pass is heavily dependent on commercial fishing as part of the local economy. In 2008, APICDA opened Bering Pacific Seafoods and produced headed and gutted fillets. As part of the CDQ program, the plant aims to benefit the region (Global Food Collaborative 2010).

All fishing seasons are subject, however, to emergency openings and closures and most seasons are only open for a portion of the time specified in the regulations. Fishing regulations and seasons can change from year to year. Information on which species are currently being harvested may be obtained from the ADF&G, Division of Commercial Fisheries in Kodiak.

During the Selendang Ayu oil spill incident, the Alaska Department of Environmental Conservation (ADEC) commissioned a study to describe the major commercial fisheries that could be impacted by the spill. The complete report can be found at the following link: www/dec.alaska.gov/spar/perp/response/sum_fy05/041207201/fish/041207201_fisheries_rpt.pdf

Maps of key commercial fishing areas are available in ADF&G publications: *Alaska Habitat Management Guide Reference Maps, Southwestern Region, Vols. 1 and 2* and *Alaska Habitat Management Guide, Southwestern Region Map Atlas.* As fishing periods are adjusted yearly by emergency openings and closures, contact ADF&G for current fishing periods. Updated information may be found at their Commercial Fisheries web site: www.adfg.alaska.gov/index.cfm?adfg=fishingCommercial.main

The following groups may be contacted for information on location and timing of fishing and local current conditions. Although the primary function of these organizations is not to provide such information, the individual members will be quite knowledgeable about conditions and are often willing to share information.

Organization	Address	Phone Number
Alaska Crab Coalition	3901 Leary Way NW #6, Seattle, WA 98107	(206) 547-7560
Bering Sea Fisherman's Association	725 Christiansen Drive, Anchorage, AK 99501	279-6519
Alaska Draggers Association	P.O. Box 991, Kodiak, AK 99615	
Deep Sea Fisherman's Union/Pacific	5215 Ballard Ave NW, Seattle, WA 98107	(206) 783-2922
Alaska Marketing Association	Building C-3 Room 232 Fisherman's Terminal, Seattle, WA 98119	
Fishing Vessel Owner's Association	West Wall Bldg Room 232 Fisherman's Terminal, Seattle, WA 98119	(206) 285-3383
American Factory Trawler Assn.	4039 21st Ave West Suite 400, Seattle WA 98199	(206) 285-3739
Peninsula Marketing Association	P.O. Box 248, Sand Point, AK 99661	383-3600
American High Seas Fisheries Assn.	3040 W Commodore Way, Seattle, WA 98199	
United Fishermen of Alaska	211 Fourth Street Suite 112, Juneau, AK 99801	
United Fishermen's Marketing Assn.	P.O. Box 1035, Kodiak, AK 99615	

6. *Sport Fishing and Hunting*

Sport fishing is not as extensive in the Aleutians Subarea region as it is in the Alaska Peninsula and other parts of Alaska. Coho and sockeye are the two salmon species most frequently targeted in Dutch Harbor/Unalaska's freshwater and saltwater sport fisheries (ADF&G 2010f). In 2005, there were at least four charter boat companies operating out of Dutch Harbor/Unalaska and three registered freshwater and six saltwater fishing guides. In 2000, there were 833 sport-fishing permits obtained for Unalaska (Sepez et al. 2005).

The small charter boat fleet in Dutch Harbor/Unalaska provides non-local anglers access to the area's best known sport fishery targeting halibut that travel in or through waters in the northwestern portion of the project area. In July and August, halibut is often taken in both the Bering Sea and Gulf of Alaska. Black and dusty rockfish are popular game species found in the Aleutians and are typically caught nearshore (ADF&G 2010f). In 2000, 42 sport-fishing permits were issued for Sand Point. As of 2000, there were five sport-fishing guides operating out of Sand Point, four of which focused on freshwater activities (Sepez et al. 2005).

References:

- ADF&G (2010f). Alaska Peninsula Sport Fisheries. Available at: www.sf.adfg.state.ak.us/Management/Areas.cfm/FA/kodiakAKPenn.dutch .
- Sepez, J.A, B.D. Tilt, C.L. Package, H.M. Lazus, and I. Vaccaro (2005). Community Profiles for North Pacific Fisheries - Alaska. U.S. Department of Commerce, National Oceanic Atmospheric Administration Technical Memorandum NMFS-AFSC-160, 552 pp.
- Contact the ADF&G for current seasons within the area of the subarea. Updated information may be found at their Sport Fish web site: www.adfg.alaska.gov/index.cfm?adfg=fishingSport.main

This Subarea includes State Game Management Units 9D and 10.

7. *Marine Recreational and Tourism*

The Shumagin Islands and Dutch Harbor/Unalaska are the two main areas of importance to tourism in the Aleutians. Typically, these areas are rich in biodiversity, are relatively accessible and pristine. Caribou hunting, birding, beach combing, fishing, skiing and kayaking are popular tourist activities in the more established and accessible tourist areas. The tourism industry as a whole is largely dependent on the marine environment. Sport fishing, marine and terrestrial sightseeing, and boating are recreation and tourism activities that residents and visitors enjoy in the subarea. Recreation and tourism is extremely limited in the communities in the subarea, primarily because they do not have the facilities or resources to support such an industry.

Smaller communities like Adak have tourism activities on a much smaller scale such as visitors for sightseeing on cruise vessels or the Alaska Marine Highway System Ferry. The ferry and small tour boats also stop in Akutan, Sand Point, Cold Bay, and King Cove and to a limited extent, False Pass.
The subarea includes three national wildlife refuges:

- Alaska Maritime National Wildlife Refuge, which includes the Aleutian Islands from approximately Unimak Island to Attu;
- Alaska Peninsula National Wildlife Refuge, which extends from False Pass along the southern

portion of the peninsula to just east of Ugashik; and
- Izembek National Wildlife Refuge, which includes Umiak Wilderness Area and encompasses the area around the Izembek Lagoon from Morzhovoi Bay to areas north of Cold Bay on the Alaska Peninsula.

Although these large expanses of public lands are surrounding communities like False Pass and others, they do not add much to the local economies and accessibility is limited. Access to public and tribal lands is by cruise, tour, ferry, or chartered vessels and air and boat taxis. (See also Part 4.A Land Management Designations)

Public Anchorages and Moorings include:

- Akutan Harbor, Akutan Island
- Dutch Harbor, Unalaska Island
- Nazan Bay, Atka Island
- Kuluk Bay, Adak Island
- Constantine Harbor, Amchitka Island-Dock area closed to general public
- Kiska Harbor, Kiska Island
- Massacre Bay, Attu Island

For recreational information, contact:
Izembek National Wildlife Refuge, Cold Bay, Alaska 532-2445

The following organizations can be contacted with requests for specific information on location and timing of recreation and tourism activities. Although the primary function of these organizations is not to provide such information, the individual members will be quite knowledgeable about environmental conditions and will often be willing to share information.

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

References:

- Sepez, J.A, B.D. Tilt, C.L. Package, H.M. Lazus, and I. Vaccaro (2005). Community Profiles for North Pacific Fisheries - Alaska. U.S. Department of Commerce, National Oceanic Atmospheric Administration Technical Memorandum NMFS-AFSC-160, 552 pp.

8. *Marinas and Ports*
(See *Resources Section*)

9. *Fish Processing*
The companies listed below are canneries and major processors with permits issued by the State of Alaska.

Company	Location	Phone
Alyeska Seafoods, Inc.	Unalaska	581-1211

San Souci Seafoods	Dutch Harbor	581-1533
Garden Cove Seafoods, Inc.	Saint George	(206) 851-2700
Trident Seafoods Corp.	Sand Point	383-4848
Queen Fisheries Inc.	Dutch Harbor	581-1225
Trident Seafoods Corp.	Akutan	698-2211
Trident Seafoods Corp.	Saint Paul	546-2377
Westward Seafoods, Inc.	Dutch Harbor	581-1660
Unisea, Inc.	Dutch Harbor	581-1258
East Point Seafood Co.	Dutch Harbor	(206) 284-7571
Icicle Seafoods, Inc.	Dutch Harbor	(206) 282-0988
Peter Pan Seafoods, Inc.	King Cove	(206) 728-6000
Seatech Corp.	Akutan	(206) 782-6007
Snopac Products, Inc.	Saint George	(206) 764-9230
Unisea, Inc.	Saint Paul	546-2530
Icicle Seafoods, Inc.	Saint Paul	546-2405

10. *Logging Facilities*

There are no logging facilities in the Aleutians Subarea.

11. *Water Intake/Use*

The following list of public water intake/use permits was generated from a database maintained by ADEC.

Name of Facility	Location	State ID Number	Source
Adak Utilities	Adak	260595	Surface
Atka	Atka	260058	Surface
City of Akutan	Akutan	260252	Surface
City of Cold Bay	Cold Bay	260414	Ground
City of King Cove	King Cove	260244	Surface
False Pass Treatment Plant	False Pass	262199	Surface
Izembek Nat. Wildlife Refuge	Aleutian East	262076	Ground
Nelson Lagoon Water System	Nelson Lagoon	260804	Surface
Nikolski Village	Nikolski	260278	Ground
Offshore Systems	Unalaska	262505	Surface
Peter Pan Housing	False Pass	260317	Surface
Peter Pan Seafood	Port Moller	261216	Surface
Reeve Sand Point Terminal	Sand Point	263013	Ground
Saint George Water System	Saint George	260074	Ground
Saint George Island Hospital	Saint George	260707	Ground
Saint Paul Water System	Saint Paul	260286	Ground
Sand Point Water System	Sand Point	260294	Ground
Trident Seafood Corp.	Akutan	261193	Surface
Trident Seafood Inc.	Sand Point	262351	Surface
USAF Eareckson AFS	Shemya Island	260511	Ground
Unalaska Water System	Unalaska	260309	Surface
USAF Cold Bay	Cold Bay	260498	Ground
USCG Loran Station Attu	Attu Island	260943	Ground
USCG Saint Paul Loran	Saint Paul	261436	Ground
USN Lake Andy Rec Area	Adak	262050	Surface
USN Mitchell Creek	Adak	260943	Surface

Name of Facility	Location	State ID Number	Source
USN NAD Moffet Hill	Adak	262092	
USN Zeto Point	Aleutian West	260951	
Zapadine Bay Water System	Aleutian West	261428	

vi. 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*

Port Moller State Critical Habitat Area was established in 1972 to protect habitat crucial to perpetuation of fish and wildlife, especially waterfowl. The area includes uplands, tidelands and submerged lands.

Izembek State Game Refuge was established in 1960 to protect natural habitat and game populations, especially waterfowl. The area includes tide and submerged lands.

Port Heiden Critical Habitat Area was established in 1972 to protect natural habitat crucial to the perpetuation of fish and wildlife, especially waterfowl.

3. *Federal*

Izembek National Wildlife Refuge Covering 320,893 acres, the Refuge faces the Bering Sea on the tip of the Alaska Peninsula. Most of the refuge (300,000 acres) was designated as Wilderness in 1980 under the Alaska National Interest Lands Conservation Act. The landscape features volcanoes, glaciers, valleys, tundra and lagoons. Izembek Lagoon features one of the largest eelgrass beds in the world. The Lagoon provides a feeding area for migratory birds, particularly during fall migration, including the world's population of Pacific black brant (150,000 birds on average), Taverner's Canada geese (55,000), and emperor geese (6,000). Approximately 23,000 threatened Steller's eiders also molt, rest, and feed at Izembek each autumn. Most waterfowl arrive in August/September. A second wave of mostly sea ducks arrives in November to overwinter. Thousands of shorebirds, as well as brown bear, caribou, ptarmigan, and furbearers inhabit the Refuge. Waterfowl and other sport hunting are primary visitor activities.

Alaska Maritime National Wildlife Refuge The majority of this vast Refuge occurs within the Aleutians Subarea. The entire Refuge covers over 4.5 million acres and 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. Of this, the Island groups within the Subarea include the Aleutian (Attu to Unimak), Pribilof, and Shumagin islands. About 75 percent of Alaska's marine birds (15 to 30 million individuals from 55 species) use the Refuge. In addition, it is also home to thousands of sea lions, seals, walrus, and sea otters. Wildlife viewing, photography and backpacking are primary uses of the Refuge.

Alaska Peninsula National Wildlife Refuge: The Refuge, established in 1980, lies on the Pacific side of the Alaska Peninsula and covers about 3,500,000 acres. The Pavlof Unit, which abuts the Izembek NWR, and the North Creek Unit, in the Port Moller area, of the Alaska Peninsula Refuge are within the Aleutian Islands Subarea. The landscape includes active volcanoes along the Aleutian Range, lakes, rivers, tundra, and rugged coastline. Moose, caribou, wolves, brown bears, and wolverines reside on the Refuge. Sea lions, seals, sea otters (about 30,000), and whales live in the marine environment. The cliffs, bays and

poorly-drained lowlands provide abundant habitat for millions of birds, particularly seabirds, waterfowl, and shorebirds that use the refuge primarily as a staging area during migration to and from nesting grounds in the Arctic. Seabirds also use the Refuge for breeding. All five species of Pacific salmon (Chinook, coho, sockeye, pink and chum) spawn in the streams and lakes on the Refuge. Brown bears forage heavily in coastal marshes and along shorelines and are particularly susceptible in the spring. Big game hunting and sport fishing are popular uses.

B. LAND MANAGEMENT MAPS

The ADNR maintains the following website for researching land records in Alaska: www.landrecords.info

The ADNR, under agreement with the ADEC, produced digital base and land management maps for each of the subareas using their ARC-INFO based GIS. 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: www.asgdc.alaska.gov/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: www.sdms.ak.blm.gov/isdms/imf.jsp?site=sdms and click on the Generalized Land Status layer.

vii. SENSITIVE AREAS ATTACHMENT 1: WILDLIFE PROTECTION GUIDELINES – PRIBILOF ISLANDS

For the Pribilof Islands Wildlife Protection Guidelines, please visit the following website: www.dec.alaska.gov/spar/perp/plans/scp_al.htm

BRISTOL BAY SUBAREA CONTINGENCY PLAN
SENSITIVE AREAS
SECTION

i. 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. This information within 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 fieldwork. 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 necessary to adequately complete the Sensitive Areas Section was compiled. Identifying relative priorities among resources and resource uses takes considerable coordination and discussion among resource management agencies.

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
U.S. 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
Division of Habitat
333 Raspberry Road
Anchorage, Alaska 99518-1599
267-2541
FAX: 267-2499
email: Bradley.dunker@alaska.gov

ii. 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		
U.S. Department of Commerce, National Oceanic & Atmospheric Administration	shoreline types, environmental sensitivity index maps	Scientific Support Coordinator Anchorage 907-271-3593

Agency	Resources	Point of Contact
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: – Bristol Bay Borough – Lake and Peninsula Borough – Bristol Bay Coastal Resource Service Area	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
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

Agency	Resources	Point of Contact
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
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

iii. 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*.

The following criteria were developed as a tool 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 and long-term affects to habitat, species, or both
- threatened and endangered species, and/or other legal designation
- persistent concentration of oil
- 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

- Threatened or Endangered Species:
  - Western Steller Sea Lion Rookeries, Haulouts and Critical habitat
  - Steller's Eider Critical Habitat
  - Sea Otter Critical Habitat
- Geomorphology - Coastal Habitat Types:
  - Marshes
  - Eelgrass Beds
  - Sheltered Tidal Flats
  - Sheltered Rocky Shores
- Geomorphology - Upland Habitat Types:
  - Streams and Lakes
  - Riparian Habitats
- Sea Otter Concentration Areas (>20)
- Harbor Seal/Spotted Seal Haulout Areas (>10)

- Walrus Haulout/Concentration Areas
- Beluga Whale Concentration Areas
- Caribou Calving and Insect Relief Areas
- Large Seabird Colonies (>5,000)
- Waterfowl and Shorebird Spring, Fall, or Winter Concentration Areas
- Eagle Nest Sites
- Anadromous Fish Streams:
  - North Side of Alaska Peninsula, >1,000,000 Sockeye Spawners
  - South Side of Alaska Peninsula, >5,000 Sockeye Spawners
  - >25,000 Pink Spawners
  - >15,000 Chum Spawners
  - >2,500 Coho Spawners
  - >500 Chinook Spawners
- Large Freshwater Fish Systems
- Herring Spawning Areas
- Land Management Designations:
  - Federal Lands:
    - Designated Wilderness Areas
    - Wild and Scenic Rivers
  - State Lands:
    - Refuges
    - Sanctuaries
    - Critical Habitat Areas
- 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

- Geomorphology - Coastal Habitat Types:
  - Gravel Beaches
  - Mixed Sand and Gravel Beaches
  - Exposed Tidal Flats
  - Coarse-Grained Sand Beaches
- Sea Otter General Distribution (<20)
- Harbor/Spotted Seal Haulout Areas (< 10)
- Steller Sea Lion General Distribution
- Seabird Colonies (1,000-5,000)
- Waterfowl and Shorebird Nesting and/or Molting Concentration Areas
- Anadromous Fish Streams:
  - North Side of Alaska Peninsula, 100,000 - 1,000,000 Sockeye Spawners
  - South Side of Alaska Peninsula, 500-5,000 Sockeye Spawners
  - 5,000 - 25,000 Pink Spawners

    - 5,000 - 15,000 Chum Spawners
    - 500 - 2,500 Coho Spawners
    - 100 - 500 Chinook Spawners
- Moderately Sized Freshwater Fish Systems
- Bear Spring Concentration Areas
- Caribou Migration Routes
- Commercial Harvest Areas
- Recreational Use Areas
- Land Management Designations:
    - Federal Lands:
        - National Parks
        - National Wildlife Refuges
    - State Lands: State Parks
- Cultural Resources/Archaeological Sites:
    - National Register Eligible Sites (Other Than Village Sites)
    - Sites Adjacent To Shorelines

D. AREAS OF LESSER CONCERN

- Geomorphology - Coastal Habitat Types:
    - Fine-Grained Sand Beaches
    - Exposed Wave-Cut Platforms
    - Exposed Rocky Shores
- Walrus General Distribution
- Northern Fur Seal General Distribution
- Seabird Colonies (<1,000)
- Waterfowl and Shorebird General Distribution
- Bear Fall Concentration Areas
- Anadromous Fish Streams:
    - North Side of Alaska Peninsula, # 100,000 Sockeye Spawners
    - South Side of Alaska Peninsula, <500 Sockeye Spawners
    - <5,000 Pink Spawners
    - <5,000 Chum Spawners
    - <500 Coho Spawners
    - <100 Chinook Spawners
- General Freshwater Fish Habitat
- Land Management Designations:
    - Federal Lands:
        - Public Lands
        - National Preserves
    - State Lands:
        - General Public Lands
- Cultural Resources:
    - Cultural Resources that do not meet National Register Criteria

E. AREAS OF LOCAL CONCERN

The Bristol Bay Borough Coastal Management Plan identified several Special Use Areas based on unique, environmentally vulnerable, or commercially important fish and wildlife resources and habitat.

Commercial fishing is a key use in many of these areas. The Lake and Peninsula Borough Coastal Management Plan and the Bristol Bay Coastal Resource Service Area both designated the Nushagak and Mulchatna Rivers Area Meriting Special Attention.

1. ***Area Meriting Special Attention A: Industrial Area***

This is an industrial area adjacent to an important salmon migration and rearing area. Potential hazards include landslides, storm surges, erosion, and accidental petroleum spills. The area in and around the newly constructed public dock is included along with the Naknek River coastline and uplands. The area includes both private and public ownership and has mixed residential use surrounding the proposed marine industrial park. The Bristol Bay Borough owns the public dock and has planning and zoning responsibility for the area.

2. ***Area Meriting Special Attention B: Paul's Creek/King Salmon Creek Area***

This area is of high natural productivity and of essential habitat for wildlife, especially salmon, trout, bear, and moose. The area includes the upland and floodplain around Paul's Creek and King Salmon Creek. It extends from approximately 1 mile west of Paul's Creek and 1 mile east of King Salmon Creek, and from the Naknek River, 4 miles north to the rolling uplands. The area includes the intersection of the Naknek-King Salmon Highway and two of the Borough's most important salmon spawning creeks.

3. ***Area Meriting Special Attention C: Big Creek and rapids section of the Naknek River***

This area includes the Big Creek and rapids section of the Naknek River. The reason for the designation is the high spawning concentration of king, coho, pink, and chum salmon and rainbow trout in an area that is privately owned and being leased for residential development. The area is an area of high natural productivity and of essential habitat for wildlife. In addition to containing prime salmon spawning reaches, the lower reaches of Big Creek serve as a staging area for a large population of swans. It extends from King Salmon along the Naknek River to the federally owned land of Katmai National Park. It includes the upland on both sides of the river as well as the first three miles of Big Creek.

4. ***Nushagak and Mulchatna Rivers Area Meriting Special Attention***

In 1990, a cooperative recreation management plan was developed with the Alaska Departments of Fish and Game and Natural Resources. Public use areas (25) and guidelines for primitive, semi-primitive, and semi-developed uses were developed for the 200-mile corridor, which stretches from the headwaters of the Mulchatna River to Dillingham.

An August 2000 Federal/State joint survey of Native tribes in the subarea 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, are:

- Clarks Point Village Council

City well	Main water source
Hurleys well	Water for homes without running water
City tank farms	Drainage to wetlands
Trident tank farms	Drainage to wetlands and waterfront beach
Nushagak River	Subsistence and commercial fisheries

- Egegik Village Tribal Council

City dock	Oil transfer point
Oil tank farm	Heating oil storage
Egegik Light & Power Co.	Power provider
Alaska General Seafoods	Seafood company support plant
Woodbine Alaska Fish Co.	Seafood processing & support camp

- Naknek Native Village Council

Naknek River	Subsistence fishing
Naknek Lake	Subsistence fishing
Kvichak River	Subsistence fishing

- New Koliganek Village Council

Wells at both ends of Village	Water source
Homes where people live	Homes
River	Water & wildlife source
Land surrounding Village	Subsistence uses

- Newhalen

Newhalen River	Sockeye Spawning area/traffic
Lake Iliamna	Largest lake in area and every tributary
City water well	Drinking water source
Newhalen school	School ground

- Nondalton

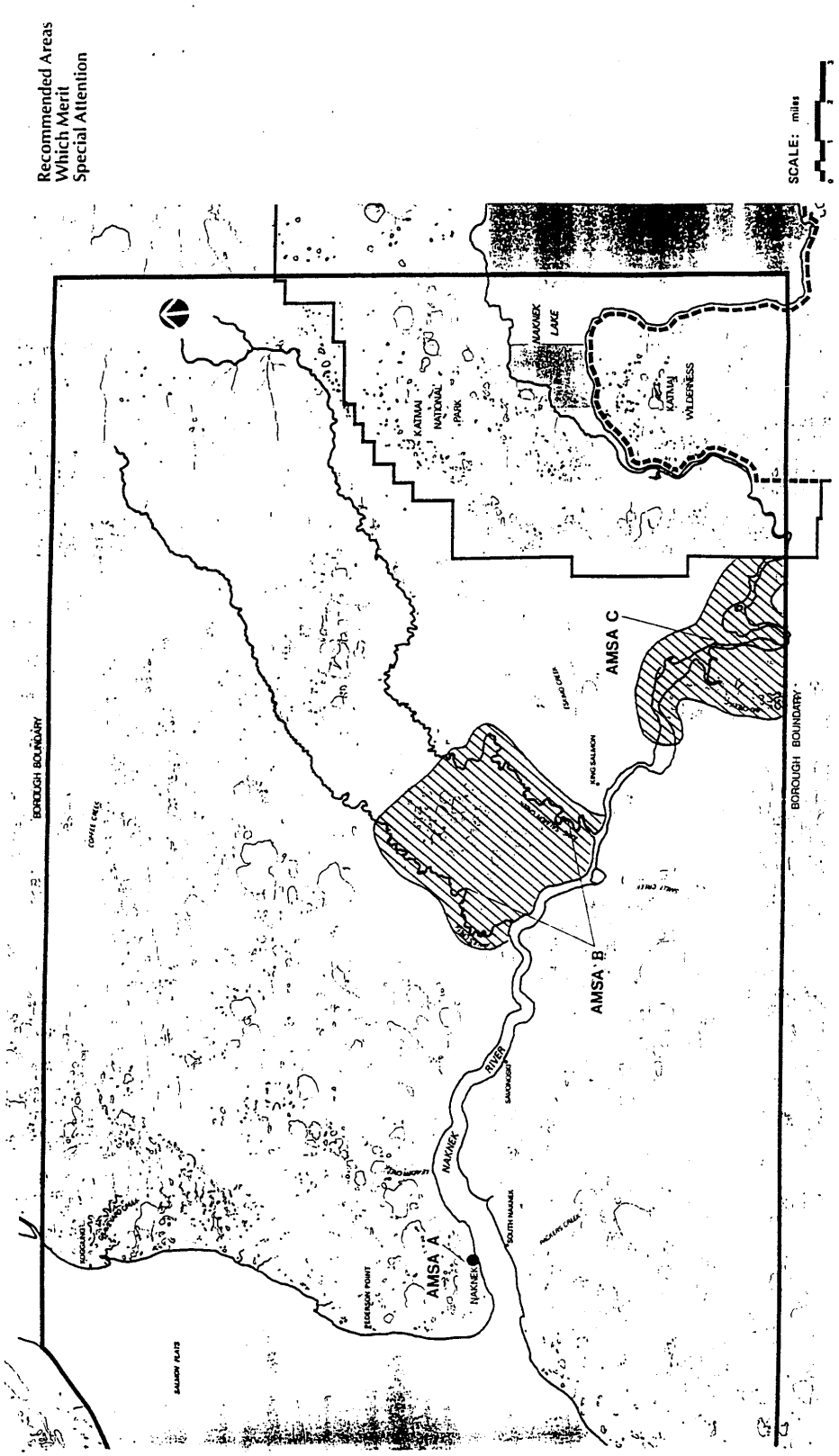
Sixmile Lake	Important spawning area for salmon-commercial/subsistence

- Native Council of Port Heiden

Port Heiden Bay	Access to all rivers
Stroggunoff Point	Access to mudflats
Meshik river	King and silver salmon
North River	Silver and pink salmon
Chumonbuk River	Food resource for Village

- Traditional Council of Togiak

Togiak school	Largest building for children
AVEC plant	Provides electricity
W&S pump house	Provides water
Clinic	Health facility



Church **Place for church gatherings**

iv. 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	Fine-grained sand Beaches Exposed wave-cut Platforms Exposed rocky shores	Gravel beaches Mixed sand & gravel beaches Exposed tidal flats Coarse grained sand beaches Riprap structures	Marshes Eelgrass beds Sheltered tidal flats Sheltered rocky flats
Lake And River Habitat Types	Exposed rocky cliffs & Banks Bedrock shores & Ledges, rocky shoals Eroding scarps/bank in unconsolidated sediment Exposed man-made Structures	Sand beaches & bars Mixed sand & gravel beaches/bars Gravel beaches/bars Gently sloping banks Exposed flats Riprap	Sheltered scarps in bedrock Vegetated steep sloping bluffs Sheltered man-made structures Vegetated low banks Sheltered sand & mud & muddy substrates Marshes
Upland Habitat Types	Alpine tundra Mesic/dry tussock Tundra	Low shrub vegetation Dwarf shrub mat and cushion tundra	Riparian willow

Whales and Porpoises

Category	Low	Medium	High
Abundance	<10	10 - 50	>50
Susceptibility	Oct 1 - Apr 30	Aug 1 - Sept 30	March 1 - July 31
Human Harvest	July 1 - May 1	May 1 - June 30 (beluga)	

Critical Life Periods J F M A M J J A S O N D

Present nearshore:

Gray Whale ==========

Killer Whale ==========

Beluga Whale ==========

Harbor Porpoise ==========

Calving

Killer Whale ==========

Beluga Whale =========

Harbor Porpoise ======

Harbor Seals

Category	Low	Medium	High
Abundance (On Haulouts)	<5	5 - 10	>10
Susceptibility		Year-round	
Human Harvest	June 1 - May 1		May 1 - May 31

Critical Life Periods J F M A M J J A S O N D

Pupping ======

Molting ==========

On haulouts (prime period) ==========

Ringed Seals

Category	Low	Medium	High
Abundance (on haulouts)		In pack ice	In shorefast ice
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**

Pupping ======

Molting =========

Present in Bering Sea ==========

Nearshore concentrations in shorefast ice ========== =====

Bearded Seals

Category	Low	Medium	High
Abundance (on haulouts)		In pack ice	In ice edge
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**

Pupping and weaning ==========

Molting ========

Present in Bering Sea ==========

Spotted Seals

Category	Low	Medium	High
Abundance (on haulouts)	<10	10 - 100	>100
Susceptibility		Year-round	
Human Harvest	Nov 1-Jan 15		Jan15-Oct 30

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

Pupping and weaning =======

Molting ========

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					==========							

Western Steller Sea Lions

Category	Low	Medium	High
Abundance (on haulouts)	<15	15 - 30	>30
Susceptibility		Year - round	
Human Harvest			

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Pupping					=======							
Molting						==========						
On rookeries				==========								
On haulouts (prime period)					==========							
In area waters	==========											

Sea Otters[1]

Category	Low	Medium	High
Abundance		<20	>20
Susceptibility			Year-round
Human Harvest	Year-round		

[1]South side of the Alaska Peninsula.

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

Walrus

Category	Low	Medium	High
Abundance		Oct 1 - Mar 31	Apr 1 - Sept 30
Susceptibility		Year-round	
Human Harvest	Oct 15 - Mar 15 May 31 - Aug 15		Mar 15 - May 31 Aug 15 -Oct 15

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Present in nearshore waters or on haulouts			==========			==========						
Edge of pack ice	=========										===	

Brown Bear

Category	Low	Medium	High
Susceptibility[2,3]	Nov 1 - Apr 30	May 1 - June 30 Sept 1 - Oct 31	July 1 - Aug 31
Human Harvest[4]	Nov 1 - Apr 15		Apr 15 - May 31 Sept 1 - Oct 31

[2]Bear densities and susceptibility to oil impacts increases through spring as more individuals emerge from dens and move to coastal areas.

[3]Bear densities and susceptibility to oil impacts decreases through the summer depending upon the availability of fish in lower reaches of streams.

[4]Most bear hunting opportunities are closed during the summer; however, bear viewing opportunities in some areas peak during the summer period.

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Denning	==========							========				
Feeding in coastal areas (primary period)				======								
Feeding along salmon streams (primary period)						======						

Caribou/Reindeer

Category	Low	Medium	High
Abundance			
Susceptibility	Oct 1 - May 15		May 15 - Sept 30
Human Harvest	May 1 - July 31	Apr 1 - Apr 30	Aug 1 - Mar 31

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Calving				===								
Insect relief habitat					==========							
Wintering area	==========									=======		

Moose

Category	Low	Medium	High
Abundance			
Susceptibility	June 15 - may 15	May 15 - june 15	
Human Harvest	oct 1 - nov 31 Jan 1 - aug 15		Aug 15 - sept 30 Dec 1 - dec 31

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

Bald Eagles

Category	Low	Medium	High
Abundance	<1 nest / 3 coastal miles	1 nest / 3 coastal miles	>1 nest / 3 coastal miles
Susceptibility			Year-round

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Present in area	==========											
Nesting and brood rearing										==========		

Ducks

Category	Low	Medium	High
Abundance	<100	100 - 1,000	>1,000
Susceptibility	Nov 16 - Feb 28	June 1 - Aug 31	Mar 1 - May 31 Sept 1 - Nov 15
Human Harvest[5]	June 1 - Aug 15 Dec 1 - Mar 31		Apr 1 - May 31 Aug 15 - Nov 30

[5]Waterfowl eggs are collected by some communities from early April through May.

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Present in area	==========											
Spring migration		========										
Nesting, brood rearing, and molting				==========								
Fall staging/migration								========				

Geese

Category	Low	Medium	High
Abundance	<100	100 - 1,000	>1,000
Susceptibility	Nov 1 – Mar 31	June 1 - Aug 31	Apr 1 - May 31 Sept 1 - Oct 31
Human Harvest[6]	June 15 – Aug 15 Dec 1 – Mar 31		Apr 1 - June 15 Aug 15 - Nov 30

[6]Waterfowl eggs are collected by some communities from early April through May.

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Present in area	==========											
Spring migration			====									
Nesting, brood rearing, molting				==========								
Fall staging/migration							======					

Tundra Swans

Category	Low	Medium	High
Abundance			
Susceptibility	Nov 1 - Mar 31	June 1 - Aug 31	Apr 1 - May 31 Sept 1- Oct 31
Human Harvest			

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Present in area	==========	==========	==========	==========	==========	==========	==========	==========				
Spring migration			======									
Nesting, brood rearing,molting					==========	==========	==========					
Fall staging/migration								======				

Seabirds

Category	Low	Medium	High
Abundance	<1,000	1,000 - 5,000	>5,000
Susceptibility	Nov 1 - Jan 31	Feb 1 - Mar 31	Apr 1 - Oct 31
Species Diversity	1 – 3	4 - 6	>6
Human Harvest[7]	June 1 - Apr 30		May 1 - May 31

[7]Seabird eggs are harvested by some native communities.

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Present in area	==========	==========	==========	==========	==========	==========	==========	==========				
At brooding colonies			==========	==========	==========	==========						
Nesting				==========	==========							

Groundfish[10]

Category	Low	Medium	High
Abundance			
Susceptibility	May 1 – Mar 1		Mar 1 -Apr 30
Human Harvest			

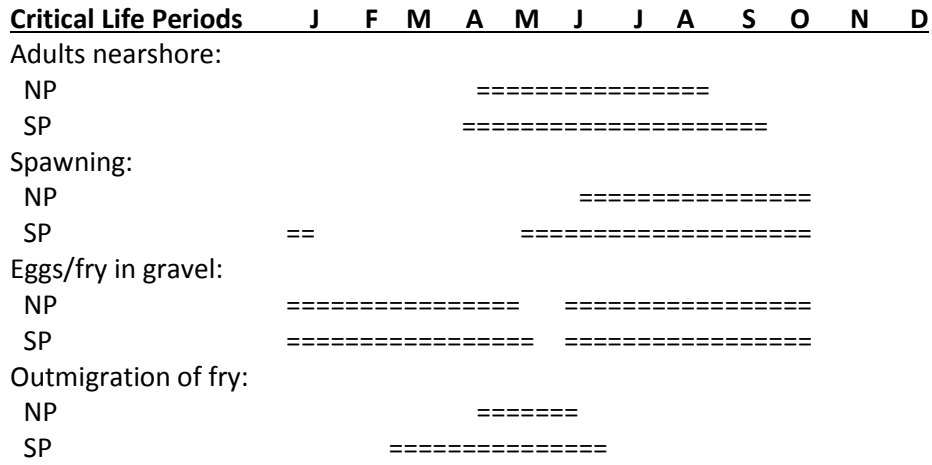
[10]South side of AK Peninsula only; information not available for North side of AK Peninsula and Bristol Bay.

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Spawning (gadids)			=====									

SALMON (Pink, Chum, Coho, Sockeye, And Chinook)[8]

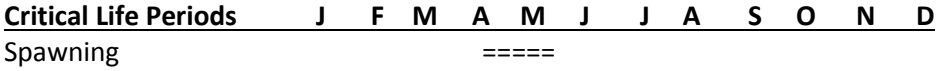
Category	Low	Medium	High
Abundance (spawners)	Np: # 100,000 sockeye Sp: <500 sockeye <5,000 pink <5,000 chum <500 coho <100 chinook	NP: >100,000-1,000,000 sockeye SP: 500 - 5,000 sockeye 5,000 - 25,000 pink 5,000 - 15,000 chum 500 - 2,500 coho 100 - 500 chinook	NP: >1,000,000 sockeye Sp: >5,000 sockeye >25,000 pink >15,000 chum >2,500 coho >500 chinook
Susceptibility	Jan 1 - Jan 31	NP: Nov 1 - Dec 31 Feb 1 - Apr 30 SP: Dec 1 - Dec 31 Feb 1 - Apr 30	NP: May 1 - Oct 31 SP: May – Nov 30
Species Diversity	1	2 – 4	5
Human Harvest	NP: Oct 1 - May 31 SP: Oct 15 - May 31	NP: aug 15 - Sept 30 SP: sept 15 - Oct 15	NP: June 1 - Aug 15 SP: June 1 - Sept 15

[8]NP: North side of Alaska Peninsula; SP: South side of Alaska Peninsula



Capelin

Category	Low	Medium	High
Abundance			
Susceptibility	July 1 – May 15		May 15 - June 30



Pacific Herring[9]

Category	Low	Medium	High
Abundance (biomass in tons)	NP: <500	NP: 500 - 5,000	NP: >5,000
Susceptibility	Oct 1 – Feb 28	Mar 1 - Mar 31	Apr 1 - Sept 30
Human Harvest	June 1 – Apr 15		NP: Apr 15 - May 31

[8]NP: North side of Alaska Peninsula; SP: South side of Alaska Peninsula

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Congregate to spawn												
NP				========								
SP				====								
Spawning												
NP				========								
SP				====								
Migration (post-spawning)												
NP				==========								
Larvae/juveniles near shore												
NP				==========								
SP						=========						

Halibut

Category	Low	Medium	High
Abundance			
Susceptibility	Sept 1 – May 31		June 1 - Aug 31
Human Harvest	Oct 1 - Apr 30		May 1 - Sept 30

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Adults move inshore				==========								
Adults move offshore							=========					
Planktonic larvae/eggs	==========									==========		

Red King Crabs[11]

Category	Low		Medium	High
Susceptibility	Larvae	July 1 – Jan 31	Feb 1 - Mar 1 June 1 - June 30	Mar 1 - May 31
	Adult		June 1 - Feb 15	Feb 15 - May 31
Human Harvest		Feb 1 – June 1		June 1 - Lan 31[12]

[11]South side of AK Peninsula only; information not available for North side of AK Peninsula and Bristol Bay.
[12]Currently subsistence harvest only.

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Larvae			=========									
Adults in nearshore			==========									

Dungeness Crabs[13]

Category		Low	Medium	High
Susceptibility	Larvae	Aug 1 - Apr 1	Apr 1 - Apr 30 Sept 1 - Sept 30	May 1 - July 31
	Adult		Oct 1 - Apr 30	May 1 - Sept 30
Human Harvest				May 1-Jan 1

[13]South side of AK Peninsula only; Dungeness do not occur in Bristol Bay.

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Larvae				=========								
Adults in nearshore				==========								

Tanner Crabs[14]

Category		Low	Medium	High
Susceptibility	Larvae	July 1 - Jan 31	Jan 1 - Jan 31 June 1 - July 1	Feb 1 - May 31
	Adult		Jan 1 - Jan 31	Feb 1 - May 31
Human Harvest				Jan 1 - Dec 31[15]

[14]South side of AK Peninsula only; few tanner crabs in shallow waters of north side of AK Peninsula and Bristol Bay.
[15]Subsistence only.

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Larvae			==========									
Adults in nearshore				==========								

Freshwater Fish Species

Dolly Varden/Char

Category	Low	Medium	High
Abundance			
Susceptibility	Nov 1 - Mar 31	June 1 - Oct 31	Apr 1 - May 31
Human Harvest	Nov 1 - Mar 31	Oct 1 - Oct 31	Apr 1 - Sept 30

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Present nearshore			==========			==========						
Spawning							==========					
Eggs/fry in gravel	==========						==========					

Rainbow Trout

Category	Low	Medium	High
Abundance			
Susceptibility	Nov 1 - Mar 31	June 1 - Oct 31	Apr 1 - May 31
Human Harvest	Nov 1 - Mar 31	Oct 1 - Oct 31	Apr 1 - Sept 30

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Spawning			========									
Eggs/fry in gravel			=========									

Grayling

Category	Low	Medium	High
Abundance			
Susceptibility	Nov 1 - Mar 31	June 1 - Oct 31	Apr 1 - May 31
Human Harvest	Nov 1 - Mar 31	Oct 1 - Oct 31	Apr 1 - Sept 30

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

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[16]	State parks	Critical Habitats Refuges

[16]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

v. SENSITIVE AREAS: PART FOUR – BIOLOGICAL 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.

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/bristol/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

Environmental Sensitivity Index Map Atlas Index for the Bristol Bay subarea- to view the map from the ARRT website, please go to the DNR Prevention and Emergency Response Subarea Plan Maps website located at:

http://www.asgdc.state.ak.us/maps/cplans/bristol/PDFS/ESI_DATA/INDEX.PDF

To view the Wetlands Status map from the ARRT website, please go to 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
Fin whale*		*Balaenoptera physalus*	Endangered
Humpback whale*		*Megaptera novaeangliae*	Endangered
North Pacific right whale*		*Eubalaena japonica*	Endangered
Steller sea lion*	Western	*Eumetopias jubatus*	Endangered
Spectacled eider**		*Somateria fischeri*	Threatened
Steller's eider**	Alaska breeding	*Polysticta stelleri*	Threatened
Short-tailed albatross**		*Diomedea albatrus*	Endangered
Northern sea otter**	Southwestern	*Enhydra lutris kenyoni*	Threatened
Yellow-billed loon**		*Gavia adamsii*	Candidate
Pacific walrus**		*Odobenus rosmarus divergens*	Candidate
Designated Critical Habitat			
Species Group	**General Reference Area**		
Steller's eider	See designation maps below (50 CFR Part 17)		
Northern sea otter	See designation maps below (50 CFR Part 17)		
Steller sea lion	See map below for haulouts and rookeries (50 CFR 226.202)		
North Pacific right whale	See designation map below (50 CFR Part 226)		

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

[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."

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

Critical habitat maps for sea otters:
http://alaska.fws.gov/fisheries/mmm/seaotters/pdf/SeaOtterCriticalHabitatMaps.pdf

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

North Pacific right whale critical habitat designation:
http://www.fakr.noaa.gov/frules/73fr19000.pdf

Steller’s eiders critical habitat

Steller sea lion critical habitat map for Western and Southcentral Alaska
http://alaskafisheries.noaa.gov/protectedresources/stellers/maps/criticalhabitat_map.pdf

Northern Pacific right whale critical habitat map

2. *Fish and Wildlife*

(a) Fish

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

Finfish

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

The waters of this subarea are among the most productive in the world. Major freshwater systems of the region include the Nushagak/Mulchatna, Kvichak, Togiak, Naknek, Egegik, Ugashik, Cinder, Meshik, and Chignik river systems. 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 in the Bristol Bay subarea.

Arctic Grayling are found in most clear-water streams of drainages of Bristol Bay south to the Mother Goose Lake-King Salmon River drainage; grayling do not occur on the south side of the peninsula. Large grayling are found in the Ugashik, Becharof, Nuyakuk and Togiak river drainages. Arctic grayling spawn in May and June, typically in unsilted rapid-runoff streams and lake inlets and outlets; fry emerge by early June. Grayling commonly overwinter in deep, large rivers or lakes, or in smaller streams if adequate water quality and flow exists throughout the winter.

Arctic Char/Dolly Varden are widely distributed throughout the Bristol Bay subarea; important drainages include the Togiak River and Wood River Lakes, the Naknek River and lake, and the Becharof and Ugashik rivers. Migration of anadromous char from overwintering areas to marine feeding areas occurs from April to June. Fish return to freshwater spawning and overwintering areas from July through December. Char spawn from August through December; fry emerge in April and May. Char typically overwinter in lakes.

Rainbow Trout and Steelhead inhabit all major Bristol Bay drainages north of Becharof Lake-Egegik River. Rainbow trout are primarily found in the Kvichak watershed below Six-Mile lake and in the Naknek watershed; they also occur in the Wood and Nushagak river systems, but they are not found in the Egegik or Ugashik Rivers. Steelhead (anadromous) are found in a few streams in the Bristol Bay Region, including the King Salmon River on the north side of the Alaska Peninsula, and the Chignik River and stream that drains into Ivanof Bay on the south side of the peninsula. Rainbow trout generally spawn during May and June, and fry emerge by July. Steelhead generally spawn between March and May, and fry emerge during July.

Salmon. Chinook, coho, sockeye, pink, and chum salmon occur within the subarea. The most significant drainages for salmon in the region include the Nushagak, Kvichak, Naknek, Egegik, Ugashik, Meshik, and Chignik. The six major river systems of Bristol Bay are home to the largest commercial sockeye salmon fishery in the world. Adult salmon are present in freshwater from mid March through early October, depending on the species of salmon and the stream system. Salmon eggs incubate in the stream gravels over the winter; fry emerge from stream gravels from mid March through early June. Chinook, sockeye, and coho fry remain in fresh water from one to four years before migrating to sea.

Pacific Herring spawning concentration areas occur along the south side of the Alaska Peninsula in a number of small bays; the largest concentrations are found in Amber and Aniakchak Bays. On the south side of the Alaska Peninsula, spawning occurs from late April to mid June. In Bristol Bay, herring spawn in numerous rocky bays from Nushagak Bay to Cape Newenham, as well as along Hagemeister, Summit, High and Crooked Islands and Asigyukpak Spit, from late April through July. The major herring concentration that occurs in the Togiak area each spring is the focus of two commercial fisheries (sac roe and spawn on kelp harvests). Spawning occurs in intertidal and subtidal areas; kelp or eelgrass are typically the preferred spawning substrates. Herring south of the Alaska Peninsula characteristically move offshore to feed after spawning. In Bristol Bay, they migrate south along the north shore of the Alaska Peninsula through at least mid-summer and possibly later. Herring in both areas usually migrate to deeper waters during winter.

Capelin. Infrequently harvested, capelin are nevertheless important forage fish for higher trophic predators such as seabirds and marine mammals because of their high oil content. Capelin spawn on sandy to small gravel beaches on both sides of the Alaska Peninsula and Bristol Bay, typically from May through July, but inconsistently in timing, location, and numbers from year to year. Capelin are infrequently repeat spawners. Much of their life history in this area is unknown.

Other Forage Fish. Numerous species of fish inhabit the nearshore area and these populations are often dominated by sand lance and rainbow smelt which may comprise 40% of the nearshore fish by number. Sand lance is one of the most important forge fish in the subarea. Rainbow smelt, well as being forage fish, is an important subsistence food (to several thousand pounds per community). These anadromous fish are often seen in the vicinity of spawning herring in the spring in northern Bristol Bay with some

estimates at over 1,000 tons of fish. Particularly good runs have been reported from Togiak and Nushagak Rivers after ice-out.

Halibut. Little information is available for nearshore areas of Bristol Bay or the north shore of the Alaska Peninsula. Halibut follow salmon into the shallow waters of the mouths of the salmon's natal streams along the south shore of the Alaska Peninsula from June through August.

Groundfish. Some Pacific cod and pollock spawn near the south shore of the Alaska Peninsula in April and May and their larvae may be susceptible to oil contamination at that time. Yellow fin sole, after pollock, are the most abundant fish in the Bering Sea with a biomass of several million metric tons. They migrate to the nearshore areas in April and May to spawn. Juveniles stay in the nearshore area for 3 to 5 years.

Shellfish

Dungeness Crabs are found from the intertidal region to a depth of 230 m. Dungeness crabs are most common on sand or muddy-sand bottoms in the subtidal region, and are often found in or near eelgrass beds. However, they can also be found on a number of other substrata including various mixtures of silt, sand, pebble, cobble, and shell. Juvenile Dungeness crabs are found in similar habitats to adults, but they generally occupy shallower depths than adults. Juvenile crabs can be very abundant in the intertidal zone, but also occur in shallow subtidal areas. Survival of young crabs is greatest in habitats such as intertidal shell and eelgrass beds, where they can gain refuge from predators. In the Bristol Bay subarea, Dungeness crabs are found on the south side of the Alaska Peninsula only, and are generally distributed with a notable concentration in Castle Bay.

Red King Crab larvae generally exhibit a diel movement being most abundant in the upper water column during the day and deeper at night. Young of the year crab occur at depth of 50 m or less. They are solitary and need high relief habitat or coarse substrate such as boulders, cobble, shell hash, and living substrates such as bryozoans and stalked ascidians. Between the ages of two and four years, there is a decreasing reliance on habitat and a tendency for the crab to form pods consisting of thousands of crabs. Podding generally continues until four years of age (about 6.5 cm), when the crab move to deeper water and join adults in the spring migration to shallow water for spawning. Adult red king crab occur to a depth of 365 m; preferred habitat for reproduction is water less than 90 m. Red king crab are widely distributed south of the Alaska Peninsula. They move into waters of less than 10 fathoms from about mid-February to June 1 to mate and molt with concentrations in Castle, Chignik, Hook and Mitrofania Bays. Red king crab also occur north of the peninsula; however, no notable concentrations have been reported.

Tanner Crab larvae are strong swimmers and perform diel vertical migrations in the water column (down at night). They usually stay near the depth of the chlorophyll maximum during the day. The length of time larvae take to develop is unknown, although it has been estimated at only 12 to 14 days. After settling to the bottom, Tanner crabs are widely distributed at depths up to 473 m. South of the Alaska Peninsula, areas with concentrations of tanner crabs include Ivanof Bay, Mitrofania Island, Kuiukta Bay and Chignik Bay. Greatest numbers are found in depths of 100-200 m. North of the peninsula, tanner crabs are distributed along the continental shelf edge. Females are known to form high density mating aggregations consisting of hundreds of crabs per mound. The mounds likely form in the same general location each year, but the location of the mounds is largely undocumented.

Shrimp. Along the south side of the Alaska Peninsula, Pandalid shrimp (northern pink shrimp, humpy/flexed shrimp, spot shrimp/prawn, coonstripe shrimp, and sidestripe/giant red shrimp) are distributed throughout most major bays and certain nearshore and offshore areas; areas with shrimp concentrations include Chignik Bay, Kujulik Bay, Mitrofania Island, Ivanof Bay, and Nakalilok Bay. Following a regime shift in the late 1970s most of these populations were reduced to relict status. Pandalid shrimp also occur in Bristol Bay; no specific concentration areas have been noted.

Razor Clams. On the south side of the Alaska Peninsula, razor clams are found intertidally to a depth of several meters on exposed beaches consisting of fine or coarse sand with some glacial silt or gravel. Yantarni Bay is among the locations with productive clam beaches. On the north side of the Alaska Peninsula, an extensive clam bed of mixed species extends from Port Moller to Ugashik Bay. Kulukak Bay is a good source for cockle clams.

(b) Birds

Ducks begin arriving in the Bristol Bay 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; most eggs hatch 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 scoter and oldsquaw leave the tundra in mid July to molt at sea, often near estuaries. Scaup, goldeneye, and other divers molt largely on inland lakes. 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 August, although most leave the mainland areas by late September or early October. Diving ducks, particularly oldsquaw and scoter, winter along the Bristol Bay coast. Steller's and king eiders winter in the region; Steller's eiders also congregate on the north side of the peninsula during spring before migrating north to nesting grounds. In addition, a resident population of common eiders is found in the region. Dabbling ducks found in the Bristol Bay subarea include northern pintails, mallards, American wigeons, green-winged teal, and northern shovelers.

Geese. Canada and white-fronted geese and brant nest, molt and stage along lakes, coastal lagoons, wetlands, and rivers within the subarea. Snow and emperor geese stage within the region during spring and fall migrations, but do not breed there. 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. Staging areas are usually associated with productive estuaries, river deltas, lagoons, marshes, and tidelands. Particularly important staging areas include the Naknek River Delta, Ugashik Bay, the Cinder River lagoon, Egegik Bay, the Seal Islands, and Pilot Point.

Swans. The Bristol Bay subarea supports the second largest tundra swan breeding population in Alaska. Swans arrive in the region from April to May. Swans begin nesting around mid May, and eggs hatch from mid-to-late June. Important swan nesting habitat includes the Pilot Point and Ugashik areas. 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. The Naknek River supports a particularly high density of swans, particularly during spring.

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

Bald Eagles are distributed throughout the Bristol Bay subarea. Bald eagles nest along rivers, lakes, and the coastline. Nesting is concentrated along the south side of the Alaska Peninsula and begins in late March and runs through May. Young eagles fledge from early July through late August. Feeding areas include sea beaches and rock coastlines, freshwater anadromous fish streams and lakes, and terrestrial habitats. Bald eagles are opportunistic feeders, scavenging various forms of carrion and/or preying upon fish, small mammals or birds.

Other Raptors occurring in the subarea include golden 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

Seabird nesting colonies are found throughout the subarea. Common breeders include cormorants, murres, auklets, puffins, and kittiwakes; the majority of nesting seabirds are murres. Large nesting colonies occur in the Walrus Islands; 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 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).

(c) Marine Mammals

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 associated with ice most of the year returning to nearshore areas in late fall and early winter as the shorefast ice reforms. 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.

Bearded Seals are associated primarily with the pack ice, and in association with leads, flaws, and polynyas. Consequently, their movements are directly related to the advance and retreat of sea ice and so are not found as frequently in nearshore waters as are spotted or harbor seals. Pupping occurs from mid-March to early May. Molting occurs in May and June.

Spotted Seals are found in Bristol Bay waters year-round. They are associated with the sea ice-front in winter and have pups, breed, and molt there. 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 during the ice-free months. Spotted seals are known to occasionally haul out, inter-mixed with harbor seals, in northern Bristol Bay at sites such as Nanvak Bay and as far south as the mouth of the Kvichak River. Nanvak Bay is, generally, considered the southern extent of spotted seal land use. They move out of the coastal zone when the shorefast ice begins to form in late fall.

Harbor Seals are found in nearshore waters throughout the subarea. Harbor seals tend to concentrate in estuaries and protected waters. Habitats used for haulouts include cobble and sand beaches, tidal mud flats, offshore rocks and reefs, and ice (frozen heads of bays, in fjords, etc.) when available; on the northern coast of the Alaska Peninsula, seals concentrate on shoals and sandbars exposed during low tides primarily in estuaries. Harbor seals enter lakes and rivers on a seasonal basis. Iliamna Lake appears to support one of the few freshwater populations of harbor seals in the world. Known seal haulouts occur throughout the Bristol Bay subarea. Major haulout locations include the Seal Islands, Port Heiden, Port Moller, Cinder River, Egegik and Ugashik bays, off-shore sandbars near the mouth of the Kvichak River, Izembek Lagoon and nearby off-shore sandbars. Walrus, Round and Haggemeister islands represent the northern extent of harbor seals within the sub area. Haulouts are used for pupping, molting, and resting, and may be used year-round; peak haulout use occurs during June through early October. Pupping occurs between late May and early July; most pups are born during the first three weeks of June.

Northern Fur Seals are primarily pelagic, coming ashore only to breed and pup. The fur seal pelagic distribution in the subarea includes waters on the south side of the Alaska Peninsula; no known rookeries are found in this region.

Walrus. In winter walruses are associated with active ice. During years with extensive ice, walruses may be widely distributed and numerous in Bristol Bay; when ice cover is light, relatively few walruses may be found in the area. Walruses, primarily females and juveniles, follow the receding ice edge north begin migrating north beginning in late March or April. Virtually all walruses that remain in Bristol Bay during the summer are males. Bristol Bay Region terrestrial haulouts used by males during summer include Cape Seniavin, Port Moller, and Walrus Islands. Round Island, a part of the Walrus Islands State Game Sanctuary, is the center of abundance for walruses summering in Bristol Bay, and it is used throughout the summer by 8,000 to 12,000 bulls. Cape Pierce and Cape Newenham (Togiak National Wildlife Refuge) are also significant terrestrial haulouts--during May-October, up to 7,000 animals may be there.

The Steller Sea Lion population that occurs within the Bristol Bay subarea is part of the population segment (classified in 1997 as endangered under the Endangered Species Act. Sea lions are found along the south side of the Alaska Peninsula and along the north side of the peninsula as far northeast as Cape Seniavin. There are no reported haulouts in southern and eastern Bristol Bay, but sea lions are common throughout northwestern Bristol Bay. There are two major Steller sea lion haulouts in northern Bristol Bay area that are designated as critical habitat under the ESA: Round Island, part of the Walrus Islands at

58°36'N, 159°58'W, and Cape Newenham at 58°39'N, 162°10.5'W. Critical habitat includes a terrestrial zone that extends 3000 feet (0.9 km) landward and an aquatic zone that extends 20 nm (37 km) seaward from the base point surrounding the terrestrial site. Pupping occurs from late May to early July, with most pups being born during June. During May through August, territorial breeding behavior occurs on the rookeries, but there are no rookeries on the north side of the Alaska Peninsula.

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 Bristol Bay subarea. However, some foraging trips of Pribilof fur seals could extend into the Bristol Bay subarea.

Beluga Whales are present along north side of the Alaska Peninsula from late March to freeze-up. During late March through May, belugas concentrate in the mouth of the Naknek River, feeding on smelt, and moving upriver with spring breakup. Several weeks later, they move to the mouth of the Kvichak River to feed on outmigrating sockeye salmon smolt; other rivers where concentrations of belugas have been observed include the Snake River, Igushik River, Wood River, and Nushagak River. Calving occurs between June and August; belugas are distributed throughout the Kvichak and Nushagak Bays during this period. Belugas remain in inner Bristol Bay through the summer; and may ascend rivers as far as King Salmon on the Naknek River, Portage Creek on the Nushagak River, and Levelock on the Kvichak River. They to move offshore in October.

Seabird Summary Map. To view the document on the web, please visit the following website:
http://www.asgdc.state.ak.us/maps/cplans/bristol/bb3seabird.pdf

Other Whales. From Unimak Pass, migrating gray whales follow the northern Alaska Peninsula coast up to Egegik Bay, then head towards Nunivak and St. Lawrence Islands during spring. Gray whales have been observed feeding near the Walrus Islands. Harbor and Dall's porpoises and killer whales are found year-round on the south side of the Alaska Peninsula, and during the summer on the north side of the peninsula. Minke whales may be found throughout the Bristol Bay Region during summer. Humpback whales are present in the marine waters north and south of the Alaska Peninsula, while fin whales occur in the waters south of the Alaska Peninsula and north of the Bristol Bay area. For more information on whales, see the National Marine Fisheries Service web site at:
http://www.fakr.noaa.gov/protectedresources/whales/default.htm

Sea Otters are generally found in shallow (<40 m) nearshore waters of the open coast. Along the north side of Alaska Peninsula, sea otter concentrations are greater in areas westward of the subarea, such as Port Moller, Amak Island, Izembek Lagoon and Bechevin Bay. The eastern limit of the sea otter range fluctuates depending on the severity of winter sea ice conditions. Port Heiden has the furthest eastward concentration of sea otters, however low densities may be observed as far east as Egegik Bay. Two consecutive winters of heavy ice conditions resulted in sea otters concentrating in the Port Heiden area, with many hauled out on land. Local residents reported 200-300 sea otters in the vicinity of Port Heiden during the Fall of 1999, and approximately 70 sea otters were observed in Port Heiden Bay during March 1999 by a U.S. Geological Survey biologist (USFWS, USGS unpublished information). Sea otters are also found along the south side of the Alaska Peninsula, with highest concentrations of otters occurring at Kujulik and Hallo Bays. Scattered individuals may also be found at other locations along the Peninsula in other parts of the subarea. Breeding can occur year round.

(d) Terrestrial Mammals

Caribou. Two distinct caribou herds use habitat within the Bristol Bay subarea, the Mulchatna and the Northern Alaska Peninsula herds. The Mulchatna herd ranges east of the Nushagak River and north of Lake Iliamna. The Northern Peninsula herd ranges between the Naknek River and Port Moller. Calving occurs from mid May to early June. On the Alaska Peninsula, calving occurs on the coastal plain between Port Moller and Cinder River, frequently associated with areas of extensive wet sedge marshes. The Mulchatna herd generally calves in the upper Mulchatna and Chilikadrotna drainages, north of Lake Clark, and the upper Nushagak drainage. Summer habitat is primarily treeless uplands where heath tundra, alpine tundra, and sedge wetlands predominate. Winter habitat includes spruce forests and poorly drained coastal plains where sedges are abundant. Lowlands between Becharof Lake and the Naknek River are important wintering grounds for the Northern Peninsula herd; lowlands north of the Kvichak River and west and north of Iliamna Lake are used by the Mulchatna herd during winter.

Moose occur in habitats throughout much of the Bristol Bay subarea, ranging from aquatic and riparian floodplains 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. Calving occurs in late May and early June, frequently in isolated marshy lowlands.

Brown Bears are distributed throughout the Bristol Bay subarea. During spring, concentrations of bears may be found along the beaches, grass flats, sedge meadows, and saltwater wetlands of the Alaska Peninsula coastal plain. Bear concentrations may also be found along rivers when spawning salmon are present. Brown bears enter dens beginning in late October, with most bears denned by mid December. Bears emerge from their dens as early as mid March, depending on weather conditions.

Wolves and Foxes are found throughout the subarea. 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. Red foxes have a reproductive pattern similar to that of wolves.

Dall Sheep are found in Lake Clark National Park and Preserve. 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.

Aquatic Furbearers such as beaver, mink, and river otter are common inhabitants of aquatic and riparian floodplain and wetland areas, including marshes, ponds, lakes, streams, and rivers.

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 BRISTOL BAY SUBAREA

Globl Rank	State Rank	Scientific Name	Common Name	Federal Status
G5	S1	*Catabrosa Aquatica*	Brook Grass	
G2G3	S2S3	*Douglasia Alaskana*	Alaska Rock Jasmine	
G3G4	S3	*Papaver Alboroseum*	Pale Poppy	
G3	S2S3	*Primula Tschuktschorum*	Chukchi Primrose	
G3	S3	*Rumex Beringensis*		
G2	S2	*Smelowskia Pyriformis*		
G3Q	S3	*Taraxacum Carneocoloratum*	Pink-Flower Dandelion	
G3	S3	*Thlaspi Arcticum*	Arctic Pennycress	

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 occurrence
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.

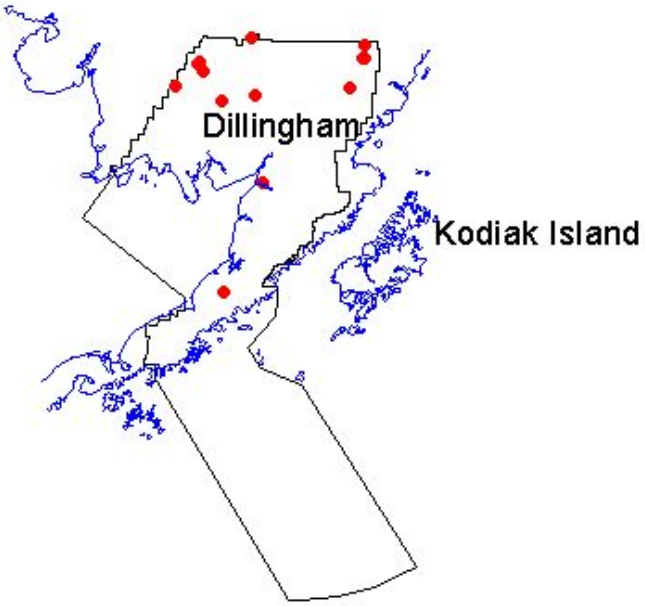
Species State Rankings

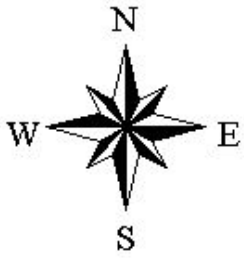
S1: Critically imperiled in state. (usually 5 or fewer occurrences)
S2: Imperiled in state. (6-20 occurrences)
S3: Rare or uncommon in state. (21-100 occurrences)
S4: Apparently secure in state, but cause for long-term concern (usually more than 100 occurrences)
S5: Demonstrably secure in state.
S#S#: State rank of species uncertain, best described as a range between the two ranks.

To view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/bristol/rareplants.jpg

Known Rare Plant Locations for the Bristol Bay 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 fish hatcheries operating in the subarea.

2. *Aquaculture Sites*
There are no aquaculture sites in the subarea.

3. *Historic Properties*
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 Coordinator 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 subsistence resources and harvest allocation. In 1990, however, the Federal government became responsible for assuring a Federal subsistence priority on Federal public lands, and in 1999 on Federal reserved waters. The Federal Subsistence Board adopts 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 or Dillingham; and the U.S. Fish and Wildlife Service, Office of Subsistence Management at Anchorage at: http://alaska.fws.gov/asm/index.cfml.

5. *Commercial Fishing*
The five species of salmon found in the Bristol Bay subarea are the focus of major commercial harvests. Bristol Bay is world renowned for sockeye salmon production. In addition, the Togiak herring fishery is the largest in Alaska.

The following figures provide seasonal information on the major commercial fisheries. It must be remembered, however, that all fishing seasons are subject to emergency openings and closures and that

most seasons are only open for a portion of the time specified in the regulations. Also, fishing regulations and seasons can change from year to year. Specific information on which species are being harvested may be obtained from the Alaska Department of Fish and Game, Division of Commercial Fisheries Management and Development at either Anchorage or Kodiak.

Maps of key commercial fishing areas are available in the previously referenced Alaska Department of Fish and Game publications, the Alaska Habitat Management Guide Reference Maps, Southwest Region, Vol. III and the Alaska Habitat Management Guide, Southwest Region Map Atlas. As fishing periods are adjusted yearly by emergency openings and closures, contact Alaska Department of Fish and Game for current fishing periods. Updated information may be found at their Commercial Fisheries web site: http://www.adfg.alaska.gov/index.cfm?adfg=fishingCommercial.main

The following groups can be contacted with requests for specific information on the location and timing of fish runs as well as local current conditions. Although the primary function of these organizations is not to provide such information, the individual members will be quite knowledgeable about environmental conditions and will often be willing to share information.

Organization	Phone
Alaska Indep. Fishermen's Marketing Association	206-542-3930
Bering Sea Fisherman's Association	279-6519
Bristol Bay Driftnetters Association	463-4970
Bristol Bay Herring Marketing Cooperative	842-2386
Bristol Bay Native Association	842-5257
Bristol Bay Native Corporation	278-3602
Kvichak Setnetters Association	277-0187
Setnetters Association of Bristol Bay	272-4114

6. *Sport Fishing and Hunting*

Sport fishing and hunting occurs at a wide variety of locations in the 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 subarea. There are many commercial and private fishing and hunting lodges in the subarea. 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*

- Wood-Tikchik State Park, Dillingham
  - Primitive back country recreation and boating, 5 commercial lodges are in the park
- Katmai National Park and Preserve, King Salmon
  - Brooks Camp on Naknek Lake (bear viewing), several commercial lodges in King salmon
- Lake Clark National Park and Preserve, Port Alsworth
  - Primitive back country recreation, several commercial lodges at Port Alsworth
- Nushagak and Mulchatna Rivers
  - River rafting, camping, sport fishing
- Alaganak Wild River
  - Sport fishing and recreation

8. *Commercial Tourism*

The travel to the subarea is dictated by seasonal changes--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*

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.

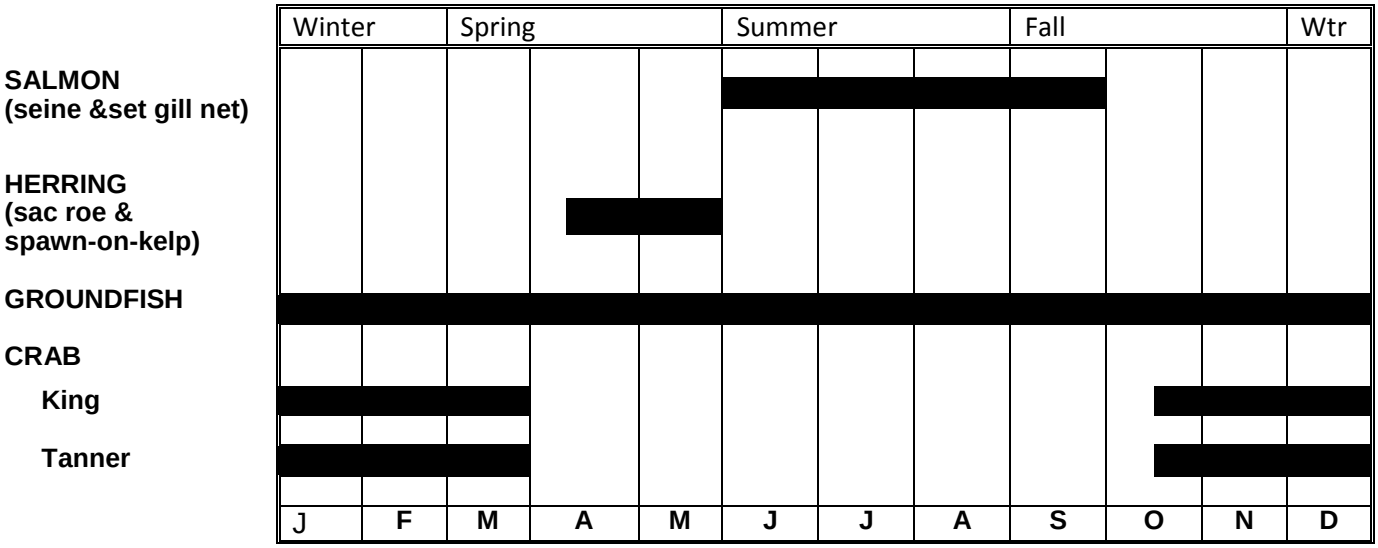
Shellfish Harvesters: Harvests shellstock and delivers to processor or shipper.

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

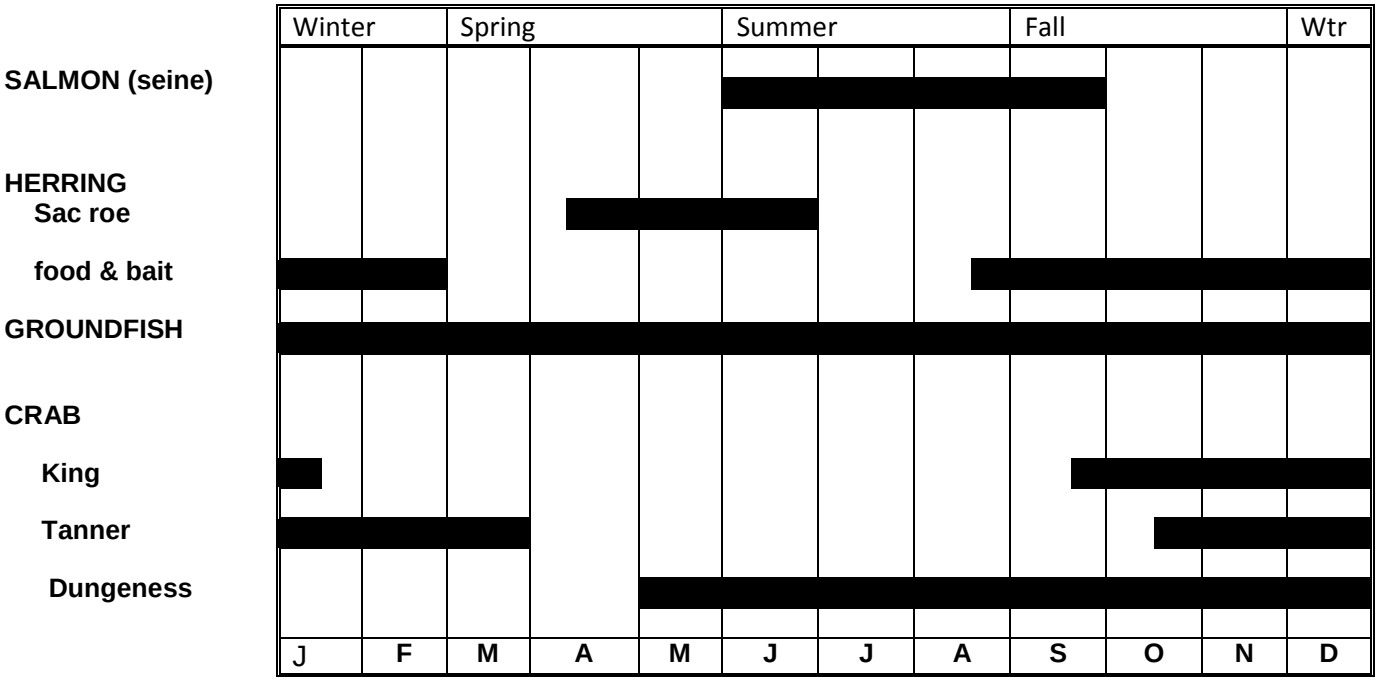
11. *Logging Facilities*

There are no commercial logging operations in the subarea.

COMMERCIAL FISHING SEASONS: BRISTOL BAY*



COMMERCIAL FISHING SEASONS: CHIGNIK*



*Times are approximate

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 System	Location	State ID No.	Source
Aleknagik Mission Lodge	Aleknagik	262536	Well
SWSD Aleknagik School	Aleknagik	261185	Well
Chignik Bay #2	Chignik	262296	Well
Chignik Bay WS #1	Chignik Bay	260228	Well
Chignik Lagoon Water System	Chignik Lagoon	261444	Well
Chignik Lake Water System	Chignik Lake	261096	Well
L&PSD Chignik Lake School	Chignik Lake	262555	Well
Clarks Point			
BBAHC Kanakanak Hospital	Dillingham	261282	Well
Bernie S/D Lots	Dillingham	261389	Well
Bingman Apts	Dillingham	261460	Well
Crystal Creek Lodge	Dillingham	262400	Well
Dillingham Water System	Dillingham	260197	Well
Golden Horn Lodge	Dillingham	261931	Well
Ricardos of Dilligham	Dillingham	262571	Well
Tikchik Narrow Lodge	Dillingham	261648	Well
Clark's Fish Co.	Egegik	262023	Well
Egegik	Egegik	262238	Well
Ekuk			
SWSD Ekwok School	Ekwok	260171	Well
Igiugig Water System	Igiugig	260812	Well
Iliamna Lake Resort &condos	Iliamna	261410	Well
Rainbow King Lodge	Iliamna	261606	Well
Ivanof Bay	Ivanof Bay	261502	Well
L&PSD Kakhonak School	Kakhonak	260406	Well
Bristol Bay Contractors Well	King Salmon	262636	Well
Eddies Fireplace Inn	King Salmon	261486	Well
FAA King Salmon East Housing	King Salmon	261305	Well
International Seafoods	King Salmon	262678	Well
Katmai Fishing Lodge	King Salmon	262107	Well
USFWS AK Pen Becharof NWR	King Salmon	261517	Well
USNPS Brooks Camp	King Salmon	260553	Well
Koliganek Water System	Koliganek	260040	Well
L&PSD Levelock School	Levelock	260082	Well
Manokotak Heights	Manokotak	262246	Well
Manokitak Water System	Manokotak	260090	Well
Alaska Commercial	Naknek	262686	Well
BBBSD Naknek	Naknek	260464	Well
Bristol Bay Boro. Bldg.	Naknek	261583	Well
Bristol Bay Boro. Dock	Naknek	261591	Well

Name of System	Location	State ID No.	Source
Camai Health Clinic	Naknek	261981	Well
D&D Restaurant	Naknek	262660	Well
Fisherman's Bar	Naknek	262068	Well
Naknek Village Council HUD	Naknek	261004	Well
Paug Vik Inc. Inlet Salmon	Naknek	262705	Well
Paug Vik King Salmon West	Naknek	260422	Well
Red Dog Inn	Naknek	260749	Well
L&PSD School Newhalen	Newhalen	260634	Well
Newhalen	Newhalen	260066	Well
Nondalton	Nondalton	260260	Ground
L&PSD School Pedro Bay	Pedro Bay	260642	Well
Perryville Water System	Perryville	260359	Surface
Pilot Point			
Portage Creek			
Port Alsworth			
L&PSD School Port Heiden	Port Heiden	260676	Well
BBBSD South Naknek	South Naknek	260472	Well
South Naknek Water System	South Naknek	260333	Well
Togiak	Togiak	260325	Well
Twin Hills Water System	Twin Hills	260032	Well
Ugashik			

vi. 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*

The State of Alaska owns the majority of tide and submerged lands within the state. Tide and submerged lands and those areas located between the mean high tide line and three miles distance offshore. Submerged lands are those located beneath the line of ordinary high water along navigable water bodies. The Alaska State Legislature has classified certain areas as being essential to wildlife and fisheries resources. These areas are designated as a Game Refuge, Critical Habitat Area, or Game Sanctuary. Other designated lands are State Parks or Forests.

The following four State critical habitat areas may be located at the web page:
http://www.adfg.alaska.gov/index.cfm?adfg=bristolbay.main

Port Heiden State Critical Habitat Area was established in 1972 to protect fish and wildlife habitat, particularly that of waterfowl. Spring, fall, and molting concentrations of waterfowl occur in this area and brown bear concentrations occur during both spring and summer (along spawning streams). A harbor seal haulout area is also found in Port Heiden. The area is managed by the Alaska Department of Fish and Game.

Cinder River State Critical Habitat Area was established in 1972 to protect fish and wildlife habitat, particularly that of waterfowl. Spring, fall, and molting concentrations of waterfowl occur in this area, as do brown bear spring concentrations. Harbor seals haul out at the mouth of the Cinder River. The area is managed by the Alaska Department of Fish and Game.

Egegik State Critical Habitat Area was established in 1972 to protect fish and wildlife habitat, particularly that of waterfowl. Spring, fall, and molting concentrations of waterfowl occur in this area, as do brown bear spring concentrations. A harbor seal haulout area is located at the in Egegik Bay. The area is managed by the Alaska Department of Fish and Game.

Pilot Point State Critical Habitat Area was established in 1972 to protect fish and wildlife habitat, particularly that of waterfowl. Spring, fall, and molting concentrations of waterfowl occur in this area, as do brown bear spring concentrations. A harbor seal haulout area is located in Ugashik Bay. The area is managed by the Alaska Department of Fish and Game.

Walrus Islands State Game Sanctuary, a group of seven small islands in Bristol Bay, was established in 1960 to protect walruses and other game. Best known among the Walrus Islands is Round Island, where each summer 8,000 to 12,000 male walruses haul out on exposed rocky beaches; in addition, the

island hosts the Sanctuary's largest haulout concentration of Steller sea lions (600-700 animals). Also, hundreds of thousands of seabirds nest on the islands each summer. The area is managed by the Alaska Department of Fish and Game. Web page:
http://www.adfg.alaska.gov/index.cfm?adfg=walrusislands.main

Wood -Tikchik State Park, the largest state park in the nation, at 1.6 million acres, was created in 1978 for the purpose of protecting the area's fish and wildlife breeding and support systems and preserving continued subsistence and recreational activities. The management philosophy is one of non-development and maintenance of the area's wilderness character. Park facilities are rustic and few, with great emphasis placed upon low impact camping and "pack it in, pack it out" practices. Access is by air from Dillingham. All 5 species of pacific salmon spawn here. Moose, caribou, brown bear and small game/furbearers are present. Many birds nest and/or migrate through the area. The Park is managed by the Alaska Department of Natural Resources. Web page:
http://dnr.alaska.gov/parks/units/woodtik.htm

3. ***Federal***

Togiak National Wildlife Refuge Managed by the U.S. Fish and Wildlife Service, the 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

Alaska Maritime National Wildlife Refuge Managed by the U.S. Fish and Wildlife Service, the 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. Web page:
http://alaska.fws.gov/nwr/akmar/index.htm

Alaska Peninsula National Wildlife Refuge The Refuge lies on the Pacific side of the Alaska Peninsula and covers about 3.5 million acres. The landscape includes active volcanoes along the Aleutian Range, lakes, rivers, tundra, and rugged coastline. Moose, caribou, wolves, brown bears, and wolverines reside on the refuge. Sea lions, seals, sea otters (about 30,000), and whales live in the marine environment. Ducks, geese, and shorebirds also thrive in the area, as do several species of fish. Big game hunting and sport fishing are popular uses of the Refuge. The Refuge was established in 1980 and is managed by the U.S. Fish and Wildlife Service. Web page: http://alaska.fws.gov/nwr/akpen/index.htm

Becharof National Wildlife Refuge Managed by the U.S. Fish and Wildlife Service, the Refuge was established in 1980. The Refuge covers 1.2 million acres, and is dominated by Becharof Lake, the second largest lake in Alaska. The lake is surrounded by low rolling hills, tundra, wetlands, and volcanic peaks. Salmon spawning streams attract one of the largest brown bear populations in the state. Moose, caribou, wolves, wolverines, fox, and beaver are abundant. Sea otters, sea lions, harbor seals, and whales, inhabit the marine environment. The Refuge is a major source of salmon, grayling, and arctic char. Waterfowl are common, as are eagles, peregrine falcons, and thousands of seabirds. Big game

hunting and sport fishing are primary visitor uses. Web page: http://alaska.fws.gov/nwr/becharof/index.htm

Aniakchak National Monument and Preserve The Monument and Preserve was initially created as a unit of the National Park System in 1978; it was subsequently designated as a Monument and Preserve in 1980. The Monument includes Aniakchak caldera, one of the largest calderas on the Alaska Peninsula. Terrestrial mammals that inhabit the Monument and Preserve include moose, caribou, brown bears, wolves, beaver, and fox. Marine mammals which may be found along the coast include sea otters, harbor seals, and sea lions. Bald eagles nest and feed in the Monument and Preserve, and large numbers of waterfowl and shorebirds migrate through or nest in the area. Salmon and arctic char are among the fish species supported by the fresh and salt waters of the area. Aniakchak is managed by the National Park Service. Web page: http://www.nps.gov/ania/index.htm

Katmai National Park and Preserve Managed by the National Park Service, the Park and Preserve cover approximately 4 million acres on the Alaska Peninsula. Katmai was established in 1918 as a National Monument, and was expanded and re-designated in 1980. In 1912 Mount Katmai exploded, creating the Valley of Ten Thousand Smokes. The area supports significant populations of salmon as well as providing for trophy sport fishing (e.g. rainbow trout). The park supports the largest protected population of brown bears in North America; other terrestrial mammals include moose, caribou, wolves, lynx, wolverines, fox, and beaver. Waterfowl, shorebirds, and bald eagles are relatively common. In addition, the Park's coastal environment supports seabird colonies, and marine mammals such as sea otters, harbor seals, and sea lions. The Alagnak Wild River heads in Kukaklek and Nonvianuk lakes in Katmai National Park and Preserve. Web page: http://www.nps.gov/katm/index.htm

Lake Clark National Park and Preserve Managed by the National Park Service, this 4 million acre Park and Preserve was designated in 1980. Terrestrial mammals found within the area include moose, Dall sheep, caribou, black bears, brown bears, wolves, wolverine, fox, beaver, and lynx. Waterfowl, shorebirds, and bald eagles are also supported by the Park and Preserve. Marine mammals found along the coast include harbor seals, sea lions, and beluga whales. Salmon, grayling, rainbow trout, and arctic char are among the fish species supported by the salt and fresh waters of the area. 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.

Land Management Map Legend Page: To view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/base/LegendPage.pdf

Land Management Map 1 of 6 - to view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/bristol/BristolMap1of6.pdf

Land Management Map 2 of 6: To view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/bristol/BristolMap2of6.pdf

Land Management Map 3 of 6: To view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/bristol/BristolMap3of6.pdf

Land Management Map 4 of 6: To view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/bristol/BristolMap4of6.pdf

Land Management Map 5 of 6: To view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/bristol/BristolMap5of6.pdf

Insert land management designations map: Map 6 of 6 - to view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/bristol/BristolMap6of6.pdf

COOK INLET SUBAREA CONTINGENCY PLAN
SENSITIVE AREAS
SECTION

LIST OF FIGURES

i. 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 resource 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 resource trustees or to their appointed NRDA Representative.

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:

- *ARRT Dispersant Use Plan for Alaska* (see *Unified Plan, Annex F, Appendix I:* https://dec.alaska.gov/spar/ppr/plans/uc/Annex%20F%20Appendix1(Jan%2016).pdf)
- *In Situ Burning Guidelines for Alaska* (see *Unified Plan, Annex F, Appendix 2:* https://dec.alaska.gov/spar/ppr/plans/uc/Annex%20F%20Appendix2-3(Jan%2010).pdf)
- *Wildlife Protection Guidelines for Alaska* (see *Unified Plan, Annex G:* https://dec.alaska.gov/spar/ppr/plans/uc/Annex%20G%20(Oct%202012).pdf)
- *Historic Properties Protection Guidelines for Alaska Federal On-Scene Coordinators* (see *Unified Plan, Annex M:* https://dec.alaska.gov/spar/ppr/plans/uc/Annex%20M%20(Jan%2010).pdf)
- *Places of Refuge Guidelines (see Unified Plan, Annex O:* https://dec.alaska.gov/spar/ppr/plans/uc/Annex%20O%20(Jan%2010).pdf)

In addition, Federal OSCs in Alaska work in cooperation with the U.S. Department of the Interior (DOI) Office of Environmental Policy and Compliance, the U.S. Fish and Wildlife Service (USFWS), and the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) and National Ocean Service (NOS) to ensure response activities 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's National Oil and Hazardous Substances Pollution Contingency Plan and the Endangered Species Act* (see *Unified Plan, Annex K:* http://dec.alaska.gov/spar/ppr/plans/uc/mou/ky-ESA%20MOA(2001).pdf).

Annex N of the *Unified Plan* includes *Shoreline Cleanup and Assessment Guidelines*, which provides helpful information on clean-up options by shoreline type and can be found at https://dec.alaska.gov/spar/ppr/plans/uc/Annex%20N%20(Jan%2010).pdf.

The Geographic Response Strategies (GRS) Section of the subarea contingency plans contains site-specific instructions 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. Although these areas have been pre-identified for protection, other sites in the area of a spill may require protection.

This section and the guidelines in the *Unified Plan* are also intended for use by facility/vessel operators who are required to develop an industry oil spill prevention and contingency plan as per state regulations 18 AAC 75.400 – 495. 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 detailed information about every possible resource at risk is included. Given seasonal fluctuations in species distribution and abundance, as well as site-specific data that may be gathered during an incident, the material included in this plan offers general information that should be refined as needed during a response. Future updates to this document will continue to add information relevant to response activities.

Some of the maps presented in this section are available on the internet at http://www.asgdc.state.ak.us/maps/cplans/subareas.html.

Figure D-1 shows the seaward boundary of the Cook Inlet Subarea and its relationship to the other subareas. While this contingency plan is specific to the Cook Inlet Subarea, we note that there are ecological connections to the adjacent subareas; for example, migratory species and ocean currents may cross planning boundaries. Suggestions, comments, and more current information are requested. Please contact either:

Dr. Philip Johnson
U.S. Department of the Interior
Office of Environmental Policy and Compliance
1689 C Street, Room 119
Anchorage, Alaska 99501
(907) 271-5011
FAX (907) 271-4102
email: philip_johnson@ios.doi.gov

Jeanette Alas
Alaska Department of Fish and Game
Division of Habitat
333 Raspberry Road
Anchorage, Alaska 99518
(907) 267-2342
FAX (907) 267-2499
email: jeanette.alas@alaska.gov

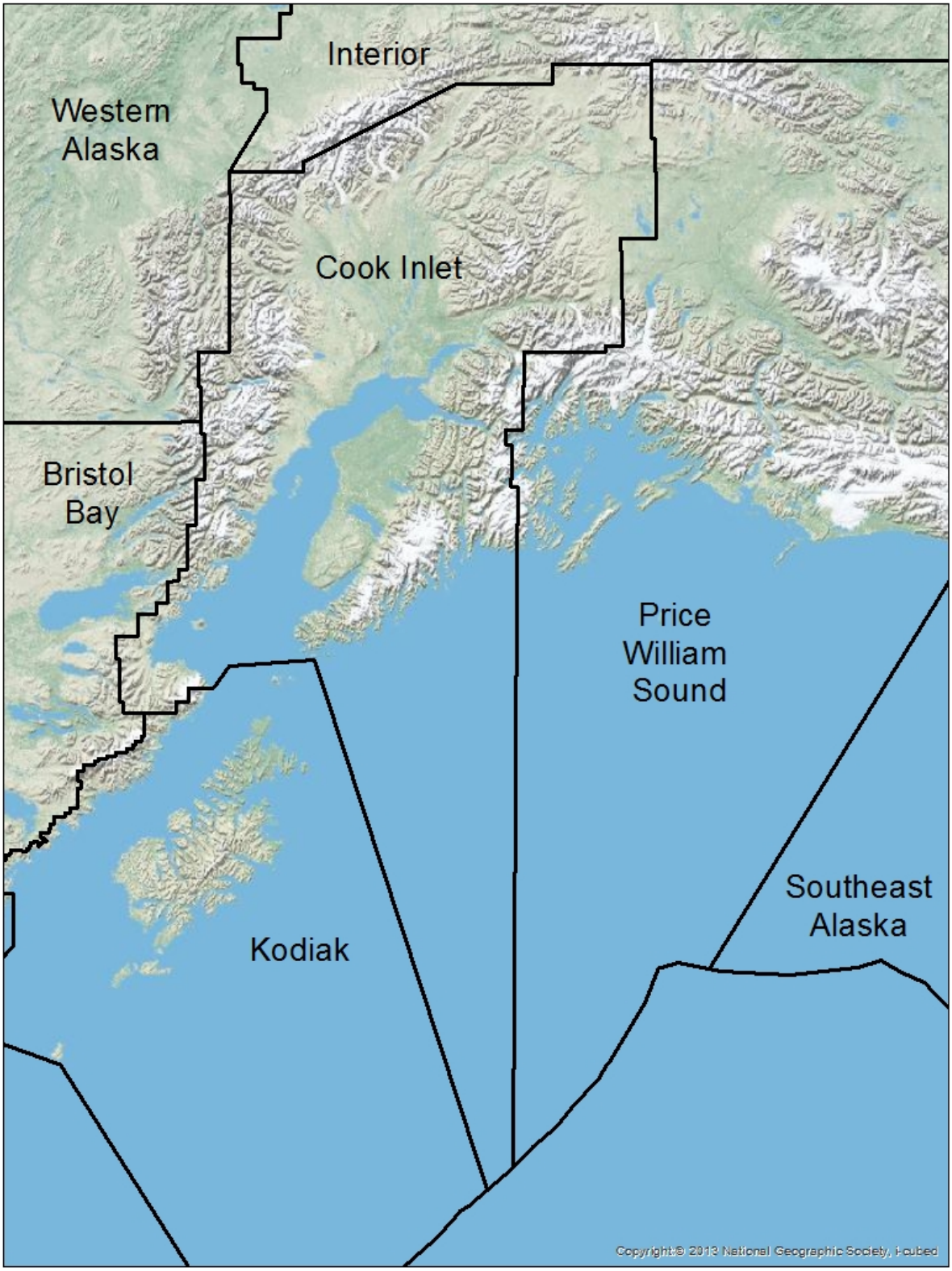


Figure D-1 – Seaward boundaries of Cook Inlet and adjacent subareas.

ii. SENSITIVE AREAS: PART ONE – INFORMATION SOURCES

AGENCY	RESOURCES	POINT OF CONTACT
Fish & Wildlife Habitat Resources		
Alaska Department of Fish and Game	Fish, shellfish, birds, terrestrial mammals, marine mammals	Division of Habitat Anchorage - 907-267-2342
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 marine species and listed anadromous fish in marine waters, designated critical habitat	Protected Resources Division Juneau- 907-586-7630
U.S. Department of Commerce, National Marine Fisheries Service	Essential Fish Habitat, federally managed commercial fish stocks, including corals, special aquatic vegetation (marine), and offshore salmon	Habitat Conservation Division Anchorage - 907-271-5195
U.S. Department of Commerce, National Marine Fisheries Service	Effects of oil and oil spill response on marine mammals, fisheries resources, hydrocarbon chemistry, dispersants	Protected Resources Division Juneau- 907-586-7630
U.S. Department of Agriculture	National forest lands	Chugach National Forest – Glacier Ranger District Girdwood – 907-783-3242
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
U.S. Department of Agriculture	Archaeological/historical sites on national forest lands	Chugach National Forest – Glacier Ranger District Girdwood - 907-783-3242
Shoreline Types		
U.S. Department of Commerce, National Oceanic & Atmospheric Administration	Shoreline types, environmental sensitivity index maps	Office of Response and Restoration Scientific Support Coordinator Anchorage - 907-428-4143
U.S. Department of Commerce, National Marine Fisheries Service Alaska Regional Office	Shoreline types (Alaska ShoreZone categories), biophysical habitat data, high-resolution digital video and photographs	NOAA Fisheries Analytical Team 907-586-7858 https://alaskafisheries.noaa.gov/habitat/shorezone

AGENCY	RESOURCES	POINT OF CONTACT
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 Anchorage - 907-267-22342
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 Agriculture	National forests, national monuments, wild and scenic rivers, wilderness areas, research natural areas	Chugach National Forest – Glacier Ranger District Girdwood - 907-783-3242
U.S. Department of Defense	Military installations and reservations	Alaska Command Anchorage - 907-552-3944
University of Alaska Anchorage Alaska Center for Conservation Science	Kachemak Bay Research Reserve	http://accs.uaa.alaska.edu/kbnerr/
Local Governments: – Municipality of Anchorage – Matanuska-Susitna Borough – Kenai Peninsula Borough	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	Division of Commercial Fisheries Upper Cook Inlet (Soldotna) – 907 - 262-9368 Lower Cook Inlet (Homer) – 907-235-8191
Alaska Department of Natural Resources	Tideland leases	Division of Mining, Land, and Water Anchorage - 907-269-8565
Alaska Department of Environmental Conservation	Seafood processing, commercial shellfish growing areas and operators	Division of Environmental Health Food Safety & Sanitation Program Anchorage - 907-269-7501 Division of Water Anchorage - 907-269-7561
U.S. Department of Commerce National Marine Fisheries Service	Fishing permits, seasons	Protected Resources Division Juneau- 907-586-7630

AGENCY	RESOURCES	POINT OF CONTACT
Subsistence, Personal, and Sport Uses		
Alaska Department of Fish and Game	Subsistence and personal uses statewide and navigable waters, sport hunting and fishing	Division of Sport Fish Anchorage - 907-267-2218, Palmer - 907-746-6300, Soldotna - 907-262-9368
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 Juneau - 907-586-7630
U.S. Department of Agriculture	Subsistence uses on Federal Forest Service lands	Chugach National Forest – Cordova Ranger District Cordova – 907-424-7661
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 Anchorage - 907-269-8400
Alaska Department of Fish and Game	Sport hunting and fishing	Division of Wildlife Conservation Anchorage - 907-267-2257 (see above for Division of Sport Fish contacts)
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
U.S. Department of Agriculture	Campgrounds, cabins, recreation areas, trails, within the national forest system	Chugach National Forest – Glacier Ranger District Girdwood - 907-783-3242
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 Commercial Fisheries Juneau – 907-465-4235
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 - 907-428-4100
U.S. Environmental Protection Agency	Source water protection	Office of Water and Watersheds 206-553-1152

iii. SENSITIVE AREAS: PART TWO – AREAS OF ENVIRONMENTAL CONCERN

A. BACKGROUND/CRITERIA

The following relative priority listing was developed by the Sensitive Areas Workgroup, 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 cleanup 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 OSCs for protecting historic properties and cultural resources is contained in Annex M of the *Unified Plan.*

The following criteria were developed as a tool 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
- seafood safety/contamination, health/safety
- subsistence food safety and food security
- mortality -- wildlife, fish, other organisms (how many threatened in relation to abundance)
- animal displacement and sensitivity to displacement
- aesthetic degradation
- habitat availability and rarity
- sub-lethal 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, designated critical habitat, and/or other legal designation
- bioconcentration 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 countermeasure

B. AREAS OF MAJOR CONCERN

- Threatened or Endangered Species Habitats:
  - Steller Sea Lion Rookeries, Haulouts, Designated Critical Habitat, and No Approach Buffer Zones
  - Steller's Eiders Wintering Areas
  - Beluga Whale Designated Critical Habitat
  - Southwest Alaska Distinct Population Segment (DPS) Northern Sea Otter Designated Critical Habitat
  - Western North Pacific DPS and Mexico DPS Humpback, Fin, and North Pacific Right Whale Foraging Areas
- Shoreline Geomorphology - Coastal Habitat Types:
  - Marshes
  - Sheltered Tidal Flats

    - Sheltered Rocky Shores
    - High Density Kelp Beds
    - Eelgrass Beds
- Catcher Beaches
- Sea Otter Concentration Areas (>20)
- Harbor Seal Haulouts (>10)
- Large Seabird Colonies (>5,000)
- Waterfowl and Shorebird Spring, Fall, Winter Concentration Areas
- Bald Eagle Nest Sites
- Bald Eagle Feeding Concentration Areas
- Anadromous Fish Streams # of Spawners
    - >25,000 sockeye salmon
    - >30,000 pink salmon
    - >10,000 chum salmon
    - >2,500 coho salmon
    - >1,000 Chinook salmon
- Intertidal and Freshwater Salmon and Forage Fish Spawning Areas
- Hatcheries
- Herring Spawning Areas
- Habitat Areas of Particular Concern (HAPC)
- Beluga Whale Concentration Areas
- Land Management Designations:
    - Federal:
        - Wilderness
        - Wild and Scenic Rivers
        - National Natural Landmarks
        - National Parks and Preserves
        - National Monuments
        - National Wildlife Refuges
        - Public Lands
        - National Forests
        - Native allotments and town sites
    - State:
        - Refuges
        - Sanctuaries
        - Critical Habitat Areas
- Cultural Resources/Archaeological Sites:
    - National Historic Landmarks
    - Burial Sites
    - National Register Eligible Village Sites
    - Intertidal Sites
- High Use Subsistence Harvest Areas
- High Use Commercial Fishing Areas
- High Use Recreational Areas

C. AREAS OF MODERATE CONCERN

- Species of Concern Habitats (Threatened or Endangered Candidate Species)
- Shoreline Geomorphology - Coastal Habitat Types:
  - Gravel Beaches
  - Mixed Sand and Gravel Beaches
  - Exposed Tidal Flats
  - Coarse-Grained Sand Beaches
- Sea Otter General Distribution Areas (<20)
- Harbor Seal Haulouts (<10)
- Seabird Colonies (1,000-5,000)
- Waterfowl and Shorebird Nesting and Molting Concentration Areas
- Anadromous Fish Streams (# of Spawners)
  - ≥4,000 to ≤25,000 sockeye salmon
  - ≥5,000 to ≤30,000 pink salmon
  - ≥5,000 to ≤10,000 chum salmon
  - <500 to ≤2,500 coho salmon
  - ≤1,000 Chinook salmon
- Shellfish Growing Waters and Beaches
- Bear Spring Concentration Areas
- Land Management Designations:
  - State:
    - State Parks
- Cultural Resources/Archaeological Sites:
  - National Register Eligible Sites (Other Than Village Sites)
  - Sites Adjacent To Shorelines
- Commercial Fish Harvest Areas
- Recreational Use Areas
- Essential Fish Habitat (EFH)
- Commercial Seafood Processing Facilities
- Offsite Hatchery Release Locations

D. AREAS OF LESSER CONCERN

- Shoreline Geomorphology - Coastal Habitat Types:
  - Fine-Grained Sand Beaches
  - Exposed Wave-Cut Platforms
  - Exposed Rocky Shores
- Seabird Colonies (<1,000)
- Raptor Feeding Areas
- Waterfowl and Shorebird General Distribution Areas
- Bear Fall Concentration Areas
- Anadromous Fish Streams (# of Spawners)
  - <4,000 sockeye salmon
  - <5,000 pink salmon
  - <5,000 chum salmon
  - <500 coho salmon

- Land Management Designations:
  - State:
    - General Public Lands

E. AREAS OF LOCAL CONCERN

AGENCY DESIGNATED AREAS: Some areas within the Cook Inlet Subarea warrant special attention due to the presence of highly productive wildlife habitat, the ability to sustain a large part of a villages' subsistence needs, the occurrence of unusual historical sites or large mineral deposits, recreation, energy development, hazardous areas, or the presence of important fisheries. These were previously identified as Areas Meriting Special Attention, Important Use Areas, Special Use Areas, or Sensitive Areas through the Anchorage Coastal Management Plan, Kenai Peninsula Borough Coastal Management Program, Port Graham/Nanwalek Area Which Merits Special Attention Plan (Kenai Peninsula Borough), Matanuska-Susitna Borough Coastal Management Plan, and Point Mackenzie Area Which Merits Special Attention Plan (Matanuska-Susitna Borough). On July 1, 2011, the federally approved Alaska Coastal Management Program expired, resulting in a withdrawal from participation in the Coastal Zone Management Act's National Coastal Management Program. However, several of these plans were developed while the program was in effect and habitat areas that warrant special attention were identified; they are summarized in the table below. **This information is presented without modification.**

DESIGNATED AREA	REASONS FOR DESIGNATION	LAND OWNERSHIP/ VILLAGES TO CONTACT
Anchor River Mouth	Area is habitat for salmon, steelhead, Dolly Varden, halibut, wildlife and seabirds. Used for recreational purposes. Boat launching area.	Private, State (Anchor River Recreation Area)
Andesitic Dike at Potter Marsh on the Old Seward Highway	Unique geology.	State
Bird Creek Regional Park	Spawning ground for anadromous fish. Is habitat for moose, brown and black bear, lynx, wolverine, hare, grouse, dall sheep and birds. Used for recreational and scenic purposes.	Municipality of Anchorage
Bridge Creek Watershed	Important moose habitat. Major water supply for the City of Homer and marine-related industrial development. Used for recreational and scenic purposes.	Private, State
Cape Starichof	Area is habitat for Salmon and steelhead. Used for recreational and scenic purposes.	Kenai Peninsula Borough, private, State
Chuitna Area	Important waterfowl habitat near Beluga. Major drainages are anadromous. Significant moose harvesting area. Contains mineral and other natural resources as well as archeological sites. Used for recreational and scenic purposes.	Surface and subsurface: Kenai Peninsula Borough, private, State Major private ownerships: Cook Inlet Region, Inc., Tyonek Native Corporation Port and industrial sites: Kenai Peninsula Borough
Eagle River (drainage)	Used for recreational and scenic purposes. Provides flood control. Contributes to water supply.	Eklutna Incorporated, Fort Richardson Military Reservation (Seaward ownership), State
Fish Creek	Unique coastal marsh system. Visual and recreational open space resource.	Tidelands owned by the Municipality of Anchorage. Other owners include Alaska Railroad (right-of-way) and private ownership by adjacent property owners.
Goose Bay State Game Refuge	Protection and management of fish and wildlife populations and habitats. Provides limited public recreational opportunities.	State; also private, university and federal inholdings
Kasilof River	Important habitat for salmon, moose and migratory waterfowl. Wetlands naturally retain floodwaters. Presence of historic and archeological sites. Used for recreational and scenic purposes.	State, federal, Kenai Peninsula Borough, private
Kenai River	Migration, spawning and rearing area for salmon and other anadromous fish. Important waterfowl, bird, eagle and wildlife habitat area. Wetlands and floodplain areas provide natural water storage and water quality functions. Used for recreational and scenic purposes.	State, federal, municipal, private
Knik/Matanuska River Floodplain	Mitigates flood hazard potential along the Knik/Matanuska River. Contains areas of essential habitat for waterfowl and wildlife. Offers recreational opportunities.	State
Nancy Lake State Recreation Area	Used for recreational and scenic purposes.	Private, State

DESIGNATED AREA	REASONS FOR DESIGNATION	LAND OWNERSHIP/ VILLAGES TO CONTACT
Nikiski Industrial Area	Commercial development.	Kenai Peninsula Borough, Federal, private, State
Ninilchik/Deep Creek	Area is habitat for salmon, steelhead, halibut, dolly varden, moose, shorebirds and clams. Historic Russian village and church. Used for recreational and scenic purposes.	Kenai Peninsula Borough, private, State
Old Girdwood Townsite South of Seward Highway	Provides resting and habitat area for migratory waterfowl and other birds. Site used for recreational and scenic purposes.	Private, State
Palmer Flats State Game Refuge	Protection and management of fish and wildlife populations and habitats. Offers limited public recreational opportunities.	State
Point Campbell-Point Woronzof Coastal Wetlands	Supports numerous species of wading birds and migratory waterfowl. Used for recreational and scenic purposes.	State
Point Campbell Dunes and Delta	Contains evidence of five glacial periods. Only Anchorage locality where active sand dune migration can be observed.	Municipality of Anchorage
Point Mackenzie Industrial Port/Park Site	Port development.	Matanuska-Susitna Borough, State
Point Woronzof Bluffs	Contains the only known fossil beds in the Anchorage area.	Municipality of Anchorage, State
Port of Anchorage Area	Port and marina activity.	Alaska Railroad, Municipality of Anchorage
Port Graham/Nanwalek Area	Important area for subsistence hunting, fishing, and food gathering. Possesses unique cultural value and historical significance.	Chugach Alaska Corporation (subsurface), Nanwalek Village Corporation, Port Graham Village Corporation, State (submerged lands and tidelands)
Port Graham Waterfront	Area is habitat for salmon and clams. Contains timber resources. Presence of historic and archaeological sites (some undiscovered). Used for recreational and scenic purposes.	State
Seldovia Watershed	Black bear habitat. Potential timber resources. High scenic value.	Private
Seward Highway/ Turnagain Arm	Designated national scenic byway.	State
Susitna Flats State Game Refuge	Protection and management of fish and wildlife populations and habitats. Offers limited public recreational and commercial opportunities.	Private inholdings within the refuge, State
Upper Resurrection Bay	Area is habitat for fish, birds and wildlife. Spawning area for anadromous fish. Eulachon are present in small numbers. Supports important recreational fishery. Unique geology. Used for recreational and scenic purposes.	Alaska Railroad, City of Seward, State, Private

TRIBE-IDENTIFIED AREAS: An August 2000 survey of Native tribes in the subarea conducted by the Environmental Protection Agency (EPA) yielded additional information about sensitive areas near villages, as viewed from the local perspective. The tables below indicate the responding tribes, their primary sites of concern, and the reasons for their importance as noted by the tribes.

Chickaloon Village Traditional Council

SENSITIVE AREA	REASONS FOR DESIGNATION
Waterways	None stated
Chickaloon River	Salmon
Moose Creek	Salmon
Mantanuska River	Salmon, protection of inlet (affects other tribes)
Main office/school	Important to the tribe
Health and government building	Important to the tribe

Knik Tribe

SENSITIVE AREA	REASONS FOR DESIGNATION
Goose Bay	Subsistence activities
Fish Creek	Subsistence activities
Cook Inlet	Subsistence activities

Port Graham Village Council

SENSITIVE AREA	REASONS FOR DESIGNATION
Port Graham Hatchery	Salmon enhancement
Port Graham Bay	Subsistence activities
Head of Port Graham Bay	Spawning stream
Mouth of Port Graham Bay	Subsistence activities
Johnson Slough	Spawning stream

iv. SENSITIVE AREAS: PART THREE – RESOURCE SENSITIVITY

The following sensitivity tables were developed by the State and Federal Natural Resource Trustees with legislative responsibility for management and protection of these resources. This includes the following agencies: NMFS, USFWS, National Park Service (NPS), Bureau of Land Management (BLM), Alaska Department of Fish and Game (ADF&G), and Alaska Department of Natural Resources (ADNR). This information is a summary derived from 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	Fine-grained sand beaches Exposed wave-cut platforms Exposed rocky shores	Gravel beaches Mixed sand & gravel beaches Exposed tidal flats Coarse grained sand beaches	Marshes Sheltered tidal flats Sheltered rocky shores
Lake and River Habitat Types	Exposed rocky cliffs & banks Bedrock shores & ledges, rocky shoals Eroding scarps/banks in unconsolidated sediment Exposed man-made structures	Sand beaches & bars Mixed sand & gravel beaches/bars Gravel beaches/bars Gently sloping banks Exposed flats Riprap	Sheltered scarps in bedrock Vegetated steep sloping bluffs Sheltered man-made structures Vegetated low banks Sheltered sand & mud & muddy substrates Marshes
Upland Habitat Types	To Be Developed	To Be Developed	To Be Developed

Threatened or Endangered Species

Category	Low	Medium	High
ENDANGERED SPECIES			Whales: Western North Pacific DPS Humpback, Fin, Blue, Sei, Sperm, North Pacific right, Cook Inlet Beluga Birds: Short-tailed albatross Pinnipeds: Steller sea lion
THREATENED SPECIES			Birds: Steller's eider Marine Mammals: Southwest Alaska DPS Northern sea otter, Mexico DPS Humpback Whale
SPECIES OF GREATEST CONSERVATION NEED*			

*The Alaska Wildlife Action Plan is under review at the time of the Sensitive Areas Change 2 approval. The 2015 draft and final version (when available) can be found at http://www.adfg.alaska.gov/index.cfm?adfg=species.wap2015revision.

SEA OTTERS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE		< 20	> 20
HUMAN HARVEST	year round		

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Present nearshore	■	■	■	■	■	■	■	■	■	■	■	■
Pupping				■	■	■						

HARBOR SEALS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE[1]	< 10	10 – 25	> 25
HUMAN HARVEST	year round		

[1] Based on counts within survey units (see Figures D-13 and D-14 for survey units).

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Pupping					■	■	■					
Molting					■	■	■	■	■	■		
On haulouts	■	■	■	■	■	■	■	■	■	■	■	■

STELLER SEA LIONS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE (ON HAULOUTS)	< 15	15 - 30	> 30
SEASONAL SUSCEPTIBILITY	Nov – April	Aug – Oct	May – July
HUMAN HARVEST	Nov - March 15	June 15 - Oct 31	March 15 - June 15

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Territory establishment & breeding						■	■					
Pupping						■	■	■				
Molting							■	■	■	■	■	
On rookeries[1]						■	■	■	■	■		
On haulouts[1]	■	■	■	■	■	■	■	■	■	■	■	■
In foraging agregations[2]												

[1] The temporal pattern of habitat use can vary by site, and it is not generalizable by "type"; sites used as rookeries during the breeding season may be occupied year-round. Some haulouts are primarily used in one season; others are used year-round.
[2] The seasonality of foraging aggregations varies with the kind of fish they area foraging on. Many of the spawning aggregations of herring, eulachon, returning salmon, etc. could be expected to attract Steller sea lions if the spawning area is within their range.

WHALES

CATEGORY	LOW	MEDIUM	HIGH
SUSCEPTIBILITY		Cook Inlet Beluga spring and fall concentrations Gray migration corridor off coast Humpback whale feeding areas in lower Cook Inlet and waters adjacent to and south of the subarea boundary.	April 15 – Oct 15[1]

[1] Cook Inlet beluga whales near Susitna Delta region.

Cook Inlet Beluga Whales:

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Present nearshore	■	■	■	■	■	■	■	■	■	■	■	■
Calving												

BEARS (Brown and Black)

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE			
SEASONAL SUSCEPTIBILITY[1,2]	Nov 1 - April 14	April 15 - May 30 Aug 16 - Oct 31	June 1 - Aug 15
COMMERCIAL VALUE[1,2]	Nov 1 - April 14		April 15 - Oct 31
HUMAN HARVEST	Nov 1 - April 14	July 1 – Oct 31	April 15 - June 30

[1] Bear densities and susceptibility to oil impacts increases through spring as more individuals emerge from dens and move to coastal areas. Bear densities and susceptibility to oil impacts decreases through the summer depending upon the availability of fish in lower reaches of streams.

[2] Most bear hunting opportunities are closed during the summer period; however, bear viewing opportunities in some areas peak during the summer period.

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Denning	■	■	■	■							■	■
Spring coastal concentrations					■	■						
Salmon stream concentrations							■	■	■	■		

CARIBOU

CATEGORY	LOW	MEDIUM	HIGH
SEASONAL SUSCEPTIBILITY	October 1 – May 1		April 1 – June 7 Sept 1 – Oct 15
HUMAN HARVEST	None on lowland herd		

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Migrations				■	■				■	■		
Calving						■	■					
Wintering concentrations	■	■	■							■	■	■

STELLER'S EIDERS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE			1 or more
SUSCEPTIBILITY		March 15 – April 15[1] July 15 – Aug 15[1,2]	– Aug 15 – April 15[2]

[1] Upper Cook Inlet

[2] Lower Cook Inlet

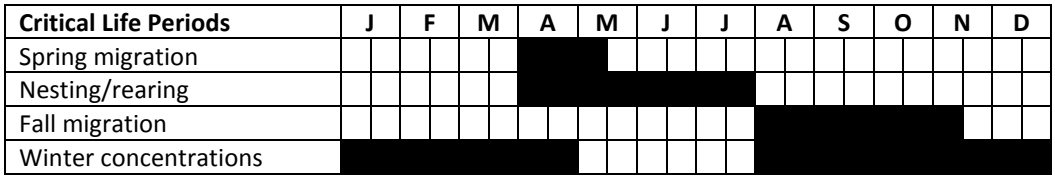
Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Spring migration			■	■								
Fall migration							■	■	■	■		
Winter concentrations	■	■										■

WATERFOWL AND SHOREBIRDS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 100	100 - 1,000	> 1,000
SEASONAL SUSCEPTIBILITY	Nov 1 - Jan 31	Feb 1 - Apr 14 June 1 - Aug 14	Oct 15 – Apr 15[1] Apr 15 - May 30 Aug 15 - Oct 31
SPECIES DIVERSITY	1 - 3	4 – 6	> 6
HUMAN HARVEST	Feb 1 - Aug 31[1] Feb 1 - Sept 30[2]	Nov 30 - Jan 31[1] Dec 17 - Jan 31[2]	Sept 1 - Oct 31[1] Oct 1 - Dec 16[2]

[1] Upper Cook Inlet: area north of the latitude of Anchor Point

[2] Lower Cook Inlet: area south of latitude of Anchor Point

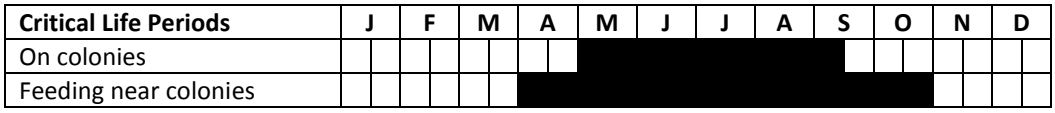


SEABIRDS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 1000	1000 - 5000	> 5000
SEASONAL SUSCEPTIBILITY	Nov 1 - Jan 31	Feb 1 - April 30	May 1 - Oct 31
SPECIES DIVERSITY	1 - 3	4 - 6	> 6
HUMAN HARVEST			May 1 - June 3[1] April 15 - June 30[2]

[1] Upper Cook Inlet: area north of the latitude of Anchor Point

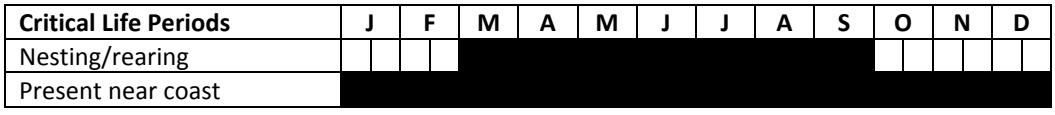
[2] Lower Cook Inlet: area south of latitude of Anchor Point



RAPTORS (generally eagles)

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	1 / coastal mile	2-5 / coastal mile	> 5 / coastal mile
SEASONAL SUSCEPTIBILITY[1]	year round		

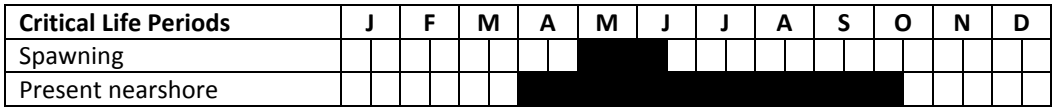
[1] There are fewer eagles present during the winter, particularly in central and upper Cook Inlet.



HERRING and SMELT (including capelin/eulachon)

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE (Biomass in Tons)	< 500	500 - 5,000	> 5,000
SEASONAL SUSCEPTIBILITY	Oct 1 - Feb 28	March and Sept	April 1 - Aug 31
HUMAN HARVEST[1]			April 1 - May 31

[1] Capelin and eulachon

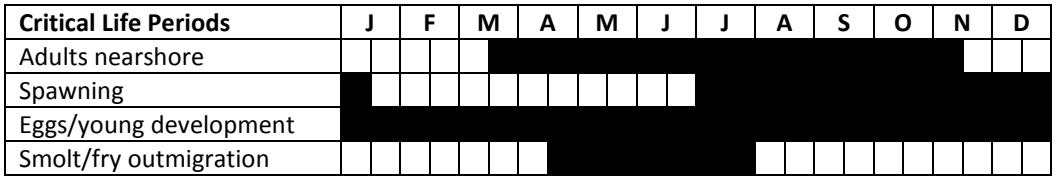


ALMON

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 4,000 sockeye < 5,000 pink < 5,000 chum < 500 coho	4,000-25,000 sockeye 5,000-30,000 pink 5,000-10,000 chum < 1,000 chinook < 500-2,500 coho	> 25,000 sockeye > 30,000 pink > 10,000 chum > 1,000 chinook > 2,500 coho
SEASONAL SUSCEPTIBILITY	Dec 1 - Mar 1	Feb 1 - March 31 Nov 1 - Dec 31	April 1 - Oct 31
SPECIES DIVERSITY	1	2 - 4	5
HUMAN HARVEST		Nov 1 - March 31	May 15 - Oct 15[1] May 1 - Oct 31[2]

[1] Upper Cook Inlet: area north of the latitude of Anchor Point

[2] Lower Cook Inlet: area south of latitude of Anchor Point. Sport fishing off Homer Spit.

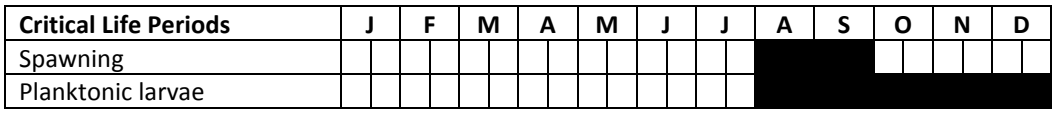


CLAMS

CATEGORY	LOW	MEDIUM	HIGH
HUMAN HARVEST	Nov 1 - March 31	July 1 - Oct 31[1] August[2]	April 1 - June 30[1] April 1 - July 31 and Sept 1- Oct 31[2]

[1] Upper Cook Inlet: area north of the latitude of Anchor Point

[2] Lower Cook Inlet: area south of latitude of Anchor Point



LAND MANAGEMENT DESIGNATIONS

CATEGORY	LOW	MEDIUM	HIGH
FEDERAL LANDS			Wild & Scenic Rivers National Natural Landmarks Wilderness Areas National Parks & Preserves National Monuments National Wildlife Refuges Chugach National Forest Public Lands Native Allotments and Town Sites[2]
STATE LANDS	Public Lands[1]	State Parks	Critical Habitats Refuges Sanctuaries

[1] Includes submerged lands out to 3 miles and historic bays and inlets.

[2] Allotments are privately owned; however, access should be coordinated through the DOI, Bureau of Indian Affairs.

CULTURAL RESOURCES/ARCHAEOLOGICAL SITES

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

v. SENSITIVE AREAS: PART FOUR – BIOLOGICAL AND HUMAN USE RESOURCES

The background information contained in this section is a mixture of references to readily available documents, knowledgeable contacts, and data not readily available elsewhere. Industry-generated references that have had agency input and review are incorporated by reference.

A. HABITAT TYPES

Shoreline habitats have been defined and ranked according to Environmental Sensitivity Index (ESI) standards produced by the 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/subareas.html. Updated ESI information can also be found on the internet at http://response.restoration.noaa.gov/maps-and-spatial-data/environmental-sensitivity-index-esi-maps.html.

Several interactive mappers or reports are available with information on biological and human use resources that can be accessed for information during a spill response:

- Cook Inlet Response Tool – developed by Alaska Ocean Observing System and Cook Inlet Regional Citizens Advisory Council
  - http://portal.aoos.org/cirt.php
- Arctic ERMA – developed by NOAA and the University of New Hampshire with the EPA, U.S. Coast Guard, and DOI
  - http://response.restoration.noaa.gov/maps-and-spatial-data/environmental-response-management-application-erma/arctic-erma.html
- Prevention and Emergency Response – created by the Alaska Department of Environmental Conservation's (ADEC) Prevention, Preparedness, and Response Program
  - http://www.arcgis.com/home/item.html?id=ed7027b903bc4c79a4e35461cdf1d6b2
- Bureau of Ocean Energy Management – Cook Inlet Planning Area - Oil and Gas Lease Sales Environmental Impact Statement
  - http://www.boem.gov/Alaska-Region/

1. *Benthic Habitats*

Oil vulnerability is lower in subtidal benthic areas than in the littoral or intertidal benthic areas since contamination by floating slicks is unlikely. Sensitivity is derived from the species that 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 and large beds of kelp.

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 Rocky Shores. 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 Rocky Platforms. 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 – Fine-grained Sand Beaches. 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 – Course-grained Sand Beaches. Medium permeability substrate: substrate is permeable with oil penetration up to 25 cm, slope is between 5 and 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 traffic ability, low densities of infauna.

ESI #5 – Mixed Sand and Gravel Beaches. 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% gravel, slope between 8 to 15 degrees, sediment mobility is high during storms, sediments are soft with low traffic ability, low populations infauna and epifauna except at lowest intertidal levels.

ESI #6 – 6A. Gravel Beaches. 6B. Rip-rap Structures. 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 traffic ability 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 Tidal Flats. 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 traffic ability, high infaunal densities.

ESI #8 – 8A. Sheltered Rocky Shores. 8B. Sheltered Man-made Structures. 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 Tidal Flats. 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 traffic ability, infaunal densities are high.

ESI #10 – 10A. Salt- and Brackish-Water Marshes. 10B. Fresh-water Marshes. Vegetated wetlands: marshes and swamps with various types of emergent herbaceous grasses and woody vegetation over the substrate.

ESI Shoreline Habitat Rankings for Cook Inlet

ESI Rank	Estuarine (Marine)	Lacustrine (Lake)	Riverine (Large Rivers)
1A	Exposed rocky shores	Exposed rocky shores	Exposed rocky banks
2A	Exposed wave-cut platforms in bedrock, mud, or clay	Shelving bedrock shores	Rocky shoals, bedrock ledges
3A	Fine to medium-grained sand beaches	–	–
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
6A	Gravel beaches	Gravel beaches	Gravel bars and gently sloping banks
6B	Riprap	Riprap	Riprap
7	Exposed tidal flats	Exposed tidal flats	–
8A	Sheltered scarps in bedrock, mud, or clay	Sheltered scarps in bedrock, mud, or clay	–
8B	Sheltered, solid man-made structures	Sheltered, solid man-made structures	Sheltered, solid man-made structures
9A	Sheltered tidal flats	Sheltered sand/mud flats	–
10A	Salt- and brackish-water marshes	–	–
10B	Freshwater marshes	Freshwater marshes	Freshwater marshes

Source: NOAA, Office of Response and Restoration. Shoreline Sensitivity Rankings List. http://response.restoration.noaa.gov/maps-and-spatial-data/shoreline-sensitivity-rankings-list.html (accessed February 29, 2016).

Alaska ShoreZone Coastal Habitat Mapping. ShoreZone is a mapping and classification system that specializes in the collection and interpretation of low-altitude aerial imagery of the coastal environment. Imagery is collected during summer low tides and is georeferenced. The ShoreZone data is set in an integrated, searchable inventory of geomorphic and biological features of the intertidal and shallow subtidal areas, which can be used as a tool for science, education, management, and environmental hazard planning and response. Mapping of the entire Cook Inlet Subarea is anticipated to be completed in 2016.

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 (Alaska base, Oceans, topographic, nautical, and aerial). Also, habitat maps can be generated online for attributes, such as Oil Residency Index, ESI, and sensitive biota (e.g., eelgrass). The shoreline classifications are described in the Alaska ShoreZone Protocols, and they also incorporate ESI categories. Habitat classifications for ShoreZone are based on survey data and imagery taken during the lowest tides of the year and only from zero-tide level and lower; the mapped data includes supratidal, intertidal, and shallow subtidal.

The NOAA NMFS, Alaska Regional Office hosts the Alaska ShoreZone web portal at:

http://alaskafisheries.noaa.gov/habitat/shorezone (all ShoreZone information and tutorials)
http://alaskafisheries.noaa.gov/mapping/szflex/ (access to imagery and mapping data).

ShoreZone imagery and habitat data is also available through the Cook Inlet Response Tool ocean data portal at http://portal.aoos.org/cirt. This on-line tool allows visualization of Alaska ShoreZone imagery and shoreline habitat data with dozens of other data layers, including many identified throughout this plan.

3. *Upland Habitat*

At this time, no uplands or wetlands classifications directly related to sensitivity to oil spills has been identified; however, several mappers with uplands or wetlands information are available that may be useful during a spill response:

- A general wetlands classification has been developed by the USFWS, National Wetlands Inventory, in Anchorage. Considerable mapping of wetlands has been completed; a Wetlands Mapper and additional information is available at http://www.fws.gov/wetlands.
- The Alaska Natural Heritage Program houses a multitude of maps, including a Rare Plant Occurrences Mapper, Vegetation Maps, Rare Ecosystems and Plant Associations, and many others. Several maps also contain links to downloadable Geographic Information System (GIS) shapefiles. Maps and additional information can be accessed at http://aknhp.uaa.alaska.edu/.
- The Kenai Peninsula Borough has an Interactive Parcel Viewer with layers, including ownership, coastal erosion, land use, borough maintained roads, and others; this map is available at http://mapserver.borough.kenai.ak.us/kpbmapviewer/.
- The Municipality of Anchorage has multiple maps and map applications, including Park and Trail Maps, Floodplain Mapping, and Street Maintenance Maps available at http://www.muni.org/maps/Pages/default.aspx.
- The Matanuska-Susitna Borough website contains links to maps and interactive mappers, such as Wetlands, Flood Zones, and Road Service Areas available at http://www.matsugov.us/#p.

- The Alaska Vegetation Classification is a U.S. Forest Service (USFS) General Technical Report (PNW-GTR-286) widely used for classifying Alaskan vegetation. It is available at http://www.fs.fed.us/pnw/publications/gtrs-prior-1997.shtml.
- The Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes and its associated Atlas specifies waterbodies which support anadromous species to the extent known. It is updated annually and an interactive mapper is available at https://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=main.interactive.

B. BIOLOGICAL RESOURCES

1. *Threatened and Endangered Species*

Federally listed threatened and endangered species are protected under the Endangered Species Act. Spill response activities which could impact a listed species should be coordinated with the USFWS and NMFS. The North Pacific right whale, humpback whale, and short-tailed albatross are also on the State of Alaska's endangered species list. As of July 2016, the following species[2] and critical habitat occur in the Cook Inlet Subarea and have been provided protection under the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq*.):

[2] 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 USC 1532). NMFS 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."

Endangered Species Act of 1973 Protected Species and Critical Habitat			
Protected Species			
Listed species	**Distinct Population Segment (DPS)**	**Latin Name**	**Status**
Blue whale[1]		*Balaenoptera musculus*	Endangered
Bowhead whale[1]		*Balaena mysticetus*	Endangered
Fin whale[1]		*Balaenoptera physalus*	Endangered
Gray whale[1]		*Eschrichtius robustus*	Delisted
Humpback whale[1]	Western North Pacific DPS	*Megaptera novaeangliae*	Endangered
Humpback whale[1]	Mexico DPS	*Megaptera novaeangliae*	Threatened
North Pacific Right whale[1]		*Eubalaena japonica glacialis*	Endangered
Sei whale[1]		*Balaenoptera borealis*	Endangered
Sperm whale[1]		*Physeter macrocephalus*	Endangered
Beluga whale[1]	Cook Inlet	*Delphinapterus leucas*	Endangered
Steller sea lion[1]	Western DPS	*Eumetopias jubatus*	Endangered
Steller sea lion[1]	Eastern DPS	*Eumetopias jubatus*	Delisted
Leatherback sea turtle[1]		*Dermochelys coriacea*	Endangered
Northern sea otter[2]	Southwest Alaska DPS	*Enhydra lutris kenyoni*	Threatened
American Peregrine Falcon[2]		*Falco peregrinus anatum*	Delisted
Short-tailed Albatross[2]		*Phoebastria albatrus*	Endangered
Aleutian Canada Goose[2]		*Branta canadensis leucopareia*	Delisted
Steller's Eider[2]		*Polysticta stelleri*	Threatened
Designated Critical Habitat			
Species Group	**General Reference Area**		
Cook Inlet beluga[1]	Northern and throughout nearshore Cook Inlet, and Kachemak Bay		
Steller sea lion[1]	Multiple areas: (see full description in 50 CFR Part 226.12)		
Pacific Salmon[1,3]	No critical habitat has been designated in Alaska for any salmon species.		
Northern Sea otter[2]	Barren Islands and lower west Cook Inlet from Redoubt Pt. south past Cape Douglas (50 CFR Part 17)		

[1] Managed by the NMFS

[2] Managed by the USFWS

[3] No species of Pacific salmon originating from freshwater habitat in Alaska are listed under the Endangered Species Act (ESA). West coast salmon species currently listed under the ESA originate in freshwater habitat in Washington, Oregon, Idaho, and California. At least some of the listed salmon and steelhead are presumed to range into marine waters off Alaska during ocean migration and growth to maturity phases of their anadromous life history.

The Northern sea otter (Figures D-3 and D-4), short-tailed albatross, and Steller's eider are threatened or endangered species under the jurisdiction of the USFWS, Alaska Region. The USFWS also manages the polar bear, walrus, all migratory bird species, and some freshwater fisheries. Most salmon species in marine waters are under the jurisdiction of the NMFS; however, ADF&G has primary jurisdiction over some salmon fisheries, including those within Cook Inlet. NMFS has authority over other marine fish, marine invertebrates, and most marine mammal species (seals, sea lions, whales and porpoises). Threatened and endangered species under NMFS's authority in the Cook Inlet Subarea are the Cook Inlet beluga whale, Steller sea lions in the western DPS, humpback whales in the Western North Pacific DPS and Mexico DPS, North Pacific right whale, western North Pacific gray whale, fin whale, sei whale, sperm whale, and several salmon stocks.

Steller's Eider: The threatened Steller's eider winters in the Kachemak Bay/lower Cook Inlet area. They tend to concentrate off the southwest end of Homer Spit and offshore of Bluff Point, between Homer and Anchor Point, but have also been observed along the southern shoreline of Kachemak Bay as well. Large flocks also concentrate offshore of Deep Creek just north of Ninilchik; 2,370 Steller's eiders were observed here during a March 2001 survey. A winter aerial shoreline count in 1994 detected 1,363 Steller's eiders in the Kamishak Bay area. While variable between years, arrival of Steller's eiders from nesting grounds probably begins in mid-July with numbers continuing to build in Cook Inlet habitats through early winter, peaking in January and February, then declining for spring migration in March and April (Larned 2005). The Alaska-breeding population of the Steller's eider was listed as threatened under the U.S. Endangered Species Act in 1997 after it became evident that the species range had contracted on the North Slope of Alaska and had virtually disappeared from its breeding grounds in western Alaska.

Steller's eiders winter in both eastern and western lower Cook Inlet (see Figure D-2). They generally associate with the nearshore environment in protected waters less than 10m in depth. Areas frequented by substantial numbers of Steller's eiders in winter (during surveys 2001-2005) included, in eastern Cook Inlet, the nearshore area from Anchor Point to 25km north of Ninilchik (1,141 in January 2005 and 2,370 in March 2001) and the nearshore area from Homer Spit to Anchor Point (338 in February 2004). Important areas in western Cook Inlet were Kamishak Bay from Douglas River to Bruin Bay, including the shoreline between Bruin Bay and Ursus Cove, a shoal 12 km southeast of Bruin Bay (3,921 in January 2005), and the mouth of Iniskin Bay (363 in January 2005). High wintering population estimates from 2004-2005 surveys were 1,247 and 4,284 eiders in eastern and western Cook Inlet, respectively (a higher estimate of 2,370 for eastern Cook Inlet was recorded previously, see above). Most of the estimates made during this study are likely biased slightly low because data were uncorrected for eiders not detected during surveys. The survey area did not include much of Kachemak Bay where more eiders were likely present. An earlier winter aerial shoreline count in 1994 detected 1,363 Steller's eiders in the Kamishak Bay area (Larned 2005).

Short-Tailed Albatross: This species was federally listed as endangered throughout its range, including the United States, in 2000. At the time of listing, designation of critical habitat was determined to not be prudent. The species is known to breed on only a few islands in Japan, from December through April. During the non-breeding season, short-tailed albatross range along the Pacific Rim from southern Japan to northern California, primarily along continental shelf margins. They may also be found at upwelling hotspots closer to shore. Overall, short-tailed albatross spend the greatest proportion of the non-breeding season off Alaska, especially within the Aleutian Islands and Bering Sea. Because short-tailed albatross forage extensively along continental shelf margins, the majority of time is spent within the national Exclusive Economic Zones (EEZ), rather than over international waters. In the Cook Inlet Subarea, they are most likely to be present at the northern edge of the Gulf of Alaska. Additional information is available at http://ecos.fws.gov/docs/five_year_review/doc2623.pdf.

Steller Sea Lions: Endangered Steller sea lions occur both within Cook Inlet and in the offshore waters extending to the 200 nm EEZ. The eastern DPS of Steller sea lions was delisted and removed from the list of threatened species by NOAA in 2013. This population overlaps with the western DPS Steller sea lions in the Cook Inlet region; however, this subarea is west of the longitudinal separation of the two populations and is considered habitat primarily for the western DPS of Steller sea lions, which is listed as endangered. Designated Steller sea lion critical habitat in the Cook Inlet Subarea is located south of the Kenai Peninsula, in lower Cook Inlet, and adjacent areas (see Figure D-5).

Beluga Whales: For Cook Inlet, the endangered Cook Inlet beluga whale is the species of greatest concern under NMFS's jurisdiction during oil spills and spill response. This endemic DPS occurs only within the confines of Cook Inlet, and the population continues to slowly decline. Large congregations of belugas in the spring through fall near the Susitna Delta region make them particularly vulnerable during that time of year (see Figures D-6 and D-7).

Humpback Whales: In Cook Inlet, the humpback whales most likely to be encountered are expected to be 89% Hawaii DPS (no longer listed under the ESA), 10.5% Mexico DPS (ESA-listed as threatened), and 0.5% Western North Pacific DPS (ESA-listed as endangered). The DPSs are not distinguishable by sight, and therefore must all be treated as ESA protected species when implementing mitigation measures under an Emergency Section 7 consultation for oil spill response. Humpback whale sightings in Cook Inlet were rare historically but have increased in recent years. Humpback whales occur in Cook Inlet in low numbers and in the offshore waters extending to the 200 nm EEZ in greater numbers. See https://alaskafisheries.noaa.gov/pr/humpback for more information on humpback whale ESA listings.

Other whales and fish species: The other endangered whale species listed above and the threatened and endangered salmon stocks occur in the offshore water portion of the Cook Inlet Subarea.

Marine Mammal Protection Act

All marine mammals, whether or not they are listed under the Endangered Species Act, are protected by the Marine Mammal Protection Act of 1972. Any spill response activities that could affect marine mammals should be coordinated with the USFWS and the NMFS.

Bald and Golden Eagle Protection Act

Although Alaskan bald and golden eagles are not on the endangered species list, they are fully protected (including their nests and nest trees) under the Bald and Golden Eagle Protection Act of 1940 and the Migratory Bird Treaty Act. Spill response activities that could affect these species should be coordinated with the USFWS.

For updated information on the internet:

USFWS National Threatened and Endangered Species website:
http://endangered.fws.gov/

NOAA Fisheries Endangered and Threatened Marine Species under NMFS' Jurisdiction website:
http://www.nmfs.noaa.gov/pr/species/esa/listed.htm or
https://alaskafisheries.noaa.gov/protectedresources/esa/

ADF&G Threatened and Endangered Species website:
http://www.adfg.alaska.gov/index.cfm?adfg=specialstatus.akendangered

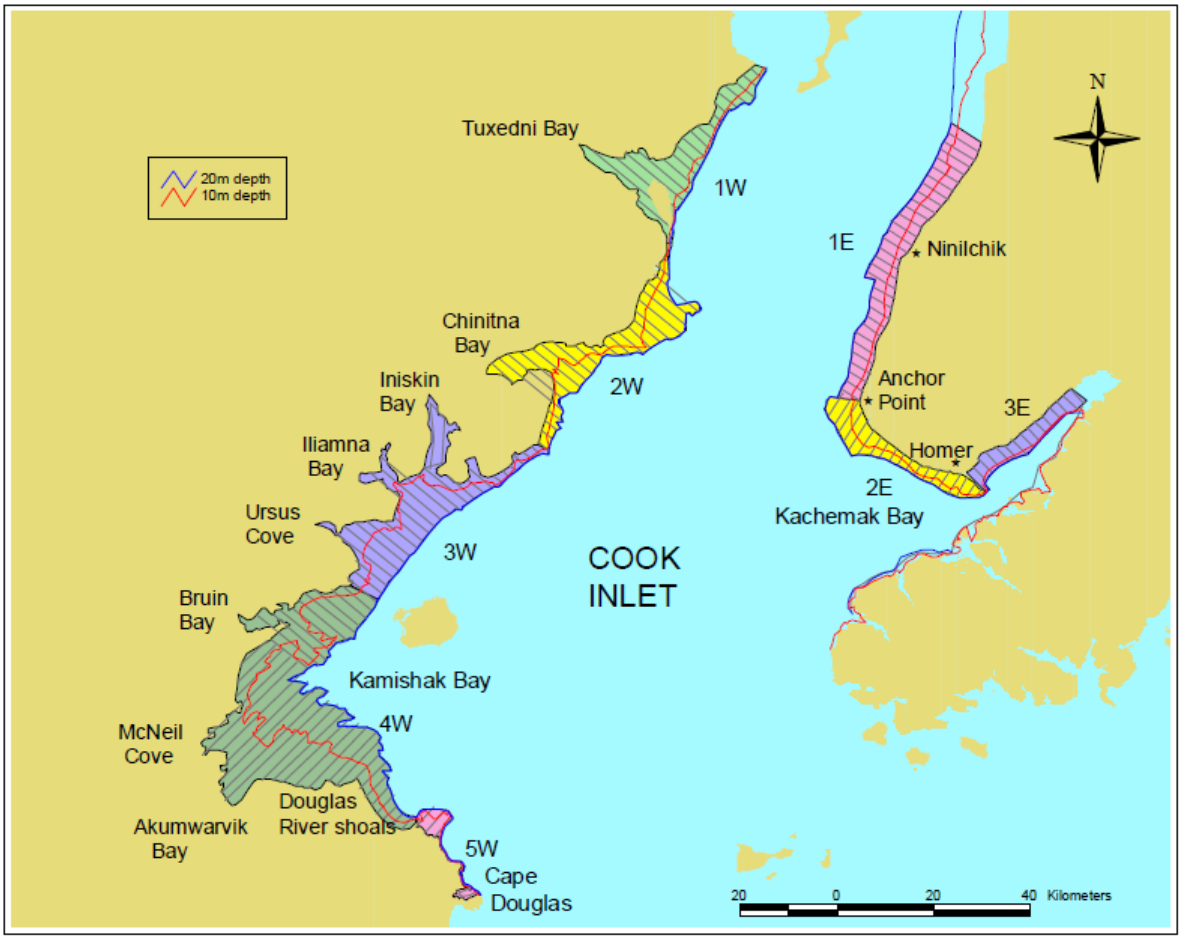


Figure D-2 – Steller's Eiders Overwintering Locations. USFWS study area showing survey units, aerial transects, bathymetry, and prominent shoreline features for 2004-2005 Steller's eider wintering survey. Steller's eiders were observed in all survey units with the exception of 1W (Larned 2006).

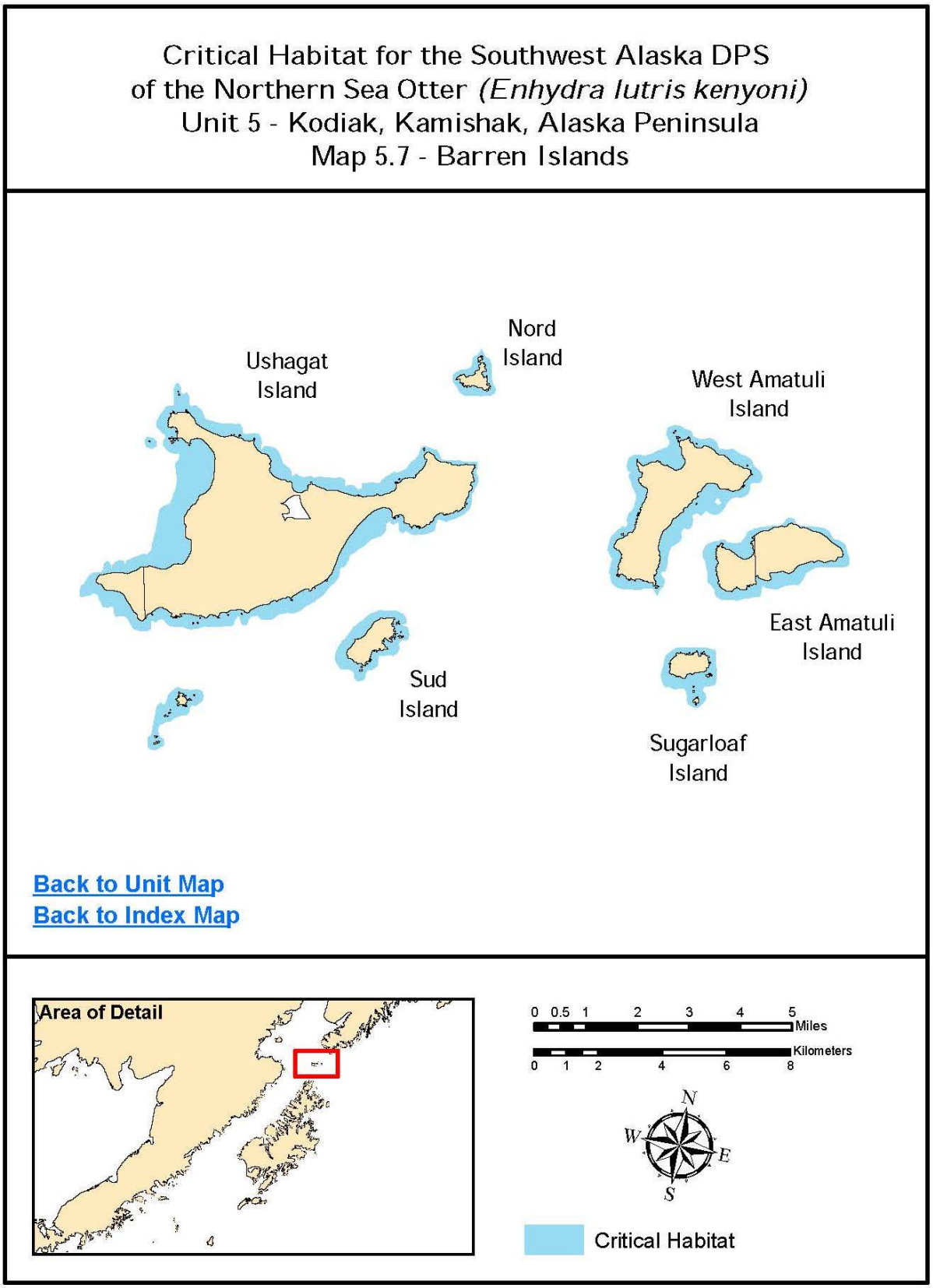


Figure D-3 – Sea Otter Critical Habitat, Barren Islands.

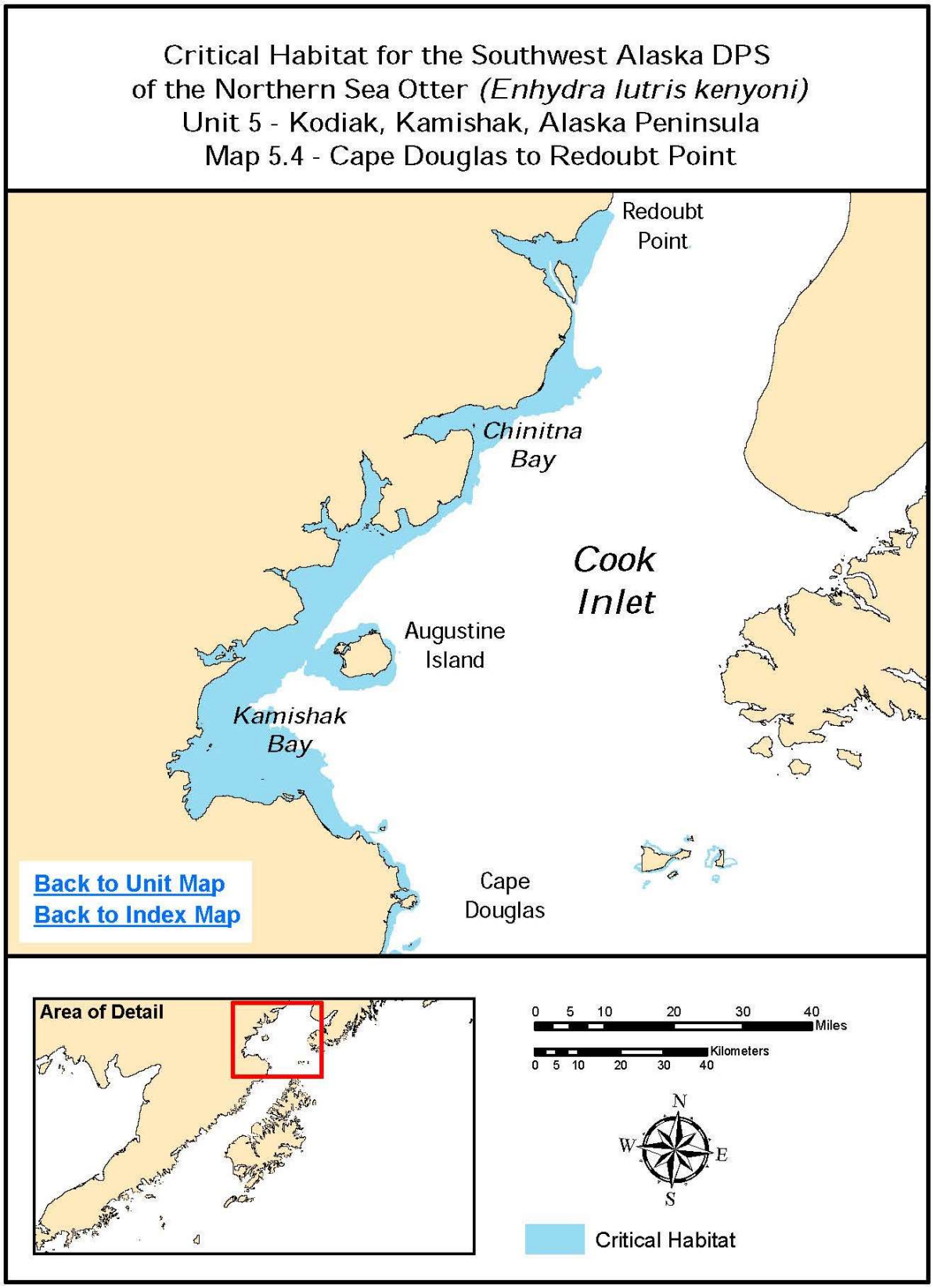


Figure D-4 – Sea Otter Critical Habitat, Cape Douglas to Redoubt Point.

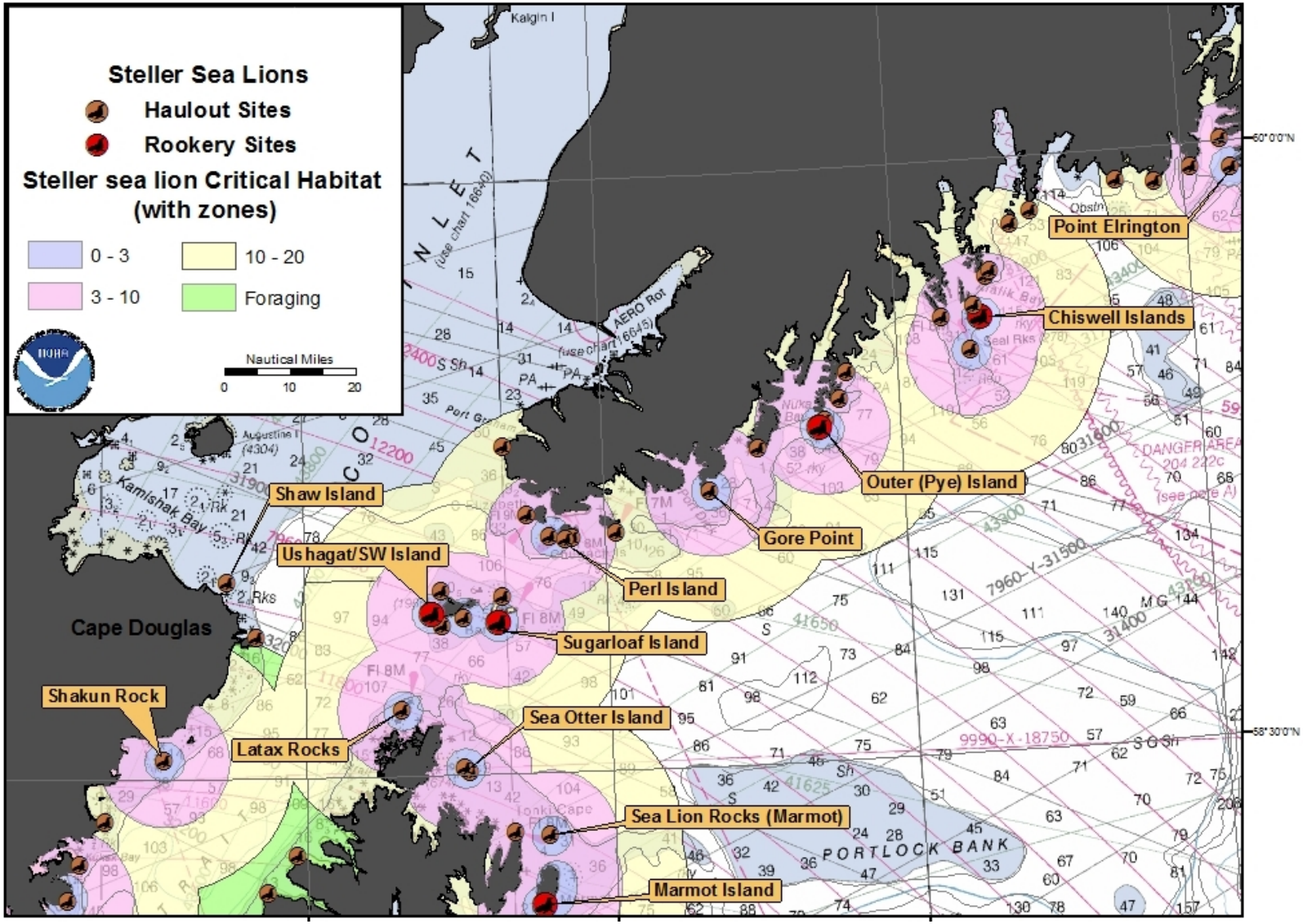


Figure D-5 – Steller Sea Lion Critical Habitat and known haulout and rookery sites in the Cook Inlet Subarea. Note: Chiswell Island is a small rookery with about 30-60 pups produced each year. This rookery is monitored by remote camera from the Alaska Sea Life Center in Seward.

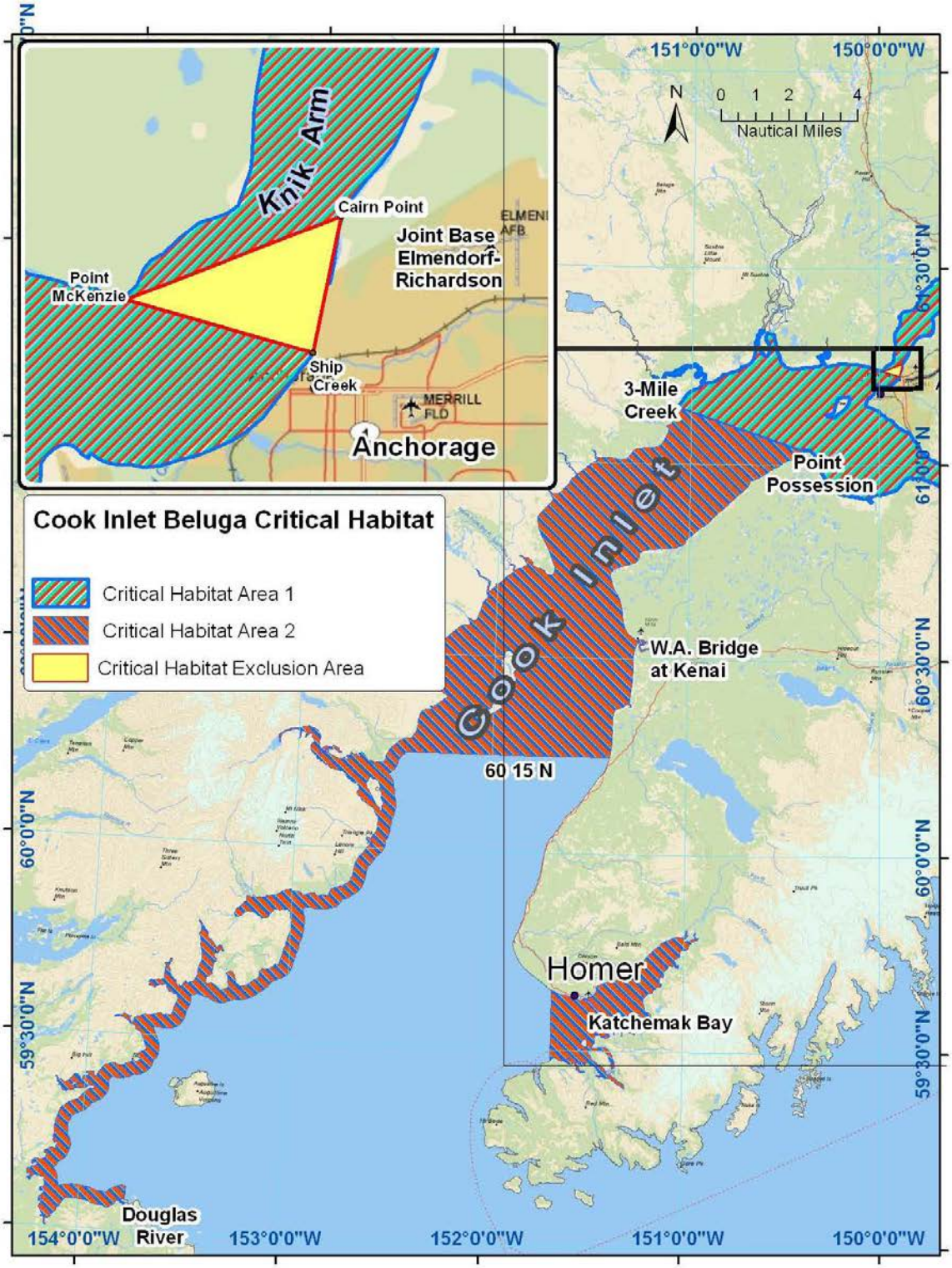


Figure D-6 – Cook Inlet Beluga Whale Critical Habitat. The exclusion zone is habitat excluded from critical habitat designation.

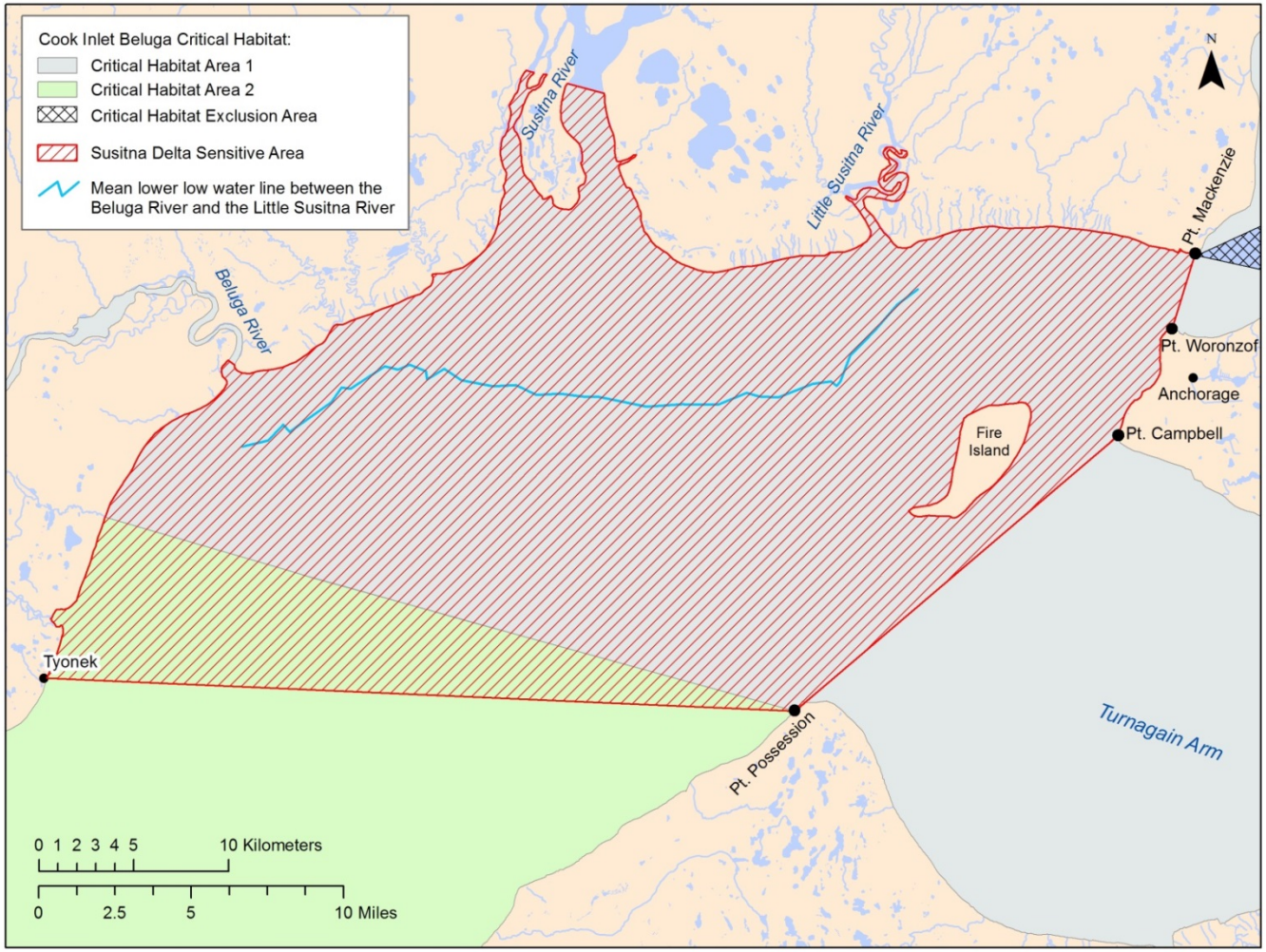


Figure D-7 – Susitna Delta Sensitive Habitat. The Susitna River Delta region is an area of high importance to Cook Inlet beluga whales, especially from mid-April to mid-October. During this time period, large congregations of belugas (sometimes in excess of 200 animals) may use this area for foraging and reproduction/calving.

2. *Fish and Wildlife*

(a) ESSENTIAL FISH HABITAT (EFH)

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSA) introduced new provisions concerning the identification and conservation of Essential Fish Habitat (EFH). The MSA, as amended through January 17, 2007, defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The NMFS and regional Fishery Management Councils (Councils) have described and identified EFH in fishery management plans (FMPs), and, to the extent practicable, minimized the adverse effects of fishing and non-fishing activities to encourage the conservation and enhancement of EFH.

Federal agencies that authorize, fund, or undertake actions that may adversely affect EFH must consult with NMFS, and NMFS must provide conservation recommendations to federal and state agencies regarding actions that would adversely affect EFH. Most of the uncertainty surrounding the level of protection needed for EFH concerns the effects of fishing activities and non-fishing activities on sea floor habitats. Substantial differences of opinion exist as to the extent and significance of habitat contamination in EFH, outside of well-studied areas like surface waters and coastal zones, as described in Part 4b of this document. However, EFH includes the entire water column and the substrate of the benthos.

The fate of spilled oil has been found to directly affect the water column and benthos; thus, the acute and chronic toxic effects to EFH are a real concern. In short, the vertical transport of marine oil snow (flocculation, sedimentation, accumulation) of surface spills and well head spills could significantly affect EFH and HAPC through the long-term contamination of benthic habitats. The protracted exposure of eggs, embryos, and larvae to, and metabolism of, toxic and carcinogenic petroleum hydrocarbons can adversely affect ecologically and economically important benthic fishes, even down to the single part-per-billion of polycyclic aromatic hydrocarbon.

Interactive mapping of EFH is provided by the NMFSand can be accessed at http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html.

For further information, contact the NMFS at http://www.fakr.noaa.gov/.

Groundfish EFH. The Cook Inlet Subarea includes EFH for arrowtooth flounder, Pacific cod, skate, pollock, weathervane scallop, and all salmon species. Specific habitat information of groundfish in the Cook Inlet and Gulf of Alaska can be found in Appendix D of the FMP for Groundfish of the Gulf of Alaska: http://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmpAppendix.pdf.

Species-specific maps for Groundfish EFH in the subarea, as identified by the NMFS, can be found on their interactive mapping website: http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html.

Salmon EFH. Marine EFH for the salmon fisheries in Alaska includes all estuarine and marine areas utilized by Pacific salmon of Alaska origin, extending from the influence of tidewater and tidally submerged habitats to the limits of the U.S. EEZ. For more information, reference Appendix A of the FMP for the Salmon Fisheries in the EEZ of Alaska: http://www.npfmc.org/wp-content/PDFdocuments/fmp/Salmon/SalmonFMPfinal1212.pdf.

Weathervane Scallop EFH. Insufficient information is available to describe EFH for Eggs, Larvae, and early Juvenile life stages.

Late Juveniles

EFH for late juvenile weathervane scallops is the general distribution area for this life stage, located in the sea floor along the inner (1 to 50 m), middle (50 to 100 m), and outer (100 to 200 m) shelf in concentrated areas of the Gulf of Alaska and Bering Sea Aleutian Islands where there are substrates of clay, mud, sand, and gravel that are generally elongated in the direction of current flow (see Figure D-8).

Adults

EFH for adult weathervane scallops is the general distribution area for this life stage, located in the sea floor along the inner (1 to 50 m), middle (50 to 100 m) and outer (100 to 200 m) shelf in concentrated areas of the Cook Inlet and Gulf of Alaska where there are substrates of clay, mud, sand, and gravel that are generally elongated in the direction of current flow (see Figure D-8).

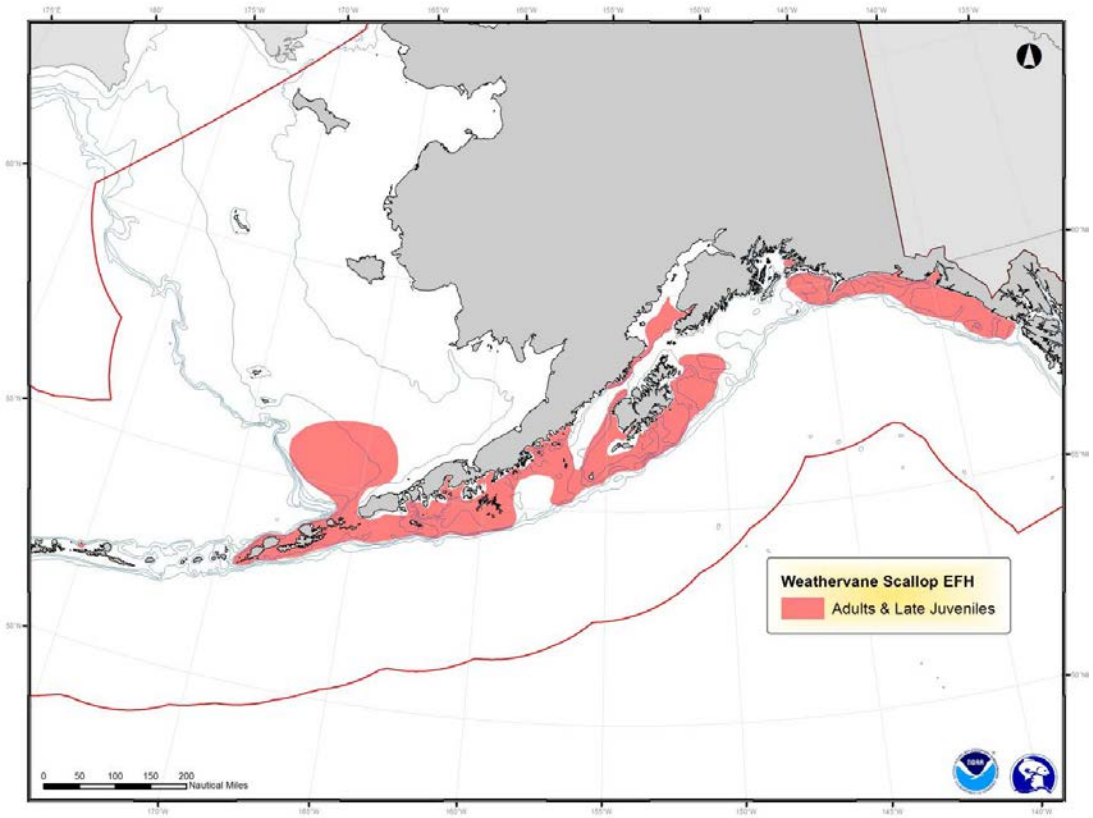


Figure D-8 – Weathervane Scallop Essential Fish Habitat (EFH) for adults and late juveniles.

(b) HABITAT AREAS OF PARTICULAR CONCERN (HAPC)

HAPC are specific sites within EFH of particular ecological significance. HAPC highlight specific habitat areas with extremely important ecological functions and/or areas that are especially vulnerable to human-induced degradation. HAPC are specific sites within EFH that are of particular ecological importance to the long-term sustainability of managed species, are of a rare type, or are especially susceptible to degradation or development (see Figure D-9). HAPC are meant to provide greater focus to conservation and management efforts and may require additional protection from adverse effects.

Two HAPC are located within the Cook Inlet Subarea, as follows:

Gulf of Alaska Slope Habitat Conservation Area

Cable	58	40.00	N	148	0.00	W
Cable	59	6.28	N	149	0.28	W
Cable	59	0.00	N	149	0.00	W
Cable	58	34.91	N	147	59.85	W

Alaska Seamount Habitat Protection Area

Kodiak Seamount	57	0.00	N	149	6.00	W
Kodiak Seamount	57	0.00	N	149	30.00	W
Kodiak Seamount	56	48.00	N	149	30.00	W
Kodiak Seamount	56	48.00	N	149	6.00	W

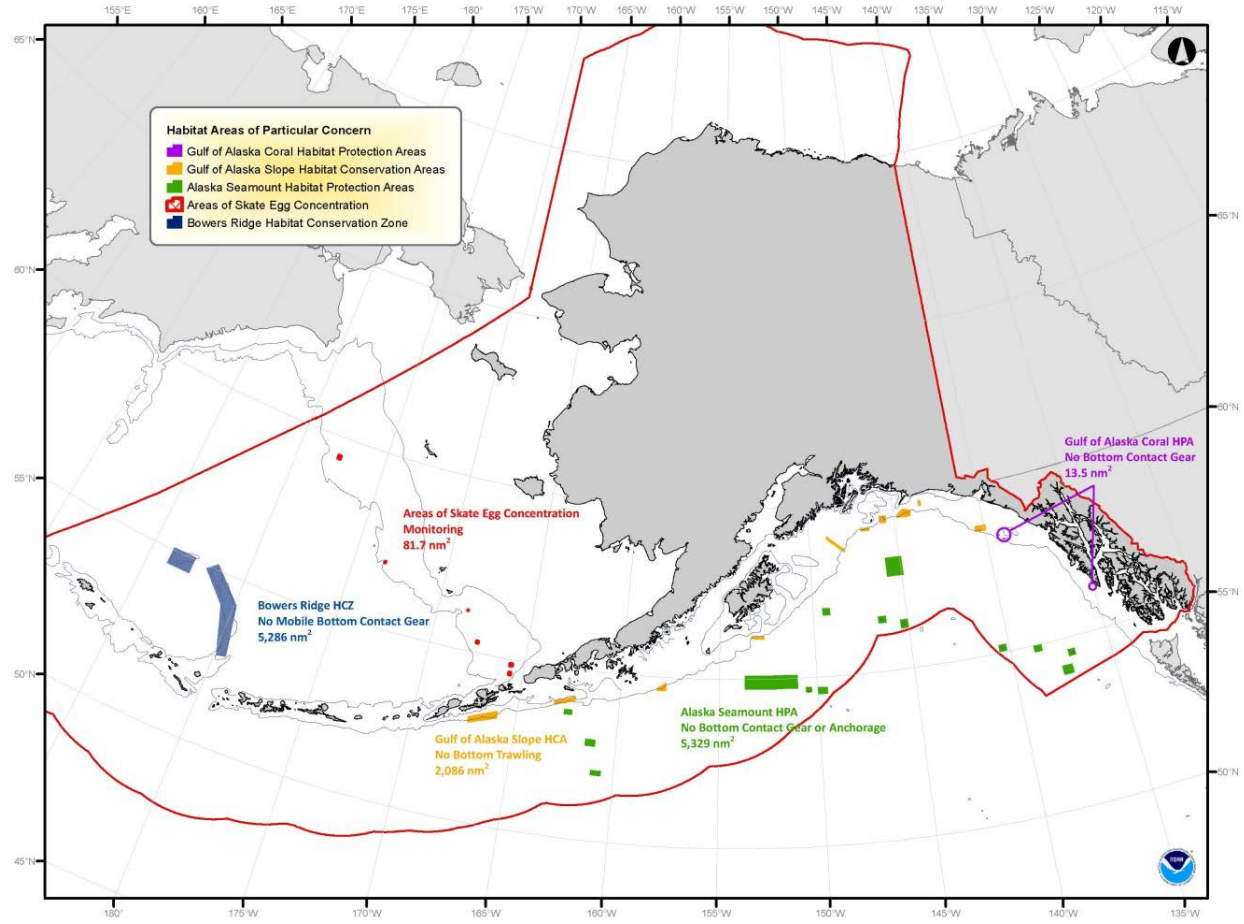


Figure D-9 – HAPC in the EEZ off Alaska. HAPC in the Cook Inlet Subarea can be viewed with a NOAA Fisheries interactive mapper at http://www.habitat.noaa.gov/protection/efh/efhmapper/.

(c) FISH

The waters of the Cook Inlet Subarea are among the most productive in the world and are economically important to the subarea. Major freshwater systems of the region include the Kenai, Kasilof, and Susitna Rivers as well as the Kamishak, McNeil, and Douglas on the western shore. Most of the flowing waters and many of the lakes support populations of anadromous and/or resident fish species.

Dolly Varden. This species is widely distributed throughout the Cook Inlet Subarea; drainages supporting large populations include the Anchor River, Amakdedori Creek, Deep Creek, Little Kamishak River, Ninilchik River, Stariski Creek, and the Kenai River. Juveniles become smolt and migrate to Cook Inlet to forage, often returning to fresh water during mid-summer where they remain to overwinter. Resident and rearing populations of Dolly Varden occur in all but the smallest streams.

Rainbow Trout and Steelhead. Most drainages of the northern and western Kenai Peninsula, from the Anchor River north to the Chickaloon River support Rainbow trout and steelhead; drainages supporting populations include the Anchor River, Deep Creek, Stariski Creek, and the Ninilchik River. The largest steelhead run in lower Cook Inlet occurs in the Anchor River and is estimated at 1,500 adults. Steelhead stocks are fall run fish that enter fresh water from August to November, spawn from April to May, and return to the ocean during May and June. Rainbow trout occur in the lower Susitna River drainage and some of the larger rivers flowing into northwestern Cook Inlet.

Pacific Salmon. Chinook, sockeye, coho, chum, and pink salmon occur within the subarea. Significant drainages supporting salmon in the region include the Kenai, Kasilof, Crescent, Susitna, Little Susitna, Ninilchik, and Anchor Rivers, and Deep Creek in upper Cook Inlet as well as the Fox River, Humpy Creek, Barabara Creek and several smaller drainages in the Kachemak Bay area. On the western side of Cook Inlet, south of Chinitna Bay, are numerous streams that support commercially significant salmon populations. These systems include Cottonwood Creek and Iniskin and Bruin rivers, as well as the McNeil, Kamishak, and Douglas Rivers. On the outer coast between Cook Inlet and Resurrection Bay are numerous pink, chum, and sockeye systems that are of significant economic importance to Alaskan commercial fishermen. Adult salmon are present in freshwater from mid-March through January, depending on the species of salmon and the system. Salmon eggs incubate in stream gravels through winter; fry emerge from stream gravels from mid-March through early June. Chinook, sockeye, and coho salmon fry remain in fresh water from one to four years before migrating to sea. Pink and chum salmon fry migrate to the sea shortly after emerging from the gravel.

Pacific Herring. Spawning concentration areas for herring occur in Kamishak Bay near Douglas Reefs, Chenik Head, Bruin Bay, Rocky/Ursus Cove, and Iniskin Bay, as well as in Kachemak Bay near Mallard Bay, Homer Spit/Mud Bay, Glacier Spit/Halibut Cove, and Tutka Bay. Spawning occurs from late April through mid-June on rocky headlands or in shallow lagoons and bays. Herring may return to different spawning locations each year. Eggs are deposited sub-tidally or intertidally on aquatic vegetation; kelp or eelgrass are generally the preferred spawning substrates, but herring may also spawn prolifically on other algae. Herring generally move offshore following spawning to feed and into deeper water during winter. Small commercial gillnet harvests of this species occur in upper Cook Inlet, while the sac roe fishery in lower Cook Inlet has been closed since the late 1990s due to depressed spawning populations.

Forage fish. Numerous species of fish inhabit the nearshore areas of Cook Inlet and are important forage species for higher trophic predators, such as seabirds and marine mammals. Capelin spawn in the intertidal zone from late May through mid-July. Eggs are deposited in sand and small gravel, hatch

two weeks later, and remain larval through the winter. Eulachon smelt return to freshwater systems in upper Cook Inlet to spawn from mid-May through mid-June. Little is known of the life history of this species in upper Cook Inlet.

Pacific Halibut. Widely distributed in lower Cook Inlet, halibut provide important recreational and commercial fisheries based out of Homer, Deep Creek, Anchor River, and Whiskey Gulch. Adult halibut use shallow feeding grounds (27-274 m) in Cook Inlet in the summer and migrate to deeper winter spawning grounds (up to 1,094 m) in the Gulf of Alaska.

Groundfish. Commercially important groundfish species in Cook Inlet include Pacific cod, rockfish, lingcod, and sablefish. Juvenile groundfish occupy shallow nearshore habitats, later moving to deeper areas when they reach sexual maturity.

(d) SHELLFISH

Dungeness crab (*Cancer magister/ syn. Metacarcinus magister*). Sharply declining crab populations in the late 1980s prompted a closure of the commercial fishery in 1991; the noncommercial fishery closed in 1998. Dungeness crabs are found in the intertidal region to a depth of 230 m. Dungeness crab are most common on sand or muddy-sand bottoms in the subtidal region and are often found in or near eelgrass beds. However, they can also be found on a number of other substrata, including various mixtures of silt, sand, pebble, cobble, and shell. Juvenile Dungeness crabs are found in similar habitats as adults, but they generally occupy shallower depths than adults. Juvenile crab can be very abundant in the intertidal zone, but also occur in shallow subtidal areas. Survival of young crab is greatest in habitats, such as intertidal shell and eelgrass beds where they can gain refuge from predators. Dungeness crab are distributed in lower Cook Inlet south of Anchor Point, and a major concentration of adults is found in the shallow, nearshore waters along the north shore of Kachemak Bay. They have been documented as far north as Kalgin Island during the summer. Reproductive concentrations in western Cook Inlet are found along the Kamishak Bay coast. Mating occurs in the spring during the molting period. Larvae are planktonic and associated with the nearshore location of females in spring. Post larval crab are most abundant on sandy bottom, inshore areas shallower than five fathoms.

King Crab (*Paralithodes camtschaticus*). Populations of king crab have been severely depressed since the mid-1980s, which prompted closure of the commercial fishery. King larvae generally exhibit a diel movement being most abundant in the upper water column during the day and deeper at night. Young of the year crab occur at a depth of 50 m or less. They are solitary and need high relief habitat or coarse substrate, such as boulders, cobble, shell hash, and living substrates including bryozoans and stalked ascidians. Between the ages of two and four years, there is a decreasing reliance on habitat and a tendency for the crab to form pods of up to thousands of individuals. Podding generally continues until four years of age (about 6.5 cm), when the crab move to deeper water and join adults in the spring migration to shallow water for spawning. Adult red king crab can occur up to a depth of 365 m; preferred habitat for reproduction is less than 90 m in depth.

When king crab were abundant in Cook Inlet, they were common in lower Cook Inlet south of Anchor Point. The inshore migration of king crab in Kachemak Bay began in late December, peaked in March, and extended through May. Migration of king crab into Kamishak Bay began in February. Mating and release of larvae occurred in nearshore areas. Large numbers of king crab spawned in outer Kachemak Bay and around Augustine Island in Kamishak Bay in waters 18-85 m deep. In Kachemak Bay, spawning began in February, peaked in April, and continued through May. Spawning in Kamishak Bay was thought to be slightly later. Offshore winter migration began in August and continued through November. The

Bluff-Anchor Point area was a major nursery area for juvenile king crab in lower Cook Inlet. Juveniles were also common at the mouth of Iniskin Bay, at Spring Point, Koyuktlik Bay Lagoon (Dog Fish Lagoon), and along the south shore of Kachemak Bay.

Tanner crab (*Chionoecetes bairdi*). There has not been a commercial fishery for Tanner crab since the 1995 closure; noncommercial harvest in lower Cook Inlet has been closed since 2012 due to low abundance. Tanner crab larvae are strong swimmers and perform diel vertical migrations in the water column (down at night). They usually stay near the depth of the chlorophyll maximum during the day. The length of time larvae take to mature is unknown, although it has been estimated to be as little as 12 to 14 days. After settling to the bottom, Tanner crab are widely distributed at depths up to 473 m. Though their populations are greatly reduced compared to populations prior to the 1980s, Tanner crab is distributed throughout Cook Inlet south of Anchor Point, around the Kenai Peninsula south and west, and in Kamishak Bay. Tanner crab are found in the littoral zone to 550 m.

Adult Tanner crab were historically thought to be most abundant in the deepwater region between Augustine Island and the Barren Islands. Tanner crab migrated into Cook Inlet from March through September, and spawning occurred from May to June. Concentrations of juveniles have been reported near Cape Douglas, Iniskin Bay, and Kamishak Bay. Females are known to form high density mating aggregations consisting of hundreds of crab per mound. The mounds likely form in the same general location each year, but the location of mounds is largely undocumented.

Shrimp. Pandalid shrimp, mainly the Northern Pink Shrimp (*Pandalus borealis*), occur throughout lower Cook Inlet with historical concentration areas in Kachemak Bay and in the deep waters off Cape Douglas. Large populations of northern pink shrimp and coonstripe shrimp (*Pandalus hypsinotis*) occurred in lower Cook Inlet until the early 1980s when declining shrimp populations prompted the closure of commercial trawl and pot shrimp fisheries by the mid-1990s.

Razor clams (*Siliqua patula*). The east side of Cook Inlet supports razor clams from the Homer Spit north to Cape Kasilof with major concentration areas at Clam Gulch, Ninilchik, Deep Creek, Happy Valley, and Whiskey Gulch. On the west side of Cook Inlet, razor clams are found from Kustatan, at the west foreland, southwest to Tuxedni Bay, with small populations at Chinitna Bay and the south shore of Augustine Island. Commercial harvest for razor clams occurs on the west side of Cook Inlet from the Crescent River to Redoubt Point. A commercial harvest for hardshell clams occurs on the south side of Kachemak Bay between Bradley River and Barabara Point.

Weathervane Scallop. Weathervane scallops occur throughout Alaska waters in discrete beds with patchy distribution. They are found at depths ranging from intertidal waters to depths of 300 m, but abundance tends to be greatest between depths of 45-130 m on substrates consisting of mud, clay, sand, or gravel. Commercial fisheries for Alaskan scallops typically take place in relatively shallow waters (< 200 m). Although weathervane scallops are widely distributed along the shelf, the highest densities in Alaska have been found to occur in discrete areas. Weathervane scallops develop through egg, larval, juvenile, and adult life stages. Spawning occurs from May to July. Eggs and spermatozoa are released into the water. After a few days, eggs hatch, and larvae rise into the water column and drift with currents. Larvae are pelagic and drift for about one month until metamorphosis to the juvenile stage when they settle to the bottom. Juvenile and adult scallops are non-burrowing filter feeders that subsist primarily on phytoplankton. Scallops have limited swimming ability. The highest concentration of weathervane scallops in Cook Inlet is located in Kamishak Bay, which has two scallop beds (a north bed and a south bed) and supports a commercial fishery. ADF&G surveys show that over the past 20

years, abundance and biomass in both beds have fallen to their lowest level. However, a small increase in biomass in 2015 allowed a modest harvest from the north bed. Based on performance in that fishery, the department plans to allow additional commercial harvest in 2016. Kachemak Bay has a few small beds that do not contain enough biomass to support commercial fishing.

(e) BIRDS

Important Bird Areas (IBA): Audubon, as the U.S. Partner for BirdLife International, has identified Important Bird Areas worldwide, several of which are located in the Cook Inlet Subarea (see Figure D-10). Many of the IBA that have been designated in the Cook Inlet Subarea are of global importance. An interactive map and more information on IBA can be found at http://ak.audubon.org/important-bird-areas-4.

Audubon Alaska also maintains an Alaska WatchList to highlight declining and vulnerable bird populations. More information and the most recent list can be found at http://ak.audubon.org/conservation/alaska-watchlist.

Important Bird Habitats/Communities

Tidal Flats. Tidal flats are used most intensively in spring and fall and also provide important overwintering habitat for shorebirds. Large numbers of shorebirds (primarily Western Sandpiper) as well as ducks (primarily northern pintails, green-winged teal, mallards, and American widgeon) are found resting from the tide line to one-half mile offshore and feeding on *Macoma* clams and other invertebrates in the intertidal area.

Puccinellia-Triglochin community. The near-coastal *Puccinellia-Triglochin* community, frequently flooded by tides, is most valuable for snow and cackling Canada geese, Taverner's Canada geese, and tule and Pacific white-fronted geese that stop to feed during spring migration.

Ramenski sedge-shallow pond community. The Ramenski sedge-shallow pond community is also used primarily for feeding and roosting. The numerous semi-permanent ponds attract migrant ducks and are used by resident dabbling ducks for brood rearing.

Marsh community. The marsh community is the most valuable habitat type for most waterfowl. During spring and fall, numerous permanent ponds and cover are the primary staging area for tundra swans, loons, grebes, and diving ducks. Marsh habitat is also the most productive nesting habitat for tule white-fronted geese, ducks, loons, grebes, and gulls. The coastal marsh community is flooded only on the highest tides.

Shrub-bog community. During fall, Canada and tule geese use this habitat type for roosting at night. The interface between marsh and shrub-bog communities has the greatest concentration of nesting ducks, geese, and cranes.

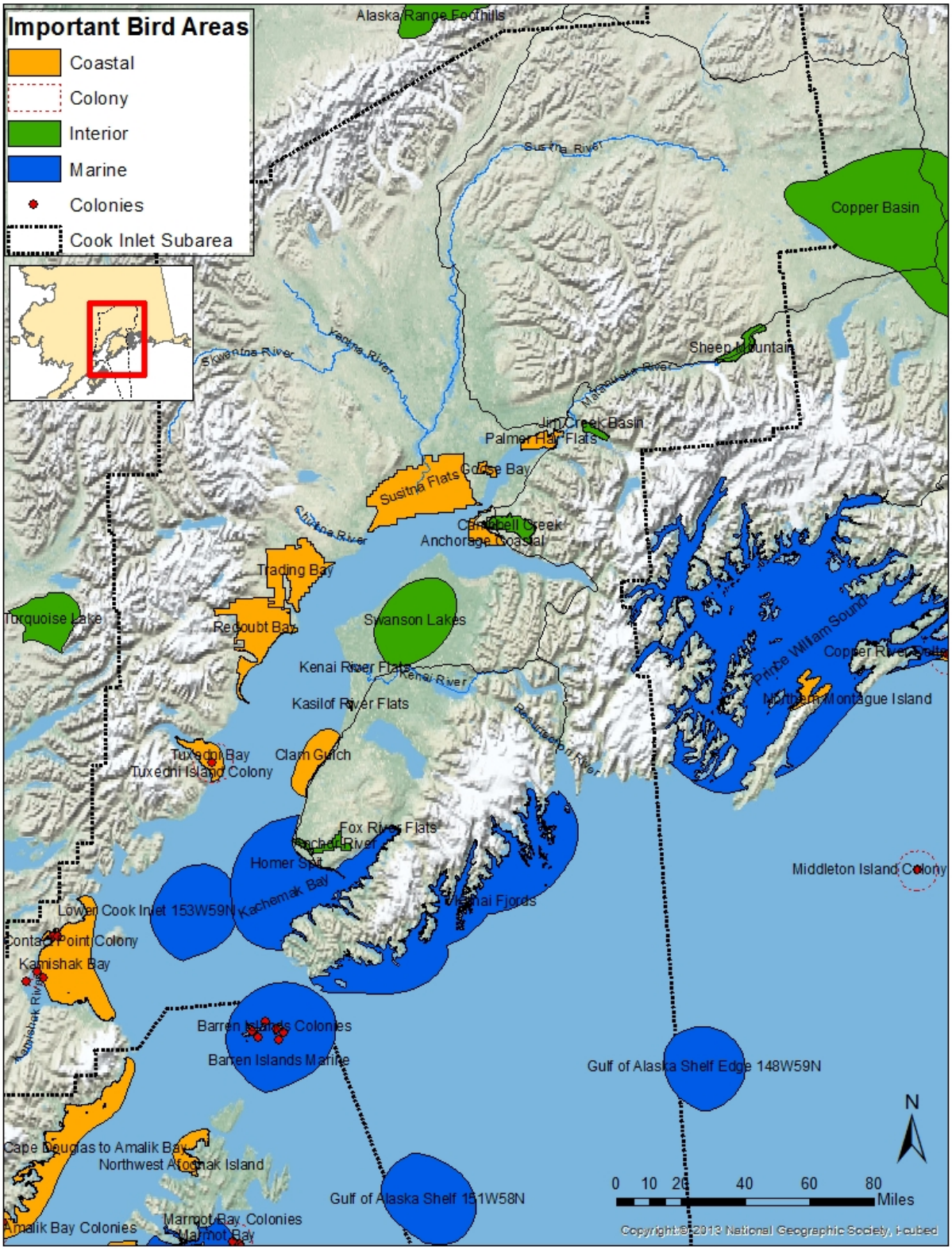


Figure D-10 – Important Bird Areas within the Cook Inlet Subarea (Audubon Alaska 2014).

Important Bird Species/Groups

Trumpeter Swans. One of the most significant wildlife populations in the northern Cook Inlet critical habitat areas is that of the trumpeter swan. Swans typically begin arriving in upper Cook Inlet in early April, but some may overwinter in the area. The peak of migration occurs in early May, depending largely on snow melt. Many trumpeters remain to nest in this area. Trumpeter swan nesting and brood-rearing is widespread; the most concentrated use occurs in the drainages of the Kustatan River, Bachatna Creek, North Fork Big River, Twentymile River, and the lower Big and Chakachatna rivers. See Figure D-12 for the Cook Inlet section of the 2005 USFWS trumpeter swan census (the east side of Knik Arm, a known spring and fall stopover for moderate numbers of swans, was not surveyed). Trumpeter swans are sensitive to human activity, particularly in the vicinity of their nests and broods. By mid-October, most swans have left upper Cook Inlet for wintering areas along the Pacific coast.

Geese. During spring migration, thousands of Canada (lesser, Taverner's, and cackling), snow, and Pacific and Tule white-fronted geese use the coastal wetlands of Cook Inlet. Upper Cook Inlet, including Trading Bay and Redoubt Bay, is considered critical migration habitat for cackling Canada geese, Pacific white-fronted geese, and the entire Wrangel Island population of snow geese. These coastal wetlands are the last feeding areas that cackling Canada geese are known to use before they arrive on nesting areas of the Yukon-Kuskokwim Delta. Butler and Gill (1987) found that spring goose numbers in upper Cook Inlet varied from 50,000 to 100,000, depending on habitat availability throughout the state. Some geese are sensitive to human disturbance; feeding flocks are easily spooked by air traffic. In Redoubt Bay, aircraft flying at or below an altitude of 500 ft and passing within 500 ft cause flocks of geese to take flight. On Susitna Flats, aircraft over 600 ft did not usually flush snow geese, and aircraft passing by at distances greater than one-third mile from a flock caused minimal alert behavior. All geese are particularly sensitive to disturbance during nesting and brood-rearing.

Tule White-fronted Goose. This species is one of the few waterfowl in North America considered at risk by the International Waterfowl Research Bureau and wintering ground counts indicate that the population consists of fewer than 10,000 individuals. Tule breeding range is restricted as well and is only known to nest in boreal forest habitats of the Cook Inlet Basin, making them one of the most vulnerable waterfowl populations in North America. The west side of upper Cook Inlet has one of two known nesting, brood-rearing, and molting areas for tule white-fronted geese.

Snow Goose. Up to 34,000 snow geese have been counted in Cook Inlet marshes enroute from their wintering areas in Washington and British Columbia to their nesting area on Wrangel Island, Siberia. Critical stops include Kenai River Flats, Anchorage Coastal Wetlands, Trading Bay, Redoubt Bay, Susitna Flats, Eagle River Flats, Palmer Hay Flats, and Goose Bay. Typically, up to 15,000 geese can be observed in these areas, although in some years only a few thousand geese may be observed due to rapid turnover of individuals.

Dabbling ducks. Surveys in upper Cook Inlet have shown a peak in April at around 20,000 ducks with the highest concentrations on Susitna Flats and Trading Bay (Eldridge 1995). Fall numbers peaked at over 45,000. Smaller numbers but still thousands of ducks were counted on Chickaloon Flats, Goose Bay, Eagle River Flats and Palmer Hay Flats. Mallard, American Wigeon, green-winged teal, northern shoveler, and northern pintail (a listed Common Bird in Steep Decline) were the most common dabbling ducks counted. Dabbling ducks make extensive use of intertidal coastal mudflats on the Susitna Flats, Trading Bay and Redoubt Bay for feeding and resting from mid-August into November, depending on freeze up. They also use these mudflats during spring migrations.

Diving ducks and sea ducks. Most scaup wintering along the coast in salt water are greater scaup, but many or most breeding in inland lakes are lesser scaup. Surveys of the coastal areas from Tuxedni Bay to Chinitna Bay during April through September 1994-96 found a peak number of diving ducks (most of which were scaup) of 16,400 birds during migration in mid-May, with fewer than 2,000 in April and June (Bennett 1996). In lower Cook Inlet and Kachemak Bay in 1993, small boat surveys estimated about 1,600 scaup, mostly within five nm of the shoreline (Agler et al. 1995). Scaup also use the intertidal mudflats of Trading Bay and Redoubt Bay in October, but not in large numbers. The breeding population estimate for the Kenai-Susitna area for May 2000 was 15,916, which is 13% of the total for Alaska.

Cook Inlet has both Barrows and Common goldeneye, primarily as winter residents, though Barrows are far more abundant. The lower Cook Inlet winter boat survey estimated 3,638 goldeneye. Aerial shoreline surveys estimated 1,128 goldeneyes in Kachemak Bay (Agler et al. 1995). Residents of Kachemak Bay have noted a dramatic decline in winter goldeneye populations there over the last 10 years.

Long-tailed ducks are primarily winter residents of Cook Inlet, with an estimated 11,058 present in eastern lower Cook Inlet during the winter of 1994 (Agler et al. 1995). During spring, migration numbers peaked along the Lake Clark National Park shoreline in April and May at an estimated 1,486 birds. Longtails do not breed in the Cook Inlet area.

Harlequin ducks winter in small numbers along much of the lower Cook Inlet shoreline and breed in low densities in many Cook Inlet river systems. Estimates during boat surveys of lower Cook Inlet ranged from 3,774 in all of lower Cook Inlet in the summer of 1993, to 1,940 in eastern lower Cook Inlet in winter of 1994, mostly within Kachemak Bay (Agler et al. 1995).

Common eiders breed in low densities along east and west shorelines in lower Cook Inlet. 1994 summer observations estimated 2,844 common eiders. The estimate of 5,822 eiders in eastern lower Cook Inlet in winter of 1994 contained king and Steller's eiders as well as Common eiders. Up to several hundred Steller's eiders are present in Kachemak Bay in the winter, particularly along the Homer spit and offshore south of Bluff Point, and up to 2,400 have been estimated wintering in nearshore habitats near Ninilchik (USFWS unpublished data). A winter aerial shoreline count in 1994 detected 1,363 in the Kamishak Bay area and 4,284 in eastern Cook Inlet in a 2005 survey (Larned 2005). Important areas in western Cook Inlet include southern Kamishak Bay from Douglas River to Bruin Bay, including the shoreline between Bruin Bay and Ursus Cove, a shoal 12 km southeast of Bruin Bay (3,921 in January 2005), and the mouth of Iniskin Bay. Kamishak Bay is also important as a staging area for large numbers of sea ducks of several species (SDJV 2007).

Scoters. Cook Inlet is an important molting area for surf and white-winged scoters, particularly in Tuxedni and Chinitna Bays. Summer surveys there estimated 11,900 surf scoters and 4,970 white-winged scoters during 1994-1996 (Bennett 1996). Summer boat surveys in 1993 estimated 49,077 scoters (mixed species) in lower Cook Inlet, and 29,408 were estimated in eastern lower Cook Inlet during the winter of 1994 (Agler et al. 1995). The Cook Inlet lowlands are also an important breeding area for scoters, primarily surfs but also small numbers of white-winged scoters. The 2000 estimate for breeding scoters for the Kenai/Susitna stratum was 3,089 birds (William I. Butler, USFWS, unpublished data). Wintering flocks in Kachemak Bay, and likely other habitats as well, contain a high

proportion of black scoters. Migratory and non-breeding black scoters also occur in large numbers in Kamishak Bay (SDJV 2007).

Shorebirds. Study results show Cook Inlet to be extremely important to both migrant and winter resident shorebirds, supporting major portions of the population of one of North America's most (Western Sandpiper) and least (Rock Sandpiper [see below]) abundant species. Twenty-eight species of shorebirds have been recorded using Cook Inlet, ranging from all being present during spring to a single species present during winter. The annual pattern of use is characterized by the sudden occurrence and rapid increase in numbers of birds during early May and their abrupt departure in mid to late May. During this period, totals frequently exceed 150,000 birds per day. As many as 3 million western sandpipers and 500,000 dunlin migrate along the coast of the Gulf of Alaska each spring and stop en route at sites along the southcentral Alaska coast, especially the Copper River delta and embayments along the west side of Cook Inlet. While many observations concern areas in lower Cook Inlet and point to major use during some years, spring surveys have revealed several tens of thousands of shorebirds using both unvegetated and vegetated intertidal habitats from Redoubt Bay north to upper Knik Arm. It is estimated that 20-47% of the Pacific flyway population of Western Sandpipers (which numbers 2-3 million) used Cook Inlet embayments, especially southern Redoubt Bay. Cook Inlet also supports between 11-21% of the Pacific flyway population of Dunlin. The Western Hemisphere Shorebird Reserve Network (WHSRN) has identified Kachemak Bay as a Site of International Importance because it supports more than 100,000 shorebirds annually. Several areas in Kachemak Bay were added to the WHSRN in 2016. More information can be found at http://www.whsrn.org/site-profile/kachemak-bay.

Pribilof Rock Sandpiper (*Calidris ptilocnemis ptilocnemis*). Cook Inlet supports what may be the entire population (about 20,000 individuals) of the nominate race of the Pribilof Rock Sandpiper. This nominate subspecies breeds on four isolated islands in the Bering Sea, and the entire population appears to spend the winter in upper Cook Inlet feeding on clams in the intertidal mudflats. Between 1997 and 2012, about 8,000 Rock Sandpipers were counted during an average survey in the upper Cook Inlet during the winter months. The average of each winter season's highest single-day count was over 13,000 Rock Sandpipers. International criteria, used to assess the conservation importance of particular wetland sites to shorebirds, not only place Cook Inlet at the highest level of recognition, but afford similar recognition to several individual embayments therein, including Kachemak Bay, southern Redoubt Bay, Susitna Flats, Trading Bay, and Tuxedni Bay. The mouths of the Kasilof and Kenai rivers are periodically used during the winter months by Rock Sandpipers.

Seabirds. See Figure D-11 for a regional summary Seabird Population Map. 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 Cook Inlet are summarized from the catalog. The maps display colony locations.

The North Pacific Pelagic Seabird Database (NPPSD) provides comprehensive geographic data on the pelagic distribution of seabirds in Alaska and the North Pacific. The current version of the NPPSD contains 335 unique taxa and include four-letter codes, common names, ITIS taxonomic serial number, and NODC taxonomic code for marine birds and mammals observed on surveys in the NPPSD dataset. This list is provided to further the goal of standardizing pelagic seabird data. Researchers are encouraged to use this list for marine bird and mammal surveys in the North Pacific. This dataset is managed by the U.S. Geological Survey, Alaska Science Center and can be accessed at http://alaska.usgs.gov/science/biology/nppsd/index.php.

The North Pacific Seabird Data Portal provides access to the North Pacific Seabird Colony Register, an automated database that contains the distribution of breeding seabirds and the relative size of all the colonies in Alaska. Download requests can be submitted online and colony data can be downloaded directly to a computer. The downloaded colony data provides information on a colony's location, species composition, and estimated numbers of breeding seabirds at that colony. The North Pacific Seabird Data Portal is maintained by the USFWS, Division of Migratory Bird Management, in Anchorage. For updated information, visit http://www.fws.gov/alaska/mbsp/mbm/northpacificseabirds/colonies/.

There are over 150 documented seabird nesting colonies in the Cook Inlet Subarea. The colonies range in size from tens of birds to tens of thousands of birds. The largest colony is at Chisik and Duck Islands in middle western Cook Inlet, with over 60,000 seabirds. The greatest densities of seabird colonies are located along the outer Kenai Peninsula Coast. Seabirds are generally present at the colonies from late April through August.

Raptors. The Cook Inlet Subarea has more than 300 known bald eagle nests and likely many more undocumented nests. Additionally, due to the rich marine resources available along the coast, it hosts many non-territorial bald eagles during all months of the year. Peregrine falcons, while less widely distributed, are likely found in association with many of the larger seabird colonies throughout the area.

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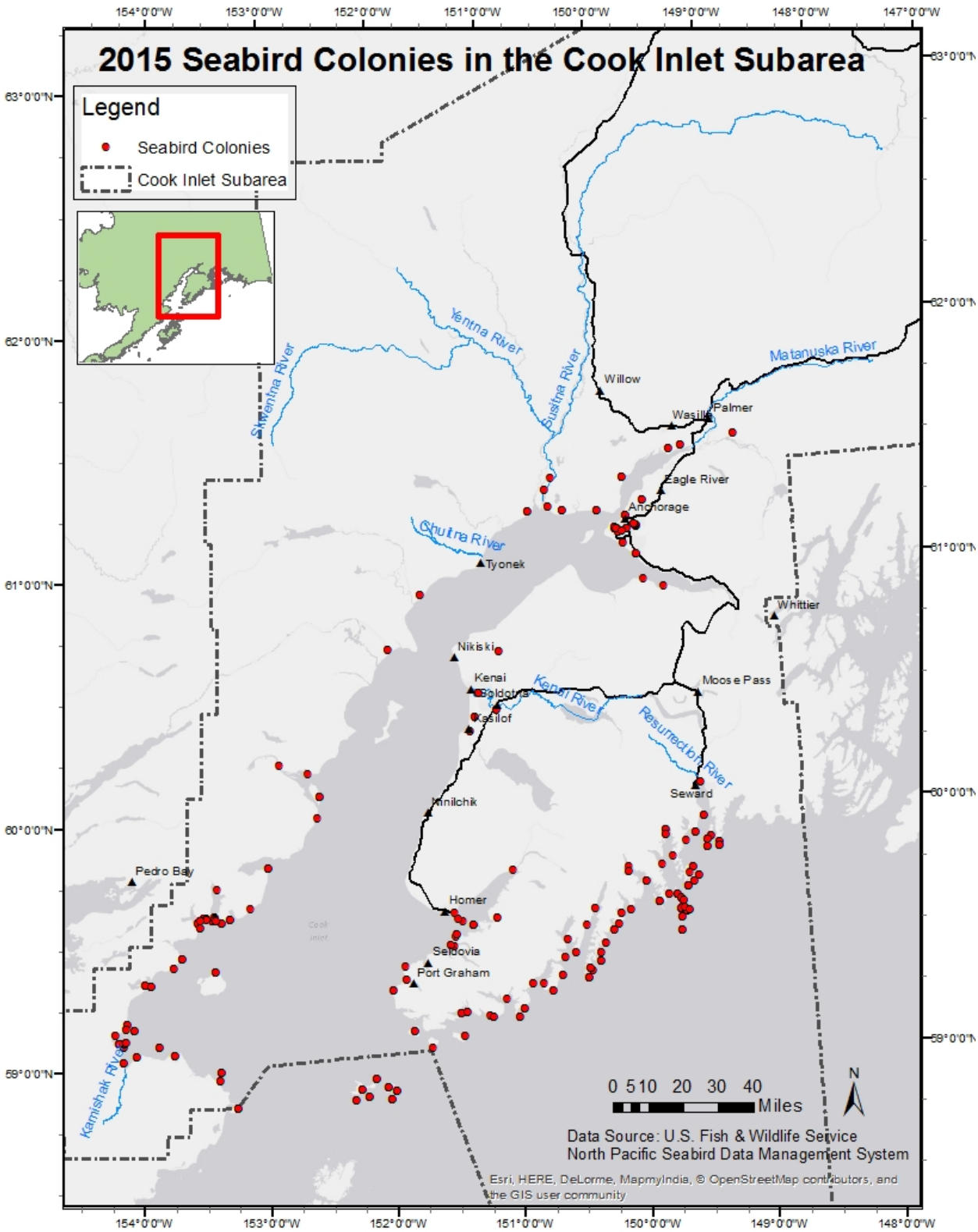


Figure D-11 – 2015 Seabird Colonies in the Cook Inlet Subarea.

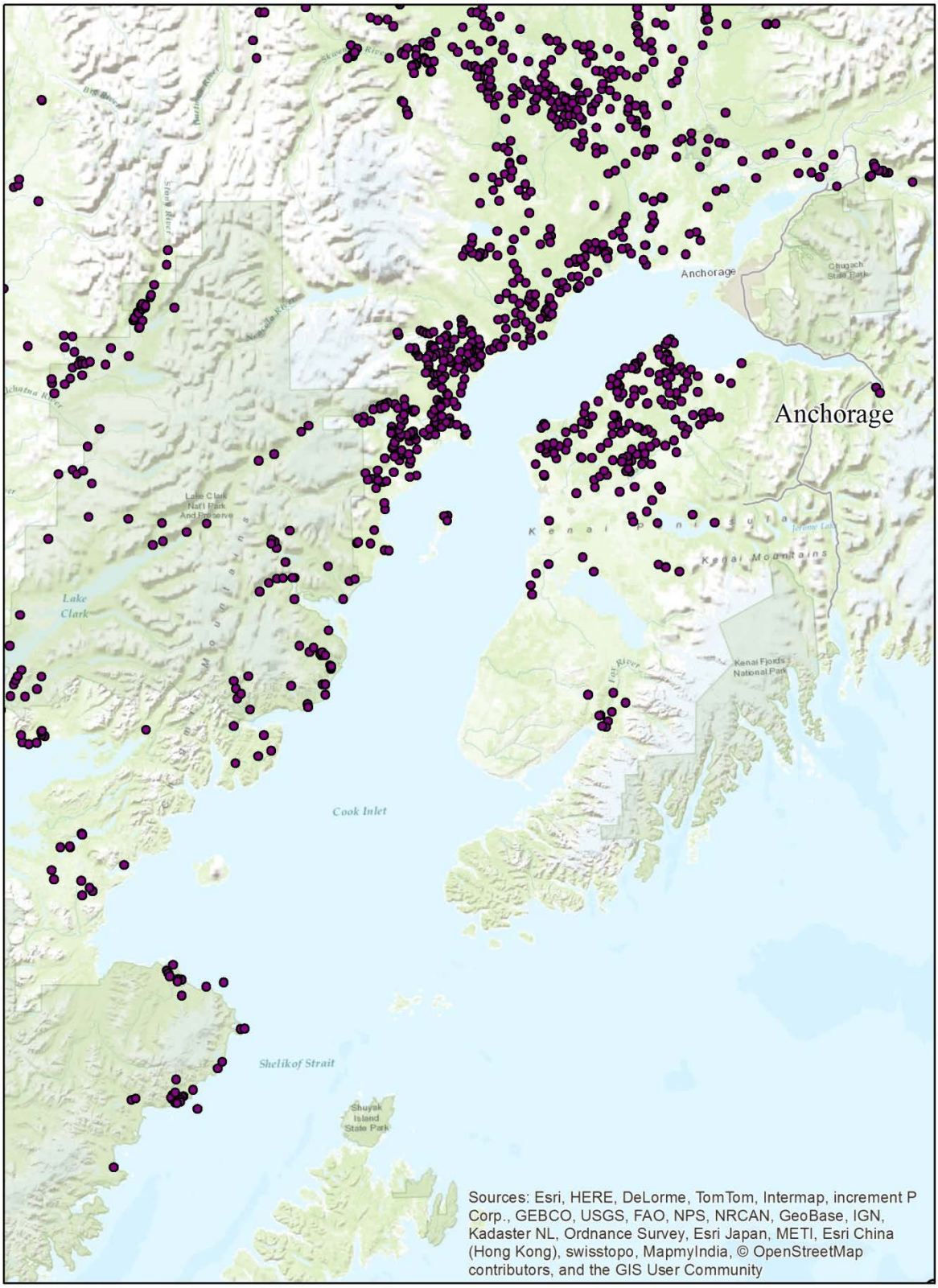


Figure D-12 – Point data from Trumpeter Swan survey (Conant et al. 2007). Each mark consists of a single swan, a pair or a single or pair with cygnets.

(f) MARINE MAMMALS

Harbor seals. This species is found in nearly all nearshore marine habitats throughout the subarea and may be found during spring and summer in some rivers and lakes. Harbor seals are usually found in close proximity to coastal and nearby island shorelines. Commonly used haulout area substrates include offshore rocks and reefs, sandbars, beaches of remote islands, mainland beaches backed by cliffs, glacial ice at the head of bays, and floating sea ice. Pupping appears to take place at all locations where harbor seals haulout.

In Cook Inlet, seals are year-round residents moving into the upper inlet in summer, coinciding with movements of anadromous fish, such as eulachon and salmon. Seals have been observed in the Susitna River and are believed to enter other Cook Inlet rivers. In some winters, heavy sea ice may influence distribution in the northern areas of Cook Inlet. Harbor seals may use the ice edge to haulout and are typically not found within areas of extensive, thick ice cover. In lower Cook Inlet, particularly high-density haulout concentration areas are found on Yukon Island and the Bradley-Fox River Flats within Kachemak Bay. Sand bars exposed at low tide north and south of Kalgin Island are important haulout locations. Seals are present year-round along the western shore of Cook Inlet and Kamishak Bay where major haulout areas include Gull Island, the area between the mouths of Oil Bay and Iniskin Bay, Augustine Island, No Name Reef, Nordyke Island, Juma Reef, Douglas River Reefs, and Shaw Island (see Figures D-13 and D-14).

Steller sea lion. The population that occurs in the Cook Inlet Subarea is part of the population segment classified in 1997 as endangered under the Endangered Species Act. Sea lions are found at haulout and rookery areas near the entrance to Cook Inlet, which include Gore Point, E. Chugach Island, Perl Island, and Elizabeth Island. Pupping occurs from late May through early July, most pups are born during June. During May through August, territorial breeding behavior occurs on the rookeries.

Steller sea lions forage in lower Cook Inlet and the Gulf of Alaska. There is designated critical habitat for this species in this area that includes terrestrial sites (rookeries and haulouts, air zones, nearshore waters associated with these sites) and aquatic foraging areas (see Figure-5). A full description of this critical habitat is found at 50 CFR 226.202. There are also special prohibitions for endangered marine mammals that apply to the western DPS of Steller sea lions. There is a special prohibition on approach of vessels within three miles (5.5 km) of rookeries west of 144 degrees West Longitude specified in 50 CFR 224.103(d). Further, there is a prohibition on approach by people on land not privately owned within one-half statutory mile (0.8 km) or within sight of those Steller sea lion rookery sites specified in this regulation, whichever is greater; and no person may approach on land not privately owned within one and one-half statutory miles (2.4 km), including the Steller sea lion rookery sites listed in paragraph (d)(1)(iii) of the aforementioned regulation, whichever is greater.

Beluga whale. The population that occurs in the Cook Inlet Subarea has been listed as depleted under the Marine Mammal Protection Act and as endangered under the Endangered Species Act. Abundance of Cook Inlet belugas has declined from an estimated 653 whales in 1994 to 347 in 1998, a 50% reduction. In 2014, the population was estimated at 340 whales. Belugas concentrate in shallow water along the mouths of rivers during spring and early summer in upper Cook Inlet, including the Susitna Delta, Eagle and Goose Bay of Knik Arm, Chickaloon Bay, and the area near the mouth of the Kenai River. These concentrations are associated with the migration of anadromous fish, including eulachon and salmon. Belugas are seldom found more than a few kilometers offshore. While belugas were commonly found in lower Cook Inlet in the past, few have been sighted there since the mid-1990s indicating a

decline in distribution towards the upper regions of Cook Inlet. However, unconfirmed beluga sightings near Anchor Point and Homer have been reported to NMFS in 2014 and 2015.

Other cetaceans. Humpback whales may occur from early spring to late fall within Cook Inlet and the Gulf of Alaska. Large numbers of humpbacks have been observed in late spring and early summer feeding near the Barren Islands, located adjacent to the southern boundary of the Cook Inlet Subarea. Within Cook Inlet, individuals and groups of humpbacks have been observed feeding near the Kenai Peninsula north and east of Elizabeth Island and in Kachemak Bay. North Pacific right whales may be present in the Gulf of Alaska. Fin whales occur occasionally within Cook Inlet, but they may be expected to occur in the Gulf of Alaska. Minke whales are found in Kachemak Bay during the summer, particularly in August. Migratory pods of killer whales are occasionally sighted in the outer portions of Kachemak Bay and in Cook Inlet. Harbor porpoises are common in bays, estuaries, tidal channels, and harbors of Kachemak Bay; they are wary and easily disturbed by boat traffic. Dall's porpoise are also present in Kachemak Bay and in other parts of lower Cook Inlet and the Gulf of Alaska.

Sea otters. This species is generally found in shallow (<40m) nearshore areas where they feed on bottom-dwelling invertebrates. Sea otters are common in Kachemak Bay with highest concentrations near Seldovia and English Bay. Rafts of otters are also commonly seen in Kamishak Bay, especially near Nordyke Island area. While the otter population of Cook Inlet is thought to be expanding in size and distribution, it is not clear whether otters will recolonize areas in upper Cook Inlet where food availability and winter sea ice may limit habitat suitability. Breeding can occur any time of year, with a peak from September-October, while pupping peaks in April, May, and early June. The Southwest Alaska DPS has been listed as threatened under the Endangered Species Act and resides on the west side of lower Cook Inlet. Critical habitat for this species is identified above.

The most recent available information for marine mammal species under NMFS's authority in Alaska can be found in the species' stock assessment reports at http://www.nmfs.noaa.gov/pr/sars/species.htm.

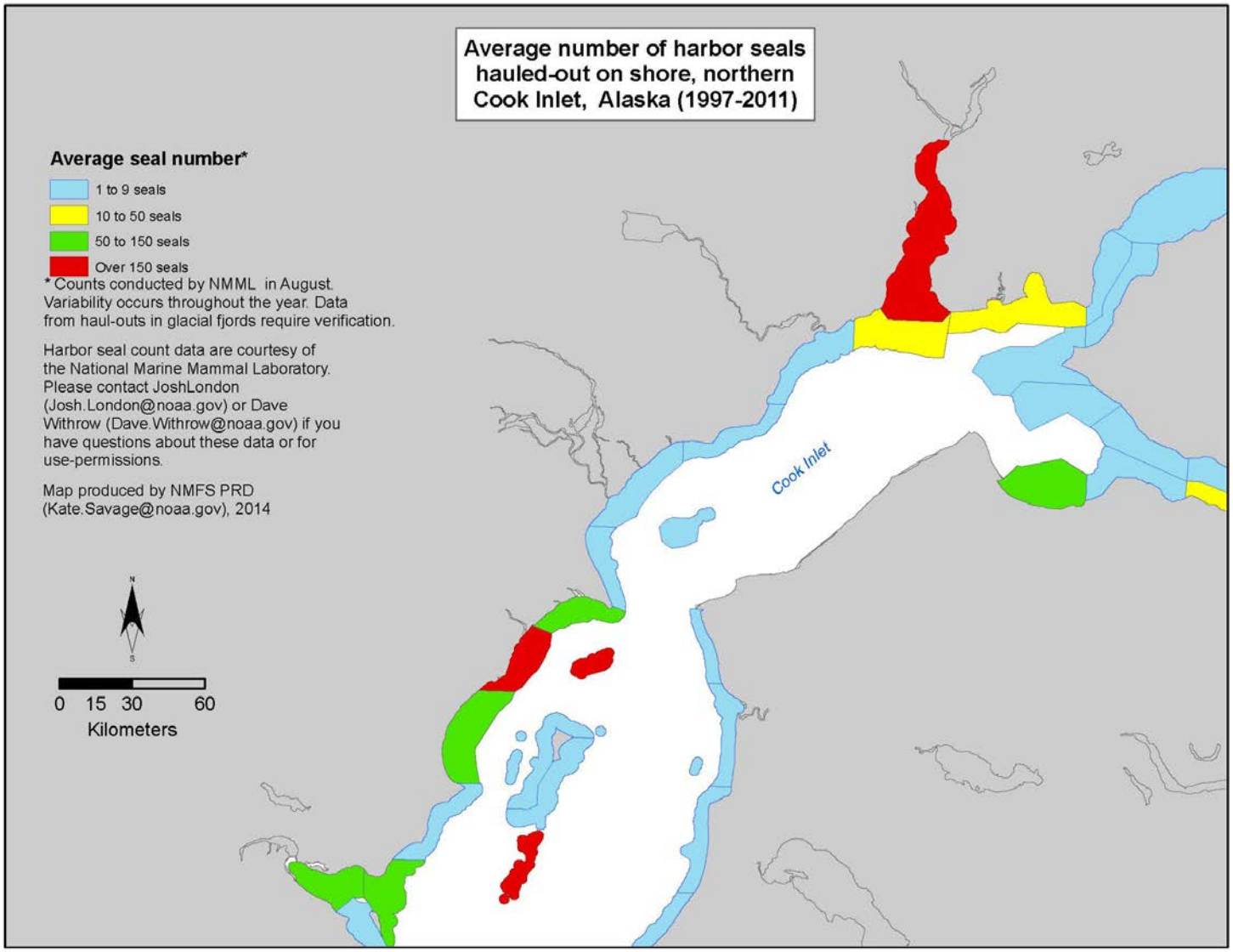


Figure D-13 – Harbor seal haulout data in upper Cook Inlet.

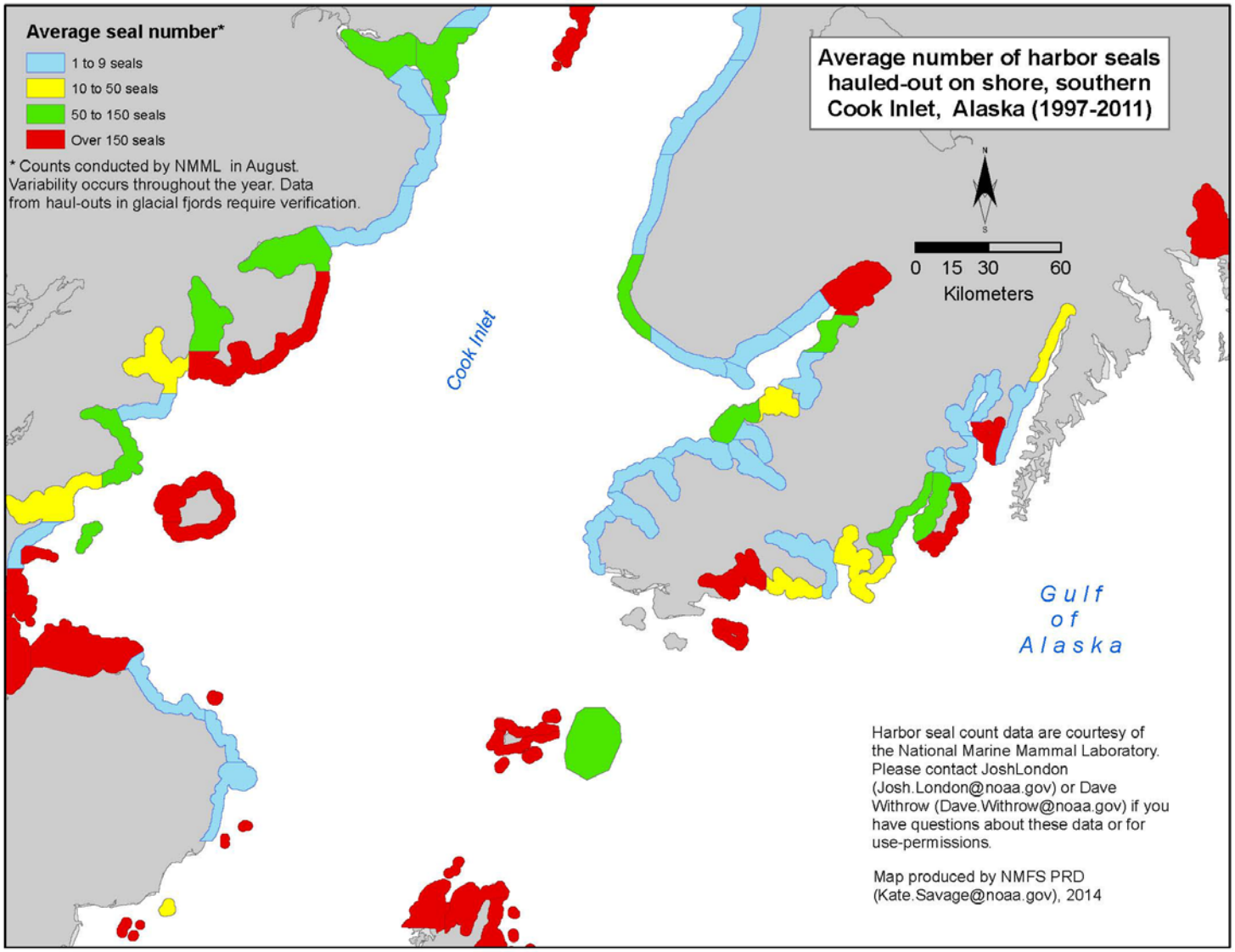


Figure D-14 – Harbor seal haulout data in lower Cook Inlet and the Gulf of Alaska.

(g) TERRESTRIAL MAMMALS

Caribou. Five caribou herds are found on the Kenai Peninsula, which was estimated at 1,059 animals in 1998. The Kenai Lowlands herd generally moves from winter concentration areas in the Moose River Flats and vicinity to the area north of the Kenai Airport for calving, which occurs during late May and early June. The herd spends the summer and autumn in this same general area. Caribou move to the Moose River Flats rutting area from October 1 to October 10 and breed there. The Kenai Mountains herd generally moves from its winter range in the small upper drainages of Big Indian Creek south to American Pass for calving. During summer and fall after the calving period caribou can be found throughout the Kenai Mountains north and west of the Sterling Highway, except that portion south of the Chickaloon River and west of Juneau Creek. The three remaining herds include the Killey River herd which is found between the Killey River and Tustumena Lake, the Twin Lakes herd north of the Killey River to Skilak Lake, and the Fox River Herd between the Fox River and Tustumena Glacier. Summer habitat is primarily moist, boggy areas where sedges predominate, while winter habitat includes aquatic vegetation, such as sedges and horsetails along lake margins and streams. Caribou often use ridge tops, frozen lakes and bogs, and other open areas for predator avoidance.

Moose. This species occurs in habitats throughout much of the Cook Inlet Subarea, ranging from aquatic and riparian floodplain to subalpine 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, as well as forested areas. Riparian areas along the major rivers and tributary streams are particularly important in winter. Calving occurs in late May and early June, frequently in isolated marshy lowlands. Newborn calves are extremely reliant on their mothers for protection and food, and so they are particularly susceptible and sensitive to environmental perturbations during the first five months of life (June to the end of October). Around five months of age, calves are weaned around the time their mother is breeding again. The breeding season or "rut" begins in late September and is in full swing by the first week of October.

Black and brown bears. Bears are distributed throughout the Cook Inlet Subarea. During spring, bears are attracted to coastal flats to eat grass and herbaceous vegetation, moving to salmon spawning areas along streams and lakes in late summer and fall. Berries are also an important food item beginning in late July and continuing through fall. Black bears are more abundant in wooded areas, seldom venturing more than 350 yards from mature trees or tall shrubs. Important migratory areas include riparian areas and shorelines of lakes. Spring black bear concentrations occur in Redoubt Bay and Susitna Flats State Game Refuge; they are also common at the head of Kachemak Bay and along the sedge flats between the Bradley and Martin Rivers and in the Fox River valley. Spring brown bear concentrations occur in the McNeil River State Game Refuge along the coastal areas of Kamishak Bay and Redoubt Bay where both brown and black bears concentrate along salmon streams in the late summer and fall, particularly the Kustatan River. Both species of bears spend the winter in dens.

Terrestrial furbearers (wolves, fox, coyote, wolverine, lynx, marten, ermine, and squirrel). These species are prevalent throughout the subarea. In general, the breeding season for wolves, coyotes, and foxes runs from January through March, with pups/kits born February through June. Marten and ermine breeding season runs from mid to late summer and give birth the following April to May. Wolverines can breed from May through August and generally give birth to 1-4 pups between February and April. Lynx breed from mid-March to early April and can give birth from late May through early June.

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.

C. VEGETATION

Rare plant species are identified below, as documented by the Alaska Natural Heritage Program. Figure D-15 identifies the general locations of these rare plants. For more information, check the Alaska Natural Heritage Program's Rare Plant Data Portal at http://aknhp.uaa.alaska.edu/maps-js/integrated-map/rare_plants.php.

Rare Plants Known in the Cook Inlet Subarea

Global Rank[1]	State Rank[2]	Scientific Name	Common Names
G1G2Q	S2Q	*Cochlearia sessilifolia*	sessileleaf scurvygrass
G2	S3	*Smelowskia pyriformis*	pearshaped smelowskia
G3	S3	*Polystichum setigerum*	Alaska hollyfern
G3	S3S4	*Ranunculus pacificus*	Pacific buttercup
G3	S3	*Rumex beringensis*	Bering Sea dock
G3G4	S3	*Draba macounii*	Macoun's draba
G3G4	S3S4	*Potamogeton subsibiricus*	Yenisei River pondweed
G4	S3	*Carex heleonastes*	Hudson Bay sedge
G4	S2	*Carex parryana*	Parry sedge, Parry's sedge
G4	S3	*Carex phaeocephala*	dunehead sedge, dunhead sedge
G4	S1	*Carex preslii*	Presl's sedge
G4	S2	*Micranthes porsildiana*	Porsild's saxifrage
G4G5	S1S2	*Agrostis clavata*	clavate bentgrass
G4G5	SU	*Festuca viviparoidea*	northern fescue
G4G5	SU	*Festuca viviparoidea ssp. krajinae*	northern fescue
G4G5	S3S4	*Isoetes occidentalis*	western quillwort
G4G5Q	S3S4	*Carex lapponica*	Lapland sedge
G5	S2S3Q	*Agoseris glauca*	pale agoseris, pale dandelion, prairie dandelio
G5	S2Q	*Arnica mollis*	hairy arnica, wooly arnica
G5	S3S4Q	*Arnica ovata*	rayless arnica, sticky leaf arnica
G5	S1S2	*Artemisia dracunculus*	false tarragon, green sagewort, silky wormwood, tarragon, wormwood
G5	S1S2	*Boechera lemmonii*	Lemmon's rockcress
G5	S1	*Boechera stricta*	Drummond's rockcress
G5	S3	*Botrychium virginianum*	botryche de Virginie, common grapefern, rattlesnake fern
G5	S3	*Carex atratiformis*	black sedge, scrabrous black sedge
G5	S1S2	*Carex bebbii*	Bebb sedge, Bebb's sedge
G5	S2S3	*Carex deflexa var. deflexa*	northern sedge
G5	S2S3	*Carex deweyana var. deweyana*	Dewey sedge
G5	S3	*Carex eburnea*	bristle-leaf sedge, bristleleaf sedge
G5	S3	*Carex interior*	inland sedge
G5	S1S2	*Catabrosa aquatica*	brookgrass, water whorl grass, water whorlgrass
G5	S3S4	*Ceratophyllum demersum*	common hornwort, coon's tail, coon's-tail, coontail, hornwort
G5	S2S3	*Chamaerhodos erecta*	little rose, little-rose
G5	S3	*Cicuta bulbifera*	bulb waterhemlock, bulblet-bearing water hemlock, bulblet-bearing water-hemlock
G5	S1S2	*Crassula aquatica*	common pigmyweed, water pygmyweed

Global Rank[1]	State Rank[2]	Scientific Name	Common Names
G5	S3S4	*Cryptogramma stelleri*	fragile rockbrake, slender cliffbrake
G5	S3	*Draba incerta*	Yellowstone draba
G5	S2	*Eleocharis quinqueflora*	ew-flower spike-rush, few-flower spikerush, fewflower spikerush, fewflowered spikesedge
G5	S2S3	*Eriophorum viridicarinatum*	tassel cotton-grass, thinleaf cottonsedge
G5	S1	*Festuca occidentalis*	western fescue
G5	S3	*Glyceria striata*	fowl manna grass, fowl mannagrass
G5	S3	*Juniperus horizontalis*	creeping juniper, creeping-cedar, genévrier horizontal, Waukegan juniper
G5	S3S4	*Lycopus uniflorus*	bugleweed, northern bugleweed, northern water-horehound, oneflower bugleweed
G5	S3	*Maianthemum stellatum*	false Solomon's seal, little false Solomon's-seal, star false Solomon's-seal, star-flower Solomon's-seal, starry false lily of the valley, starry false Solomon's seal, starry false Solomon's-seal, starry Solomon's-seal
G5	S1	*Myriophyllum farwellii*	Farwell's watermilfoil
G5	S3	*Najas flexilis*	nodding waternymph, slender naiad, wavy waternymph
G5	S2	*Pedicularis groenlandica*	bull elephant's-head, elephanthead lousewort
G5	S3	*Podagrostis humilis*	
G5	S3	*Potamogeton obtusifolius*	bluntleaf pondweed
G5	S2	*Potamogeton robbinsii*	Robbins pondweed, Robbins' pondweed
G5	S2S3	*Potentilla drummondii*	Drummond's cinquefoil
G5	S2S3	*Salix hookeriana*	dune willow
G5	S2	*Schizachne purpurascens*	false melic, false melic grass
G5	S3S4	*Stellaria umbellata*	umbellate chickweed, umbrella starwort
G5	S1S2	*Suaeda calceoliformis*	Paiuteweed, Pursh seepweed, western seepweed
G5	S1	*Trichophorum pumilum*	Rolland's bulrush
G5	S2	*Vicia americana*	American deervetch, American purple vetch, American vetch, vesce d'Amérique
G5	S3S4	*Zannichellia palustris ssp. palustris*	horned pondweed, horned poolmat, horned-pondweed
G5?	S1	*Carex sprengelii*	long-beak sedge, Sprengel sedge, Sprengel's sedge
G5?	S3	*Polypodium sibiricum*	Siberian polypody
G5?	S3S4	*Viola selkirkii*	Selkirk's violet
G5T2T4	S3	*Gentianella propinqua ssp. aleutica*	fourpart dwarf gentian
G5T3	S3	*Astragalus robbinsii var. harringtonii*	Harold's milkvetch
G5T5	S1S2	*Carex echinata ssp. echinata*	star sedge, stellate sedge
G5T5	S3	*Geum aleppicum ssp. strictum*	
G5TNR	S1S2	*Poa secunda ssp. secunda*	big bluegrass, Sandberg bluegrass, Sandberg's bluegrass
G5TNR	S3S4	*Polygonum fowleri ssp. fowleri*	Fowler's knotweed
GNR	SH	*Blysmopsis rufa*	red bulrush

Global Rank[1]	State Rank[2]	Scientific Name	Common Names
GNR	S3S4Q	*Oxytropis tananensis*	
GNRTNR	S3	*Bolboschoenus maritimus subsp. paludosus*	cosmopolitan bulrush

[1] 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.

[2] 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 occurrences)
S5 = Demonstrably secure in state.
S#S# = State rank of species uncertain, best described as a range between the two ranks.

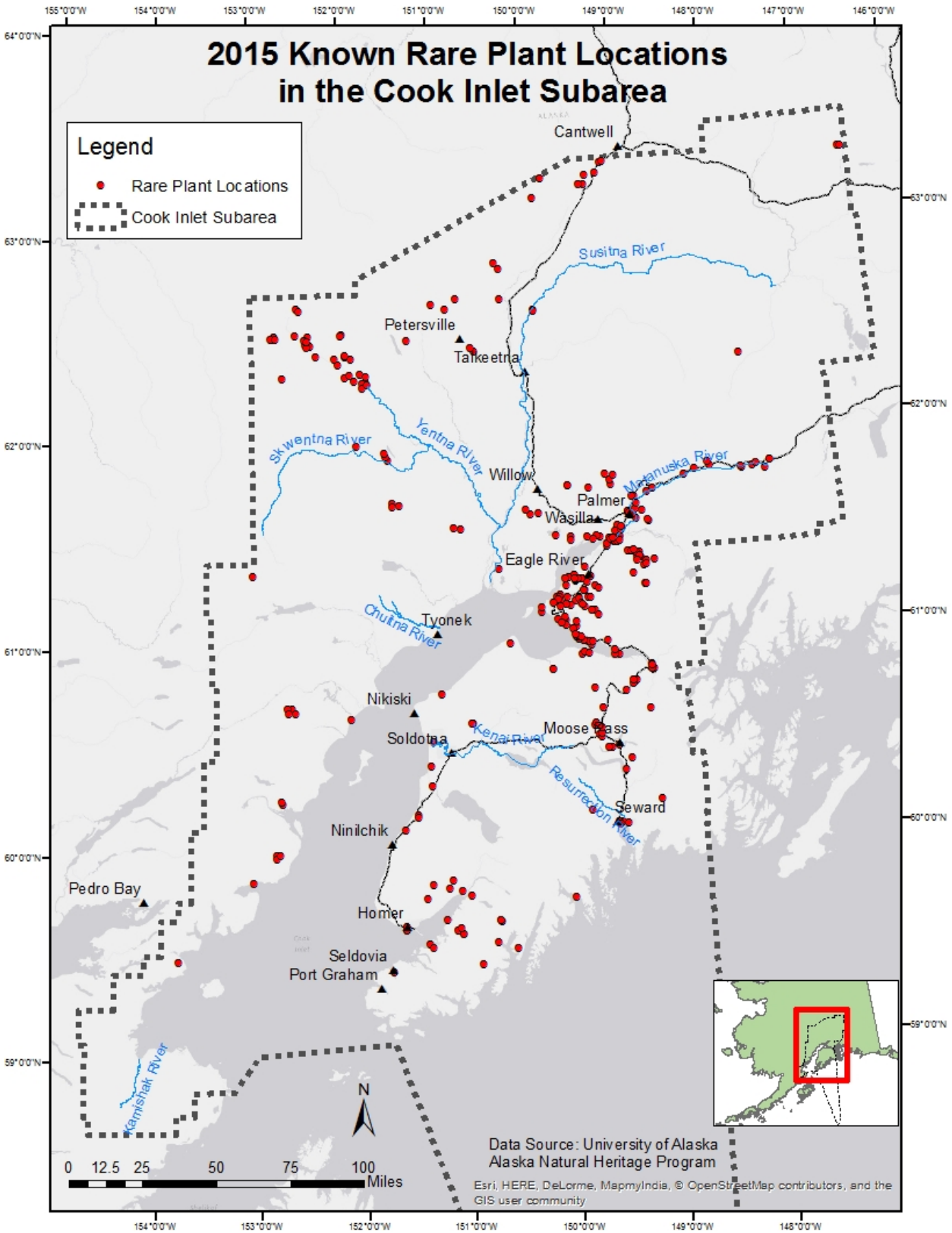


Figure D-15 – 2015 Known Rare Plant Locations in the Cook Inlet Subarea.

vi. SENSITIVE AREAS: HUMAN RESOURCE USES

A. FISH HATCHERIES AND ASSOCIATED OCEAN NET PENS

Currently, five fish hatcheries are operating in the Cook Inlet Subarea (see Figure D-16). All five species of Pacific salmon, rainbow trout, Arctic char, and Arctic grayling are produced. The Cook Inlet Aquaculture Association (CIAA) operates the Trail Lakes and Tutka Bay hatcheries, which are owned by the State of Alaska, and the Port Graham and Eklutna Salmon hatcheries, which are owned by CIAA. The State of Alaska (managed by the ADF&G) operates the William Jack Hernandez Sport Fish Hatchery. The Eklutna Salmon Hatchery is operated seasonally in conjunction with the State of Alaska's William Jack Hernandez Sport Fish Hatchery. Hatchery locations are indicated below.

The hatchery activities most vulnerable to spill damage include fry rearing and release, terminal harvests, and egg takes. However, since the timing and location of these activities varies by hatchery, species, and release location, it is difficult to generalize about them, although spring and summer will tend to be the most critical periods. Hatchery managers should be contacted for specific information. For more information, see the Cook Inlet Salmon Enhancement Plan, Phase II, 2006-2025 at http://www.adfg.alaska.gov/index.cfm?adfg=fishingHatcheriesPlanning.enhance.

Hatchery, City, Phone & Operator	Species	Release Locations
HATCHERIES OPERATED BY THE STATE OF ALASKA		
William Jack Hernandez Sport Fish Hatchery Anchorage 907-269-2000 Operator: ADF&G	Chinook and coho salmon, rainbow trout, Arctic char, and Arctic grayling	Chinook: Deception Creek, Eklutna Tailrace, Ship Creek, Crooked Creek, Ninilchik River, NDFL Homer Spit, Halibut Cove, Seldovia Bay, Resurrection Bay Coho: Eklutna Tailrace, Ship Creek, NDFL Homer Spit, Resurrection Bay Others: hundreds of locations; call for information
HATCHERIES OPERATED BY PRIVATE AQUACULTURE ASSOCIATIONS		
Trail Lakes Hatchery Moose Pass 907-283-5761 Operator: CIAA	sockeye and coho salmon	Sockeye: Shell Lake, Hidden Lake, Bear Lake, Resurrection Bay, China Poot Lake, Hazel Lake, Tutka Bay Lagoon, English Bay Lakes, Port Graham, Kirschner Lake Coho: Bear Creek, Bear Lake
Tutka Bay Hatchery Homer 907-283-5761 Operator: CIAA	pink salmon	Tutka Bay Lagoon, Paint River
Port Graham Hatchery Port Graham 907-283-5761 Operator: CIAA	pink salmon	Port Graham Bay, Paint River
Eklutna Salmon Hatchery Eklutna 907-283-5761 Operator: CIAA & ADF&G	Chinook salmon*	Eklutna Tailrace

*The Chinook salmon release program at the Eklutna Salmon Hatchery is operated by ADF&G through the William Jack Hernandez Sport Fish Hatchery.

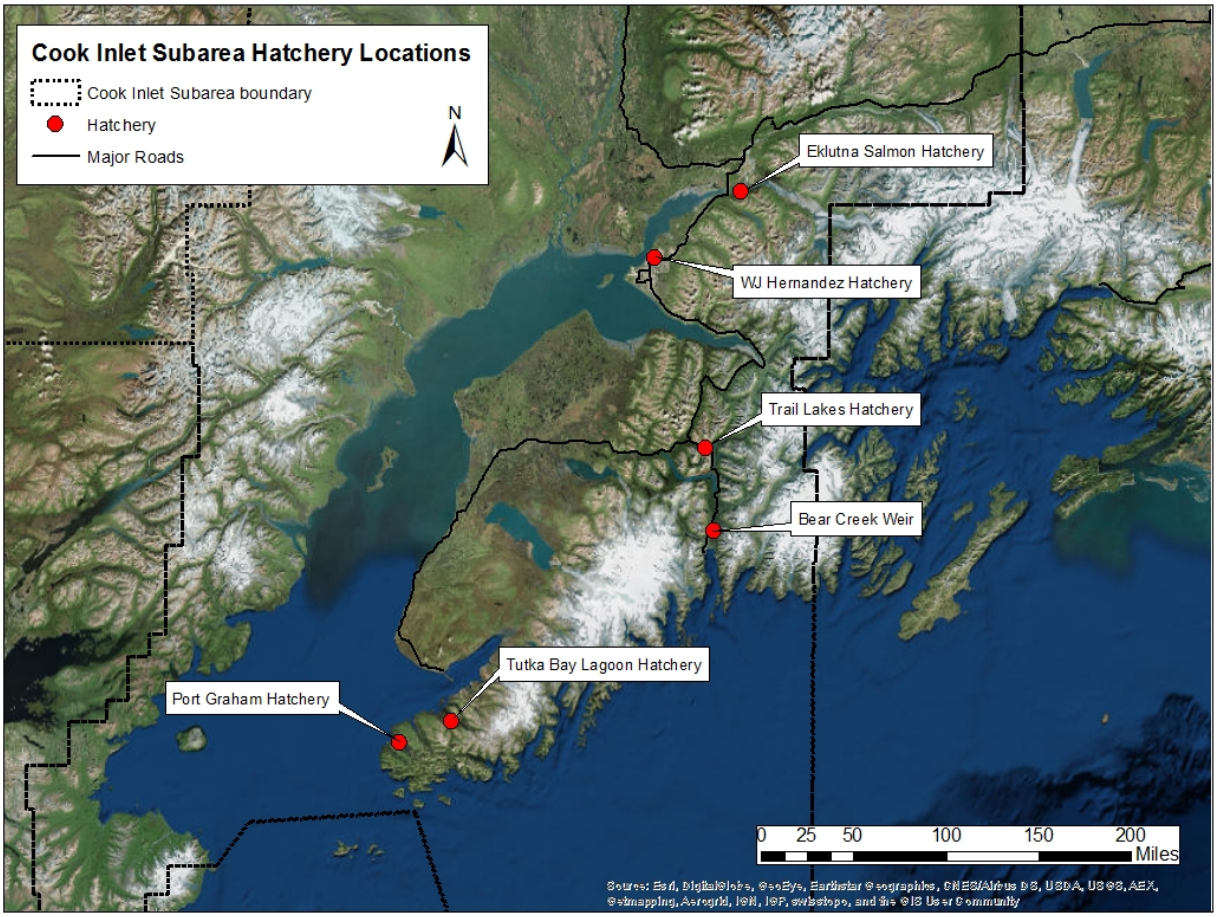


Figure D-16 – Cook Inlet Subarea Hatchery Locations.

B. AQUACULTURE SITES

Numerous in-water commercial aquatic farm operations, two cooperative nurseries, and one hatchery are currently located in the Cook Inlet Subarea (see Figures D-17 – D-22). The majority of the operations are located within bays and coves of Kachemak Bay including Halibut Cove (5), Jakolof Bay (4), Peterson Bay (2) and Bear Cove (2), and Little Jakolof Bay (1). There is also one land-based nursery located on the Homer Spit adjacent to Kachemak Bay and one land-based hatchery in Seward adjacent to Resurrection Bay. All the in-water operations have land leases allowing them to utilize submerged and tidal lands owned by the state for their operations.

Aquatic farm operations primarily grow Pacific oysters in deeper waters using stacks of 5-10 lantern nets or trays suspended from anchored longlines supported by buoys. Blue mussels are cultured using mussel socks suspended from rafts. Often the rafts are surrounded with a panel net enclosure for predator exclusion. Other incidental species growing in oyster gear are cultured, including mussels, macroalgae, and sea urchins. Operations may also use some intertidal areas for hardening aquatic farm product and defouling culture gear. Culture gear typically extends down the water column to depths of 10 to 30 ft, depending on the type of gear and equipment and environmental conditions. For some deeper water areas, operators choose to extend their culture gear down to 60 ft prior to harvesting, as a corrective measure to compensate for warmer temperatures and to minimize bacterial growth. Intertidal gear is typically sitting on the bottom substrate.

The land-based nursery, Kachemak Shellfish Mariculture Association (KMSA) Remote Setting Facility, in Homer operates as a seed distribution facility that rears small oysters or spat for use by aquatic farmers along with production of algae for oyster food. The facility also acts as a processor and sells adult oysters. The facility uses a saltwater well as a water source. The land-based hatchery, Alutiiq Pride Shellfish Hatchery (APSH), located in Seward propagates adult geoducks and rears the progeny along with oyster spat. APSH also houses the Marine Technical Center (MTC) that cultivates other invertebrate species used for research studies, such as red and blue king crab, sea cucumber, abalone, scallops, littleneck clams, and cockle. The Seward hatchery has four sources of salt water: 8-in pipeline extending to a depth of 250 ft, a saltwater well, a connection to the primary intake line for the MTC that comes from the University Sea Life Center, and a backup line from APSH.

The number of aquatic farm operations in this subarea has been stable for many years and future expansion is limited due to existing uses and space constraints. With interest in new species and diversification of commercial aquatic farm products, production of blue mussels and macroalgae (i.e., kelp) may expand in the next few years.

Aquatic farm products at all stages of development are vulnerable to spills year-round, as shellfish and aquatic plants are continuously submerged in the water column and are contained in predator exclusion culture gear. Harvest timing varies. Contact the current operator to determine actual product and onsite gear. Operation details, locations, and contact information are provided below, or they can be accessed at http://www.adfg.alaska.gov/index.cfm?adfg=fishingaquaticfarming.aquaticfarminfo. Also see http://www.asgdc.state.ak.us/maps/cplans/cook/ci3aqua.pdf.

Three departments in the state oversee different operations. Contact information for these agencies is:

- Alaska Department of Fish and Game (permits and transports) – Mariculture Coordinator
- Juneau: (907) 465-6150
- Alaska Department of Environmental Conservation (harvests and product testing and shipping) – Anchorage: (907) 269-7638
- Alaska Department of Natural Resources (leases) – Anchorage: (907) 269-8546

2015 Aquatic Farms in the Cook Inlet Subarea

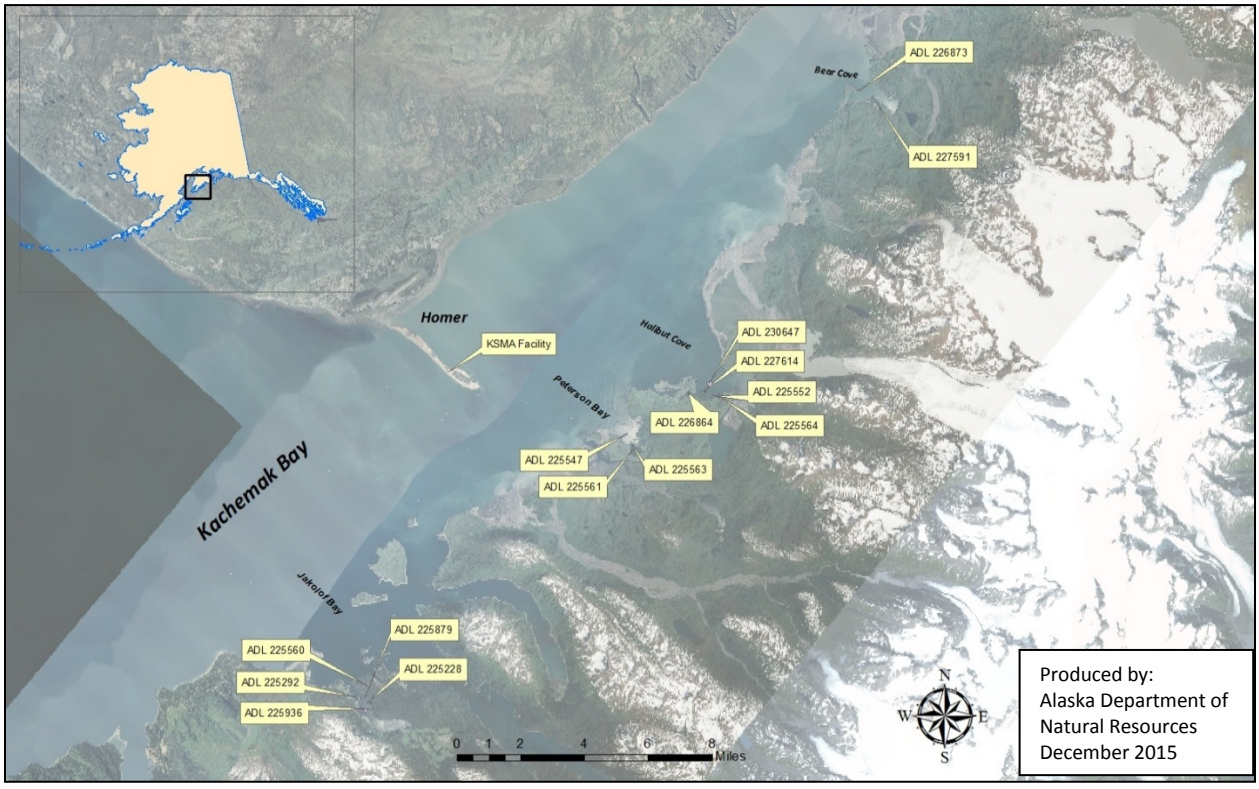


Figure D-17 – Homer/Kachemak Bay 2015 Aquatic Farms.

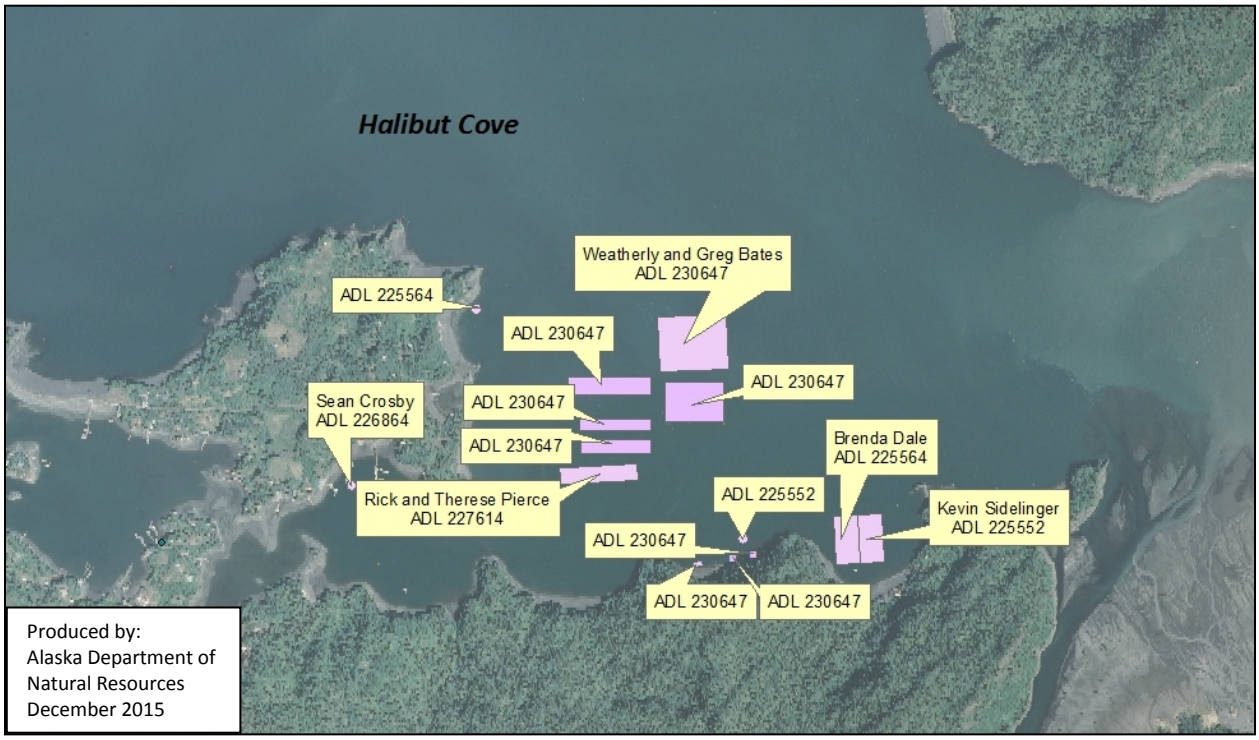


Figure D-18 – Halibut Cove 2015 Aquatic Farms.

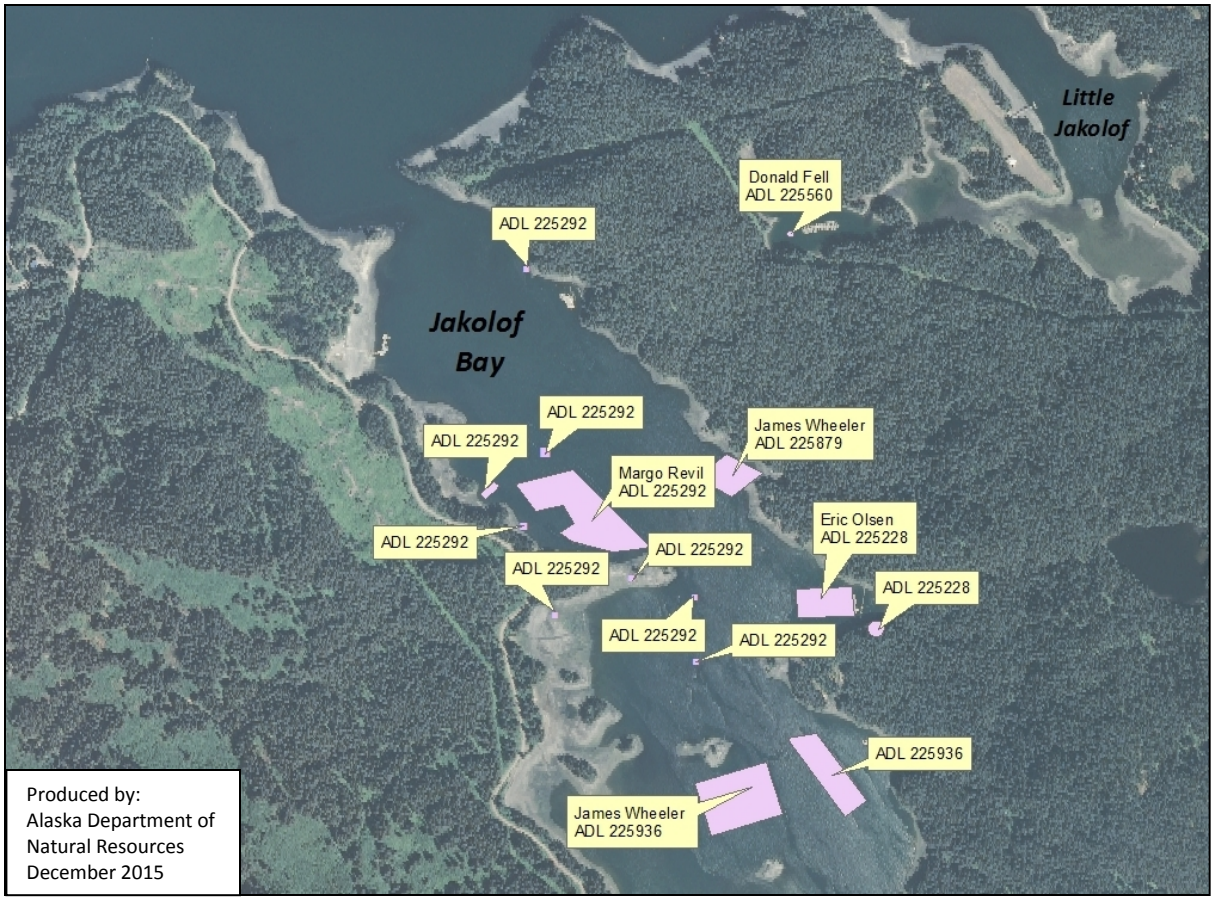


Figure D-19 – Jakalof Bay 2015 Aquatic Farms.

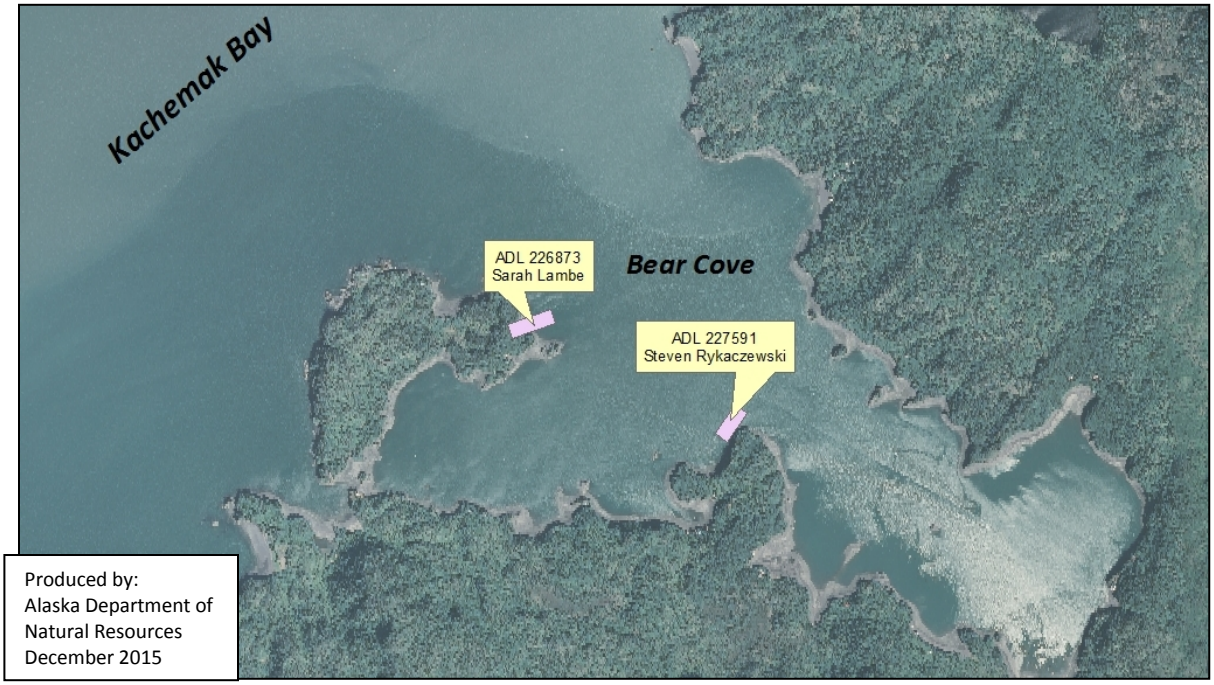


Figure D-20 – Bear Cove 2015 Aquatic Farms.

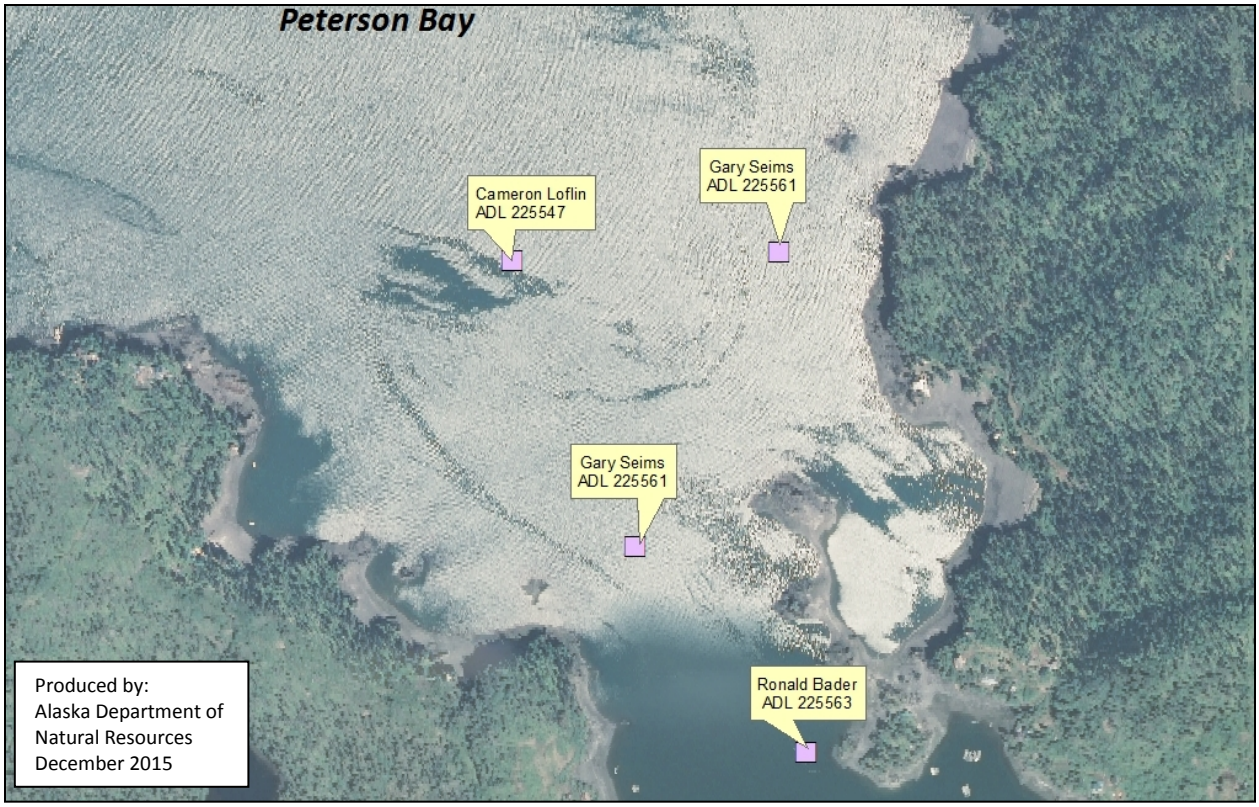


Figure D-21 – Peterson Bay 2015 Aquatic Farms.

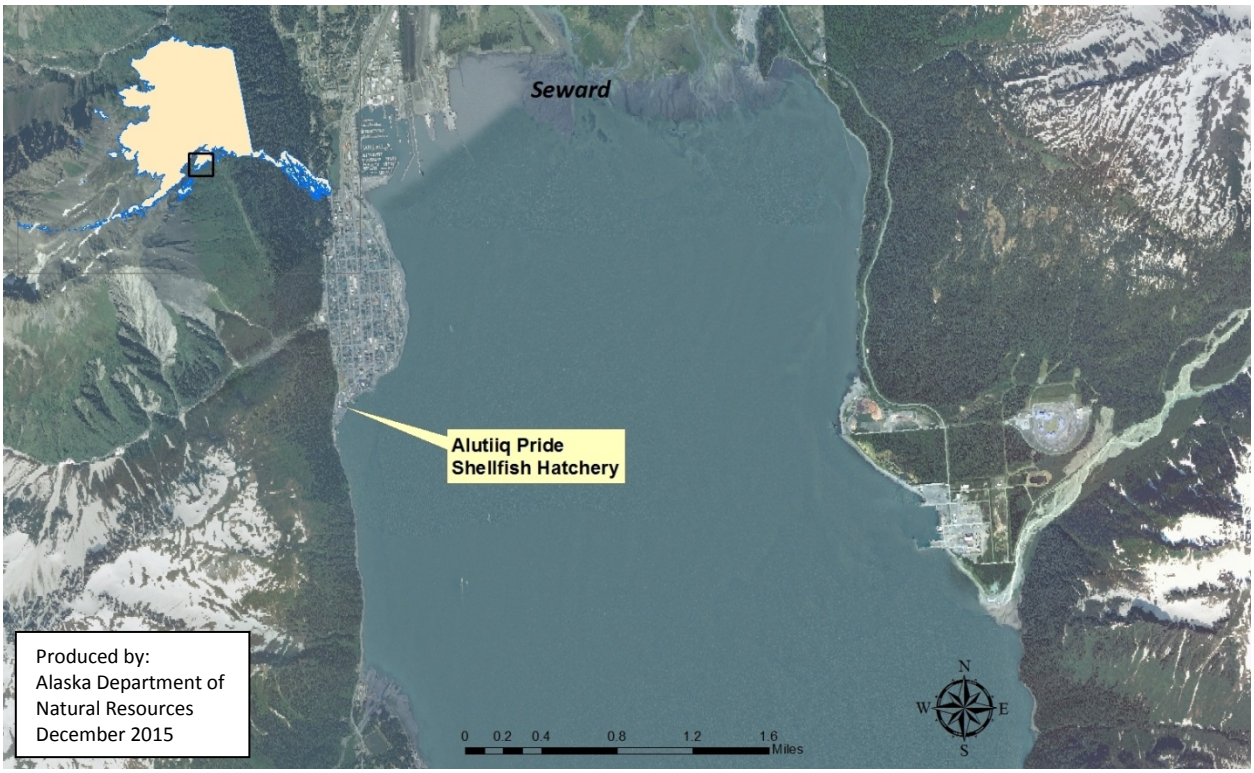


Figure D-22 – Seward/Resurrection Bay 2015 Aquatic Farms.

AQUATIC FARMS IN COOK INLET CONTINGENCY PLAN SUBAREA (as of 12/4/2015)

Contact	DNR ADL Number	ADF&G Permit No.	Site Type	Site Name	Location Description	No. Parcels	Primary Phone	Culture Area	Gear Used	Species Approved
Ronald J. Bader	225563	1991-101-AF-SC	Aquatic Farm	Peterson Bay	Peterson Bay, approx. 5 mi. SW of Homer	3	(907)345-1864 or (907)350-1436	Suspended, Other	Buoys, longlines, lantern nets, hardening racks, with cages, mussel collection lines and socks	Pacific Oyster, Blue Mussel
Weatherly and Greg Bates	230647	2009-101-AF-SC	Aquatic Farm	Halibut Cove (oysters)	Halibut Cove, Kachemak Bay	8	(907)299-2451	Suspended, Intertidal	Longlines (20 - 400 ft) on Parcel 2, lantern nets, wire-meshed trays, vexar mesh bags, grow-out raft (1 - 20 ft x 20 ft) on Parcels 1, 6, and 8, seed collectors (extruded plastic mesh), mussel sock line or droppers, predator exclusion netting panel enclosure surrounding raft, hardening racks, anchor system, buoys (A3), work rafts (4 - 16 ft x 20 ft) on Parcels 1 and 6, work rafts (10 - 40 ft x 40 ft) on Parcels 3-5	Pacific Oyster, Blue Mussel, Green Sea Urchin, Sugar Kelp
Sean Crosby	226864	1996-14-NU-SC	Nursery	Halibut Cove KSGC Nursery	Halibut Cove, Kachemak Bay	1	(907)235-1935 or (907)299-1932	Nursery	Powered floating upwelling nursery system (FLUPSY), associated floats and support structures integral to operation of the FLUPSY, anchorage systems securing the facility on its site	Pacific Oyster
Sean Crosby	Not Required	2012-101-NU-SC	Nursery	KSMA Remote Setting Nursery	on the Homer Spit	1	(907)235-1935 or (07) 299-1932	Other	Head tanks (2 - 4' x 4'), algae tanks (4 - 5' x 4'), setting tanks (3- sized?), and carboyls for algae	Pacific Oyster
Brenda Dale	225564	1991-104-AF-SC	Aquatic Farm	Halibut Cove	Halibut Cove / Kachemak Bay	2	(907)398-4938	Suspended, Other	Buoys, longlines, anchoring systems, lantern nets, mussel socks, mussel collectors, hardening racks, work raft	Pacific Oyster, Blue Mussel
Donald Fell	225560	1991-109-AF-SC	Aquatic Farm	Little Jakolof Bay	W side of Little Jakolof Bay	2	(907)235-7771	Suspended, Other	Lantern nets, oyster trays, suspended culture raft, hardening racks, work shed on raft, anchoring system, Dark Sea trays, spat collectors, mussel socks, scallop collectors	Pacific Oyster, Blue Mussel, Pink Scallop
Jeff J. Hetrick	Not Required	1992-01-HA-SC	Hatchery	Alutiiq Pride Shellfish Hatchery	Seward IMS Facility	1	(907)224-5181 or (07) 362-2378	Hatchery	Hatchery facility contains tanks and equipment for spawning, rearing and algae production	Pacific Oyster, Blue Mussel, Geoduck, Littleneck Clam, Purple-Hinged Rock Scallop, Cockle, Pacific Razor Clam, Butter Clam, Blue King Crab, Red King Crab

AQUATIC FARMS IN COOK INLET CONTINGENCY PLAN SUBAREA (as of 12/4/2015)

Contact	DNR ADL Number	ADF&G Permit No.	Site Type	Site Name	Location Description	No. Parcels	Primary Phone	Culture Area	Gear Used	Species Approved
Sarah Lambe	226873	1996-15-AF-SC	Aquatic Farm	Bear Cove	Bear Cove, 13 miles from Homer (KB)	1	(907)399-5272	Suspended	Lantern nets, longlines, buoys, work raft, anchoring system	Pacific Oyster, Blue Mussel
Cameron D. Loflin	225547	1991-113-AF-SC	Aquatic Farm	Peterson Bay	Peterson Bay, 5 mi SW of Homer (KB)	2	(801)423-1412	Suspended, Other	lantern nets, longlines, buoys, mussel socks, Hardening racks, anchoring system	Pacific Oyster, Blue Mussel
Eric D. Olsen	225228	1991-21A-AF-SC	Aquatic Farm	Jakolof Bay	NE shore of Jakolof Bay, approx. 10 mi from Seldovia, Kachemak Bay (KB)	2	(907)299-1657	Suspended, Other	Oysters and mussel rafts, anchoring system with anchor marking buoys, lantern nets, Mexican trays, mussel socks, mussel collectors, work raft, storage/work raft	Pacific Oyster, Blue Mussel
Rick and Therese Pierce	227614	2000-08-AF-SC	Aquatic Farm	Halibut Cove	Halibut Cove, East shore Ismailof Island, ~10.8 mi SE of Homer (KB)	1	(907)399-4006	Suspended	Buoys, longlines, lantern nets, anchors	Pacific Oyster, Blue Mussel
Margo Reveil	225292	1991-22A-AF-SC	Aquatic Farm	Jakolof Bay	Jakolof Bay, 12 mi from Seldovia (KB)	11	(907)299-3351	Suspended, Other	Lantern nets, longlines, floats, web beds, mussel spat collector lines, dark Sea trays, Mexican trays, scallop and sea cucumber spat collector bags, anchoring systems, anchor lines, anchors, rafts, mussel spat collector lines, hardening bags, hardening racks	Pacific Oyster, Blue Mussel, Littleneck Clam, Purple-Hinged Rock Scallop, Pink Scallop, Spiny Scallop, Green Sea Urchin, Ribbon Kelp, Sugar Kelp, Bull Kelp, Red Ribbon, Red Sea Urchin, Three-Ribbed Kelp
Steven M.Rykaczewski	227591	2000-10-AF-SC	Aquatic Farm	Bear Cove	Bear Cove, within Kachemak Bay in approx.16 nautical miles northeast of Homer (KB)	1	(907)235-2401 or (907)299-2295	Suspended	Longlines, lantern nets, work raft (10 ft x 20 ft), anchoring system - with anchor marker buoys.	Pacific Oyster
Gary A. Seims	225561	1991-116-AF-SC	Aquatic Farm	Peterson Bay	Peterson Bay, approx. 5mi SW of Homer, AK (KB)	2	(907)235-7156	Suspended, Other	Lantern nets, longlines, buoys, anchoring systems, mussel socks, work raft harvesting vessel, hardening racks	Pacific Oyster, Blue Mussel, Ribbon Kelp, Sugar Kelp, Bull Kelp, Nori, Sea Lettuce

AQUATIC FARMS IN COOK INLET CONTINGENCY PLAN SUBAREA (as of 12/4/2015)

Contact	DNR ADL Number	ADF&G Permit No.	Site Type	Site Name	Location Description	No. Parcels	Primary Phone	Culture Area	Gear Used	Species Approved
Kevin Sidelinger	225552	1991-117-AF-SC	Aquatic Farm	Halibut Cove	SC portion Halibut Cove, 1.5 mi. from village of Halibut Cove	2	(907)296-2217	Suspended, Other	Floatation buoys, longlines, , lantern net anchoring systems	Pacific Oyster
James Wheeler	225879	1992-24-AF-SC	Aquatic Farm	Jakolof Bay	One mile inside Jakolof Bay	4	(207)553-0693	Suspended, Other	Buoys, longlines (16), Lantern nets, tray systems, vexar bags, hardening racks, anchoring systems, work raft	Pacific Oyster

C. CULTURAL HERITAGE AND HISTORIC PROPERTIES

The Cook Inlet Subarea contains a multitude of known and unidentified historic properties. These may include National Historic Landmarks, burial sites, village sites, and other National Register eligible archaeological and historic sites in intertidal and on-shore locations. Oil spills and hazardous substance releases may result in severe impacts to these resources through both direct and indirect effects. OSCs are responsible for ensuring that response actions take the protection of historic properties into account and that the statutory requirements for protecting these resources are met. Guidance about how to ensure that preparedness and response accomplish this goal is provided in the *Alaska Implementation Guidelines for Federal On-Scene Coordinators for the Programmatic Agreement on Protection of Historic Properties During Emergency Response Under the National Oil and Hazardous Substances Pollution Contingency Plan*. This guidance is found in Annex M of the *Unified Plan* under the title *Historic Properties Protection Guidelines for Alaska Federal On-Scene Coordinators*.

Stringent federal and Alaska State protections exist that maintain confidentiality for the locations of known historic properties. For this reason, pre-incident site identification is limited. During a drill or an actual incident, the FOSC's Historic Preservation Specialist and the ADNR Office of History and Archaeology provide information to the Unified Command on an as needed basis.

1. *Subsistence and Personal Use Harvests*

Subsistence-related uses of natural resources play an important role in the economy and culture of many communities in the Cook Inlet 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 subsistence management of fish and wildlife resources and harvest allocation, with the exception of marine mammals, migratory birds, and halibut. In 1990, however, the federal government became responsible for assuring a federal subsistence priority on federal public lands and waters and in 1999 on federal reserved waters. The Federal Subsistence Board adopts subsistence regulations that are administered by 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 regulating subsistence uses has increased. Therefore, in the event of a spill, more extensive coordination will be required in order to address subsistence resources. Regulations regarding subsistence harvest can also be expected to undergo regular modification. Current information on harvest regulations can be obtained from the ADF&G at http://www.adfg.alaska.gov/index.cfm?adfg=subsistence.main or the USFWS at https://www.doi.gov/subsistence.

High use subsistence fishing areas within the Cook Inlet Subarea are Port Graham, Nanwalek, Tyonek, and Seldovia (see Figure D-23). The Community Subsistence Information System contains Alaska community harvest information gathered by the ADF&G, Division of Subsistence, including an Interactive Map of Geographic Survey Data, available at http://www.adfg.alaska.gov/sb/CSIS/. For more information, contact the ADF&G, Division of Subsistence, at 267-2362. Additionally, local communities

should be contacted for more specific information on the locations and seasons of subsistence harvests. Contacts for potentially-affected communities are identified in the *Response Section, Part One*.

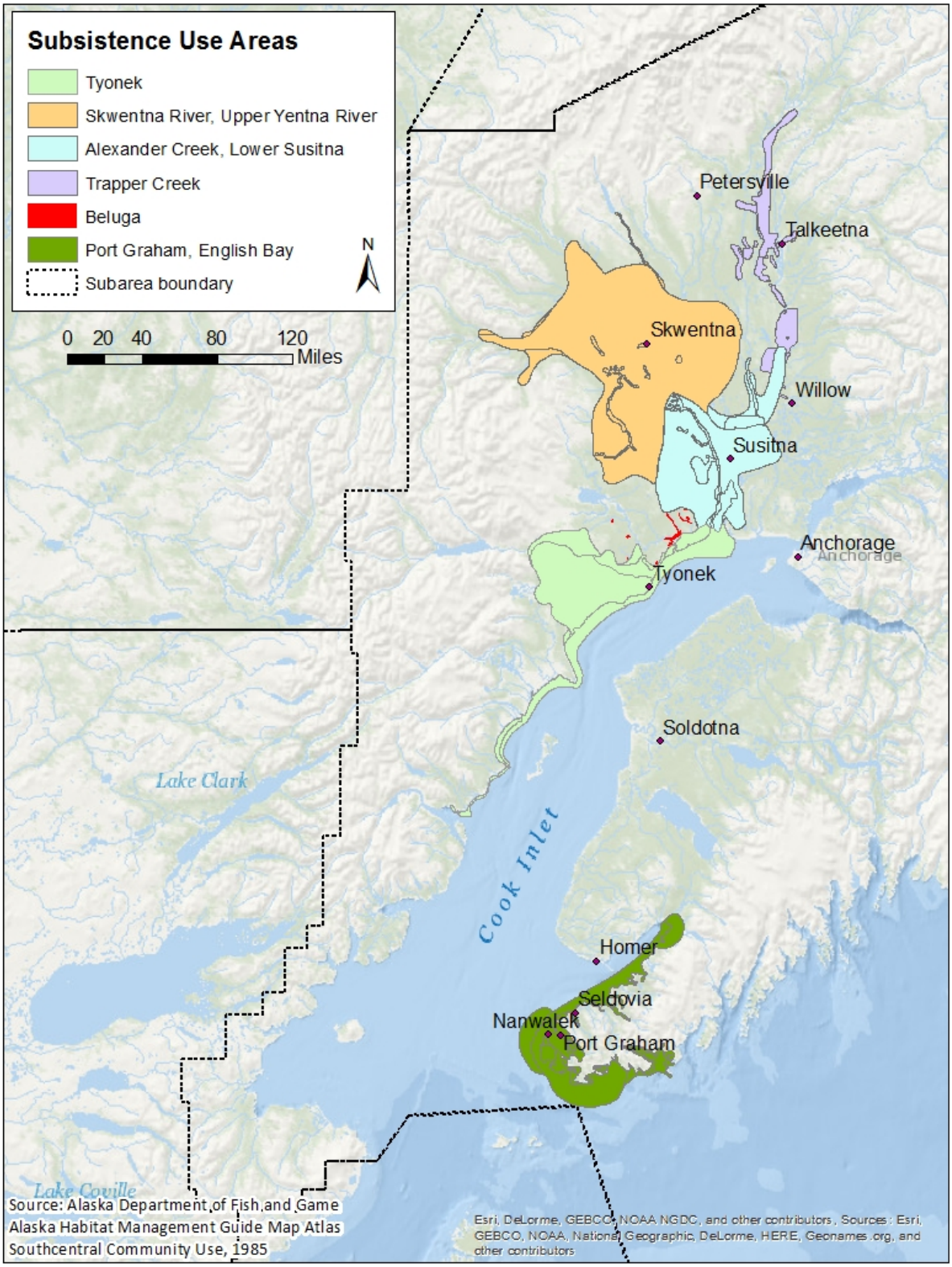


Figure D-23 – Subsistence Use Areas within the Cook Inlet Subarea.

COOK INLET PERSONAL USE HARVESTS*

Salmon dip net fisheries	
Kenai River	July 10 – July 31
Kasilof River	July 10 – August 7
Fish Creek	July 25 – August 5
China Poot Creek	July 1 – August 7
Coho salmon set net fisheries	
Southern district	August 16 – September 15
Salmon set net fishery	
Kasilof River	June 15 – June 24
Herring fishery	
Northern and Central districts	April 1 – May 31
All other districts	All year (mostly spring)
Smelt fishery	
In salt water	April 1 – May 31
In fresh water	April 1 – June 15
Shrimp fishery	All year
Dungeness crab fishery	No open season
King crab fishery	No open season
Tanner crab fishery	
Lower inlet	January 15 – December 15
Kachemak Bay	January 15 – March 15, July 15 – December 15
Clam fishery	All year

***All personal use fisheries may be opened or closed by emergency order if the ADF&G ascertains that conditions warrant such actions. Also, harvest regulations and seasons can change from year to year. The dates given above indicate periods when fisheries are commonly, but not always, open.

D. COMMERCIAL FISHING

The following table provides seasonal information on the major commercial fisheries. All fishing seasons are subject to emergency openings and closures, and most seasons are only open for a portion of the time specified in the regulations. Also, fishing regulations and seasons can change from year to year. Specific information on which species are currently being harvested may be obtained from the ADF&G's Division of Commercial Fisheries in Anchorage.

Maps of key commercial fishing areas are available in the previously referenced ADF&G publications, the Alaska Habitat Management Guide Reference Maps, Southcentral Region, Vol. 1 and 2 and the Alaska Habitat Management Guide, Southcentral Region Map Atlas. See http://www.adfg.alaska.gov/index.cfm?adfg=fishingCommercial.main for additional information by area or fishery. Commercial fishing in the federal waters of the Cook Inlet and the Gulf of Alaska are managed under the Fishery Management Plan for Groundfish of the Gulf of Alaska at http://www.npfmc.org/wpcontent/PDFdocuments/fmp/GOA/GOAfmp.pdf. Information on current fishery activity in federal waters (3nm to 200nm off Alaska) can be found on the NOAA fisheries webpage at http://alaskafisheries.noaa.gov/ or by calling NMFS Sustainable Fisheries Division at 907-586-7519 (also see Figure D-24).

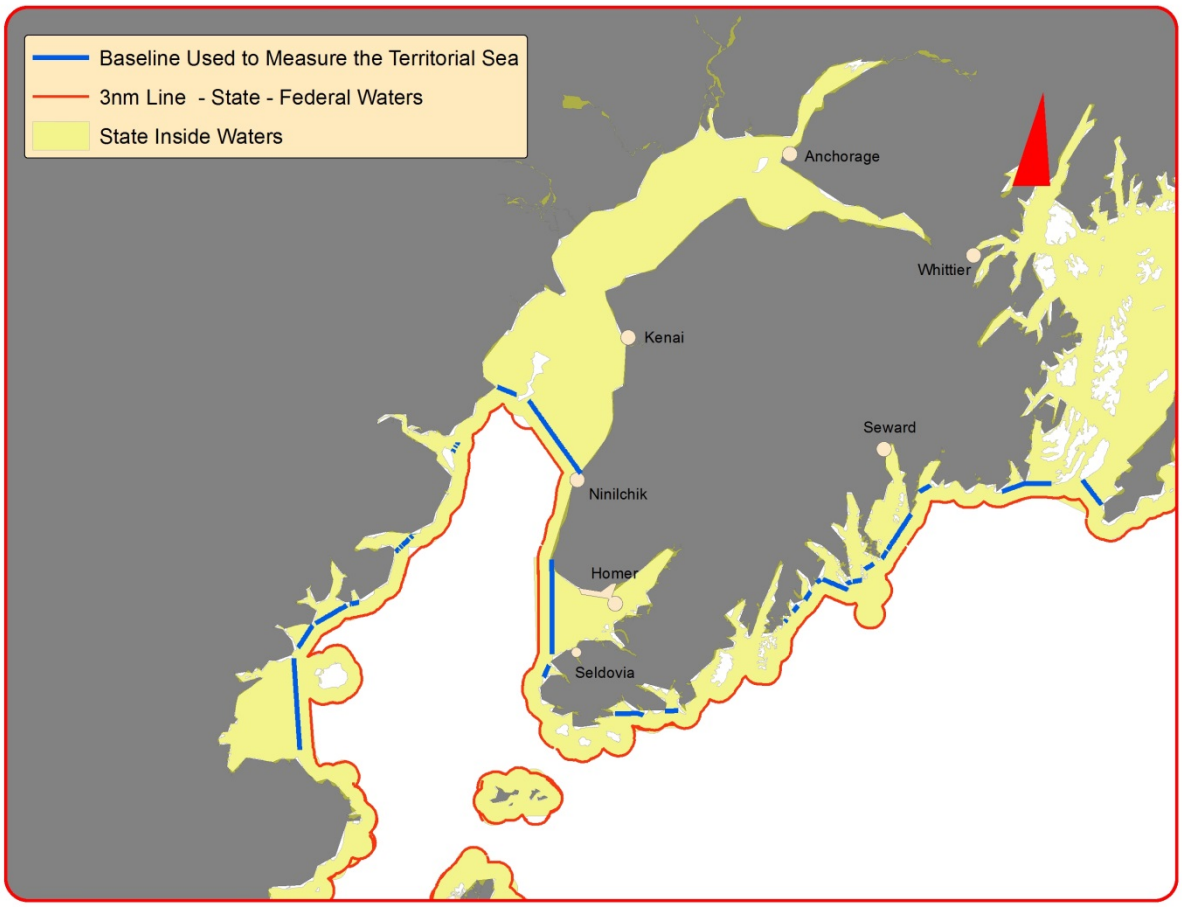


Figure D-24 – State and Federal Waters in the Cook Inlet Subarea.

Economically speaking, the salmon fishery is the most important commercial harvest activity. The upper Cook Inlet sockeye drift net fishery generally brings the greatest cash return. Set net and pink salmon seine harvests are economically significant as well. The lower Cook Inlet halibut fishery is also productive.

The following groups can be contacted with requests for specific information on location and timing of fish as well as local current conditions. Although providing such information is not the primary function of these organizations, the individual members will be quite knowledgeable about environmental conditions and may share information.

Cook Inlet Seiners Inc.
Homer
235-2656

Kenai Peninsula Fishermen's Association
Soldotna
262-2492 / 262-2898

United Cook Inlet Drift Association
Kenai
260-9436 / FAX: 260-9438

North Pacific Fisheries Association
Homer
399-6296

Northern District Setnetters
Anchorage
243-3668

Cook Inlet Fishermens Fund
Ninilchik
252-2752

Clams are harvested commercially in Kachemak Bay (Littleneck clams or steamers [*Luecoma staminea]* and Butter clams [*Saxidomas staminea]*) and in Tuxedni Bay near Polly Creek (razor clams [*Siliqua patula]*). Beaches that have been approved for the commercial harvest of shellfish include: Polly Creek (Cook Inlet), Crescent River (Cook Inlet), Chugachik Island (Kachemak Bay), Halibut Cove Lagoon (Kachemak Bay), Jakolof Bay (Kachemak Bay), Kasitsna Bay (Kachemak Bay), and Tutka Bay (Kachemak Bay).

COOK INLET GENERAL COMERCIAL FISHERIES TIMING

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
SALMON												
LCI purse seine						■	■	■	■			
UCI drift gillnet							■	■				
UCI set gillnet						■	■	■				
LCI set gillnet						■	■	■	■			
HERRING												
UCI sac roe					■	■						
LCI sac roe				■	■							
Food and bait	NO OPEN SEASON											
EULACHON SMELT												
Lower Susitna River					■	■						
HALIBUT[1]				■	■	■	■	■	■	■		
GROUNDFISH												
Rockfish[2]							■	■	■	■	■	■
Lingcod[2]							■	■	■	■	■	■
Sablefish[2]								■	■	■	■	■
Pacific cod[3]	■	■	■	■	■	■	■	■	■	■	■	■
Pollock										■	■	■
CRAB	NO OPEN SEASON											
SHRIMP	NO OPEN SEASON											
SCALLOP												
Kamishak Bay[2]									■	■		
RAZOR CLAMS												
UCI west side only[4]						■	■	■				
HARDSHELL CLAMS												
Kamishak Bay					■	■	■	■	■			
	JAN	**FEB**	**MAR**	**APR**	**MAY**	**JUNE**	**JULY**	**AUG**	**SEPT**	**OCT**	**NOV**	**DEC**

Notes: UCI = Upper Cook Inlet (waters north of the latitude of Anchor Point); LCI = Lower Cook Inlet (waters west of the longitude of Cape Fairfield, north of the latitude of Cape Douglas, and south of the latitude of Anchor Point).

[1] Fishery timing determined by the International Pacific Halibut Commission every year.

[2] Fishery closed when Guideline Harvest Level is reached.

[3] Parallel or state fishery generally lasts all year (including all gear types).

[4] No set season; managed by total allowable harvest.

E. SPORT FISHING AND HUNTING

Sport fishing and hunting activities are significant throughout the Cook Inlet Subarea throughout the year. Seasons and harvest regulations vary depending on the species and area and may be changed from year to year. Contact the ADF&G for current seasons within the area of concern. See http://www.adfg.alaska.gov/index.cfm?adfg=fishingSport.main for more information.

F. RECREATIONAL SITES AND FACILITIES

1. *Alaska Department of Natural Resources - State Parks, Picnic Areas, and Campgrounds: Name & Nearest Community*

- Chugach State Park, Anchorage
- Anchor River State Recreation Area, Anchor Point
- Anchor River State Recreation Site, Anchor Point
- Stariski State Recreation Site, Anchor Point
- Big Lake North State Recreation Site, Big Lake
- Big Lake South State Recreation Site, Big Lake
- Rocky Lake State Recreation Site, Big Lake
- Kachemak Bay State Park and Wilderness Park, Homer
- Bernice Lake State Recreation Site, Kenai
- Captain Cook State Recreation Area, Nikiski
- Deep Creek State Recreation Area, Ninilchik
- Ninilchik State Recreation Area, Ninilchik
- Bonnie Lake State Recreation Site, Palmer
- Finger Lake State Recreation Site, Palmer
- Kepler-Bradley Lakes State Recreation Area, Palmer
- King Mountain State Recreation Site, Palmer
- Long Lake State Recreation Site, Palmer
- Matanuska Glacier State Recreation Site, Palmer
- Moose Creek State Recreation Site, Palmer
- Summit Lake State Recreation Site, Palmer
- Wolf Lake State Recreation Site, Palmer
- Caines Head State Recreation Area, Seward
- Driftwood Bay State Marine Park, Seward
- Horsehoe Bay State Marine Park, Seward
- Safety Cove State Marine Park, Seward
- Sandspit Point State Marine Park, Seward
- Sunny Cove State Marine Park, Seward
- Clam Gulch State Recreation Area, Soldotna
- Crooked Creek State Recreation Site, Soldotna
- Johnson Lake State Recreation Area, Soldotna
- Kasilof River State Recreation Site, Soldotna
- Kenai River Special Management Area, Sterling
- Denali State Park, Talkeetna
- Montana Creek State Recreation Site, Talkeetna
- Independence Mine State Historical Park, Wasilla
- Little Susitna River Public Use Facility, Wasilla

- Nancy Lake State Recreation Area, Willow
- Nancy Lake State Recreation Site, Willow
- Willow Creek State Recreation Area, Willow
- McNeil River State Game Sanctuary Campground

See http://dnr.alaska.gov/parks/ for more information.

2. *FEDERAL (Also see the list of sites for Kenai Fjords National Park below.)*

National Park Service: Name & Nearest Community

- Exit Glacier Campground/Visitor Center, Seward
- Kenai Fjords Visitor Center, Seward

U.S. Fish and Wildlife Service: Name & Nearest Community

- Hidden Lake Campground, Cooper Landing
- Lower Skilak Campground, Cooper Landing
- Russian River Ferry Campground, Cooper Landing
- Upper Skilak Lake Campground, Cooper Landing
- Jim's Landing Campground, Soldotna
- Kenai Wildlife Refuge Visitor Center, Soldotna
- Swanson River Campground, Sterling
- Watson Lake Campground, Sterling

U.S. Forest Service: Name & Nearest Community

- Quartz Creek Campground, Cooper Landing
- Russian River Campground, Cooper Landing
- Begich Boggs Visitor Center, Girdwood
- Bertha Creek Campground, Girdwood
- Black Bear Campground, Girdwood
- Granite Creek Campground, Girdwood
- Tenderfoot Campground, Girdwood
- Williwaw Campground, Girdwood
- Tern Lake Campground, Moose Pass
- Trail River, Moose Pass
- Cooper Creek Campground, Seward
- Crescent Creek Campground, Seward
- Porcupine Campground, Seward
- Primrose Campground, Seward
- Ptarmigan Campground, Seward
- Schooner Bend Campground, Seward

3. *Public Use Cabins: These are available from multiple different agencies and groups. See the following websites for more information.*

- ADNR: http://dnr.alaska.gov/parks/cabins/index.htm
- BLM: http://www.blm.gov/ak/st/en/prog/recreation/activities/pub_cabins.html
- Eagle River Nature Center: http://www.ernc.org/river-yurt.html
- NPS: http://www.nps.gov/anch/cabins.htm

- USFS: http://www.fs.usda.gov/activity/chugach/recreation/camping-cabins/?recid=4832&actid=101
- USFWS: http://www.fws.gov/refuge/Kenai/cabin.html

4. ***Public Anchorages and Moorings:***
(Also see the list of sites for Kenai Fjords National Park below.)

- Mouth of the Kenai River
- Mouth of the Kasilof River
- Mouth of Deep Creek
- Kachemak Bay behind the spit
- Halibut Cove
- Sadie Cove
- Tutka Bay
- Kasitsna Bay
- Jakolof Bay
- Port Graham
- Port Chatham

ALASKA STATE PARKS
Alaska Department of Natural Resources
Division of Parks and Outdoor Recreation

Alaska State Parks in the Cook Inlet Region (maps and charts)

1. Anchorage
2. Homer (Kenai Peninsula)
3. Kenai (Kenai Peninsula)
4. Palmer (Matanuska Valley)
5. Seward (Kenai Peninsula)
6. Soldotna (Kenai Peninsula)
7. Sterling (Kenai Peninsula)
8. Wasilla (Susitna Valley)

Chart Key

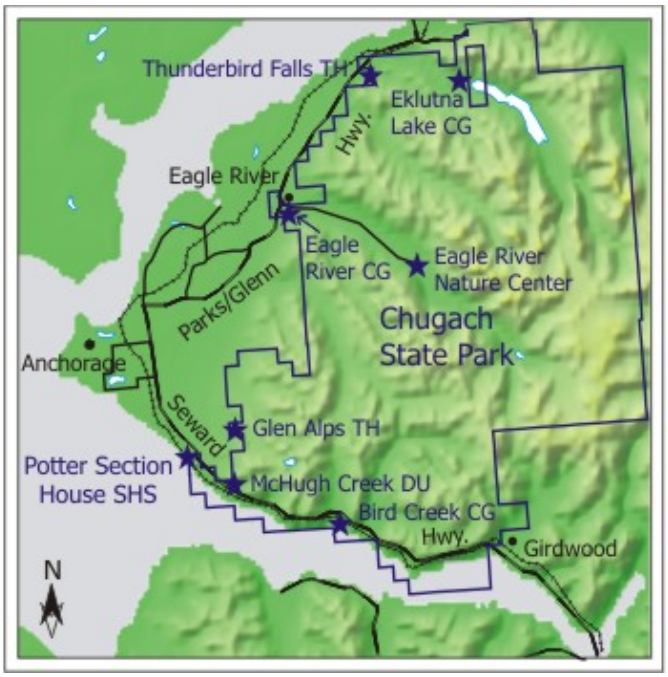
CS = Camp sites	**W** = Water, drinkable	**C** = Cabins
CL = Camping limit	**S** = Picnic shelter	**D** = Daily parking fee
CF = Camping fee	**Tr** = Trails	**F** = Fishing
P = Picnic sites	**H** = Historical feature	***** = Tent camping only
T = Toilet	**B** = Boat launch	

SRA = State Recreation Area
SRS = State Recreation Site
SHP = State Historical Park
SHS = State Historic Site
SMA = Special Management Area
SP = State Park
SMP = State Marine Park
SWP = State Wilderness Park
TH = Trailhead
DU = Day Use
GU = Group Use
CG = Campground
BL = Boat Launch

For further information, go to http://dnr.alaska.gov/parks/ or call 269-8700 (Anchorage Office). Park maps can be found online at http://dnr.alaska.gov/parks/aspunits/index.htm.

Chugach State Park near Anchorage

This map is not intended to be used as a navigational aid.

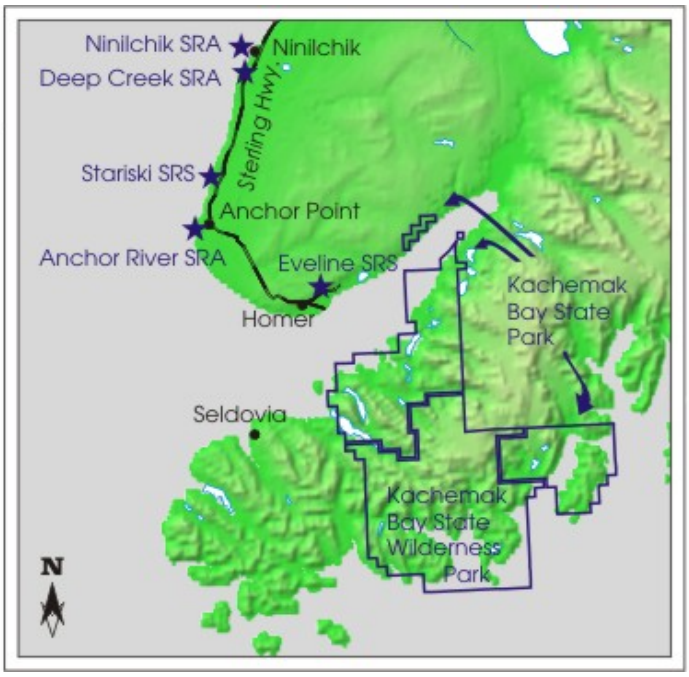


Park Unit	Acres	CS	CL	CF	P	T	W	S	Tr	H	B	C	D	F	Location
Chugach SP	495,204														
- *Bird Creek CG*		27	7	CF	4	T[1]	W	S	Tr[1]					F	101.2 Seward Hwy.
- *Bird Creek CG Overflow*		20[1]	7	CF	20	T[1]	W		Tr[1]					F[1]	101.2 Seward Hwy.
- *Bird Point DU*						T[1]	W[1]		Tr[1]						96.1 Seward Hwy.
- *Bird Ridge TH*									Tr						102.2 Seward Hwy.
- *Eagle River CG*[2]		50[1]	4	CF	12	T[1]	W[1]	S	Tr				D	F	12.6 Glenn Hwy.
- *Eagle River Greenbelt*						T[1]			Tr				D	F	Eagle River Loop Rd.
- *Eagle R. Nature Center*[3]						T[1]	W[1]		Tr[1]	H[1]		C	D		12 Eagle River Rd.
- *Eklutna Lake CG/GU*		50	15	CF	32[1]	T[1]	W[1]	S[1]	Tr[1]			C[1]	D	F	26.5 Glenn Hwy.
- *Glen Alps TH/Viewpoint*						T[1]			Tr[1]				D		Upper Huffman
- *McHugh Creek DU*					15[1]	T[1]	W[1]		Tr						111 Seward Hwy.
- *North Fork Eagle Riv.*						T[1]			Tr					F	7.5 Eagle River Rd.
- *Prospect Heights TH*						T[1]			Tr				D		Up O'Malley/Prospect
- *Thunderbird Falls TH*						T			Tr						25.5 Glenn Hwy.
- *Turnagain Arm Trail*									Tr						106-115 Seward Hwy.
- *Upper Huffman TH*					8	T[1]			Tr				D		Upper Huffman
Potter House SHS	0.5				1	T[1]				H[1]					115 Seward Hwy.

[1] Facilities are ADA accessible
[2] Sanitary dump station
[3] Annual passes not accepted

Alaska State Parks near Homer on the Kenai Peninsula

This map is not intended to be used as a navigational aid.



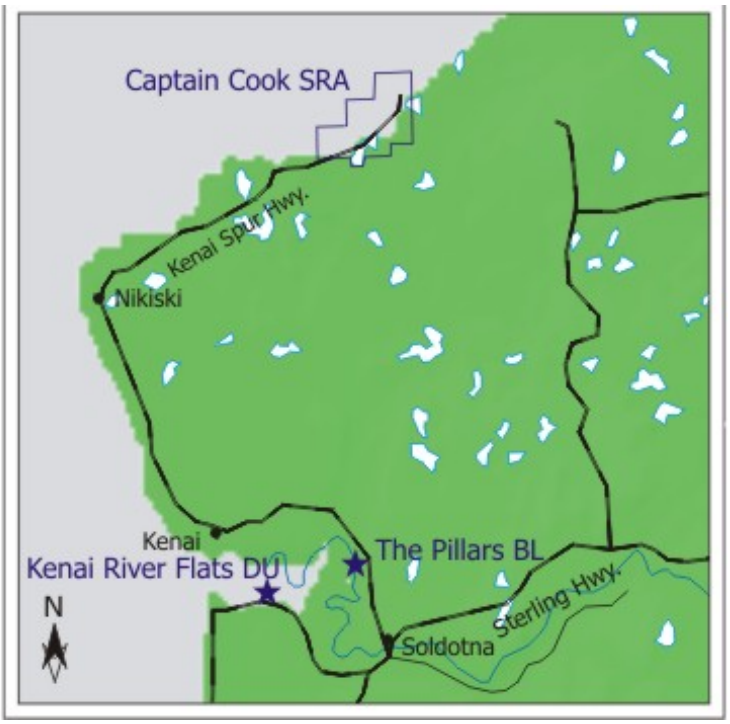
Park Unit	Acres	CS	CL	CF	P	T	W	S	Tr	H	B	C	D	F	Location
Anchor River SRA	228								Tr						
- *Coho CG*		27	15	CF		T							D	F	157 Sterling Hwy.
- *Halibut CG*		21[1]	15	CF	2[1]	T[1]	W[1]			H			D	F	157 Sterling Hwy.
- *Silverking CG*		35	15	CF		T[1]							D	F	157 Sterling Hwy.
- *Slidehole CG*		44[1]	7	CF	2[1]	T[1]	W[1]	S[1]					D	F	157 Sterling Hwy.
- *Steelhead CG*		34	15	CF		T[1]							D	F	157 Sterling Hwy.
Deep Creek SRA	172														
- *Deep Creek CG*		164	15	CF		T[1]	W[1]				B		D	F	138 Sterling Hwy.
- *Deep Creek North CG*		25[1]	15	CF		T[1]	W[1]						D	F[1]	137.3 Sterling Hwy.
- *Deep Creek South DU*					4[1]	T[1]							D	F	137.4 Sterling Hwy.
Kachemak Bay SP/SWP	370,399	8	15			T[1]			Tr			C[1]		F	No road access
Ninilchik SRA	93														
- *Ninilchik Beach CG*		35	15	CF		T[1]	W				B			F	135.5 Sterling Hwy.
- *Ninilchik River CG*		43	15	CF	2[1]	T[1]	W[1]	S[1]						F	135.2 Sterling Hwy.
- *Ninilchik Overlook*		25[1]	15	CF	2[1]	T[1]	W[1]						D	F	135.3 Sterling Hwy.
- *Ninilchik View CG*[2]		14	7	CF		T[1]	W								135.9 Sterling Hwy.
Stariski SRS	60	13	15	CF		T[1]	W	S							151 Sterling Hwy.

[1] Facilities are ADA accessible

[2] Sanitary dump station

Alaska State Parks near Kenai on the Kenai Peninsula

This map is not intended to be used as a navigational aid.

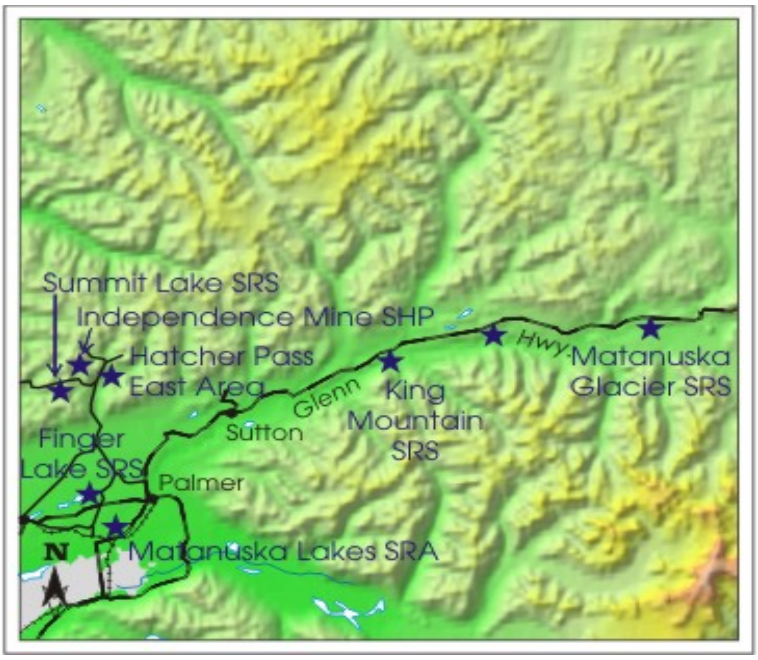


Park Unit	Acres	CS	CL	CF	P	T	W	S	Tr	H	B	C	D	F	Location
Captain Cook SRA	3,466														
- *Bishop Creek DU*					4	T	W[1]		Tr					F	36 Kenai Spur Hwy.
- *Discovery CG*		52	15	CF		T	W		Tr					F	39 Kenai Spur Hwy.
- *Discovery DU*					6	T									39 Kenai Spur Hwy.
- *Stormy Lake Beach*						T	W[1]							F	36.5 Kenai Spur Hwy.
- *Stormy Lake BL*					1	T	W[1]				B			F	37.9 Kenai Spur Hwy.
- *Stormy Lake DU*					4	T	W[1]	S[1]						F	36.9 Kenai Spur Hwy.
- *Swanson Riv. Landing*					1	T								F	38.5 Kenai Spur Hwy.
Kenai River SMA															
- *Kenai River Flats DU*	832					T								F	Kalifornsky Beach Rd.
- *The Pillars BL*[2]	16					T[1]	W[1]				B[1]		D		Kenai Spur Hwy.

[1] Facilities are ADA accessible
[2] Annual passes not accepted

Alaska State Parks near Palmer in the Matanuska Valley

This map is not intended to be used as a navigational aid.

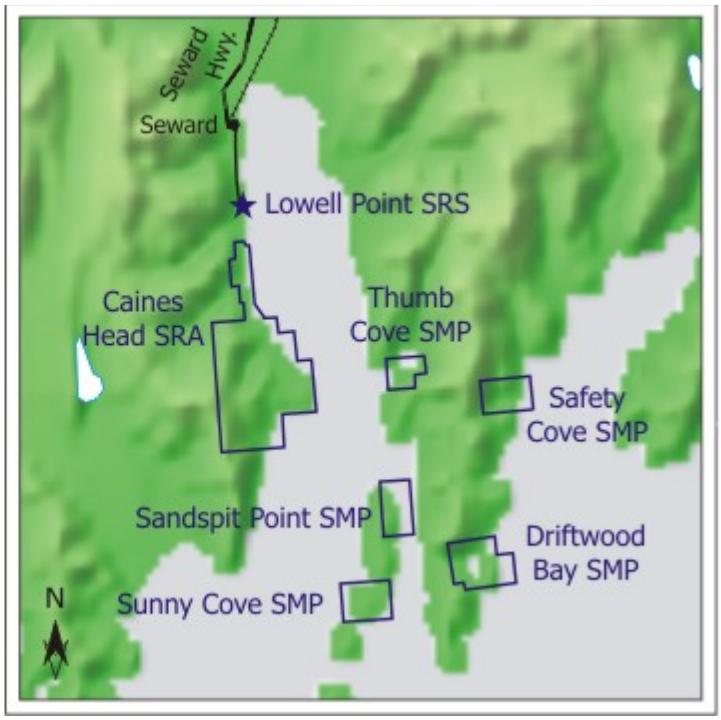


Park Unit	Acres	CS	CL	CF	P	T	W	S	Tr	H	B	C	D	F	Location
Finger Lake SRS	69	41	7	CF	10	T[1]	W				B		D	F	0.7 Bogard Rd.
Hatcher Pass East Area	75,000								Tr						Hatcher Pass Rd.
Independence Mine SHP	761				10	T[1]	W		Tr[1]	H[1]			D		17.3 Hatcher Pass Rd.
Kepler-Bradley Lks SRA	346														
- *Canoe Lake*						T[1]			Tr					F	38 Glenn Hwy.
- *Irene Lake*									Tr					F	38 Glenn Hwy.
- *Long Lake*						T[1]			Tr					F	38 Glenn Hwy.
- *Matanuska Lake*					10[1]	T[1]	W[1]		Tr[1]					F[1]	36.4 Glenn Hwy.
King Mountain SRS	20	22	15	CF	2	T	W	S							76 Glenn Hwy.
Long Lake SRS	480	9	15			T					B			F	85.3 Glenn Hwy.
Matanuska Glacier SRS	229	12	15	CF		T[1]	W[1]		Tr						101 Glenn Hwy.
Summit Lake SRS	360								Tr						19.2 Hatcher Pass Rd.

[1] Facilities are ADA accessible

Alaska State Parks near Seward on the Kenai Peninsula

This map is not intended to be used as a navigational aid.

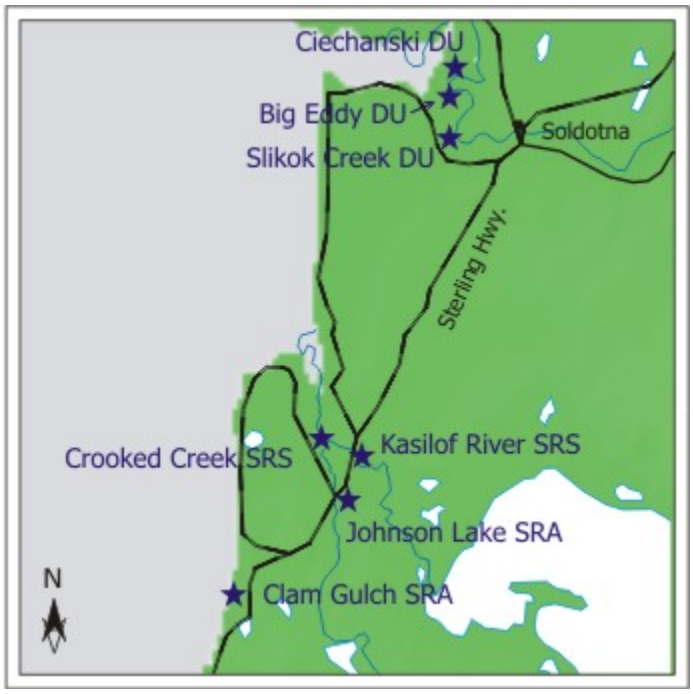


Park Unit	Acres	CS	CL	CF	P	T	W	S	Tr	H	B	C	D	F	Location
Caines Head SRA	5,961	4	15		4	T		S	Tr	H		C		F	No road access
Driftwood Bay SMP	1,480	Undeveloped												F	No road access
Lowell Point SRS	19					T[1]			Tr					F	2 Lowell Point Road
Safety Cove SMP	960	Undeveloped												F	No road access
Sandspit Point SMP	560	Undeveloped												F	No road access
Sunny Cove SMP	960	Undeveloped												F	No road access
Thumb Cove SMP	720	3				T[1]			Tr			C[1]		F	No road access

[1] Facilities are ADA accessible

Alaska State Parks near Soldotna on the Kenai Peninsula

This map is not intended to be used as a navigational aid.



Park Unit	Acres	CS	CL	CF	P	T	W	S	Tr	H	B	C	D	F	Location
Clam Gulch SRA	495	116	15	CF		T[1]	W[1]	S[1]					D	F	117 Sterling Hwy.
Crooked Creek SRS	105	79[1]	7	CF	30[1]	T	W		Tr				D	F[1]	Coho Loop Rd.
Johnson Lake SRA	332	50	15	CF	25	T[1]	W[1]	S[1]			B			F	110 Sterling Hwy.
Kasilof River SRS	30	10	15	CF		T[1]	W		Tr		B		D	F	109.5 Sterling Hwy.
Kenai River SMA															
- *Big Eddy DU*	16					T[1]								F	River mile 15.5
- *Ciechanski DU*	34					T[1]								F	River mile 16.5
- *Slikok Creek DU*	40				5	T[1]								F	Kalifornsky Beach Rd.

[1] Facilities are ADA accessible

Alaska State Parks near Sterling on the Kenai Peninsula

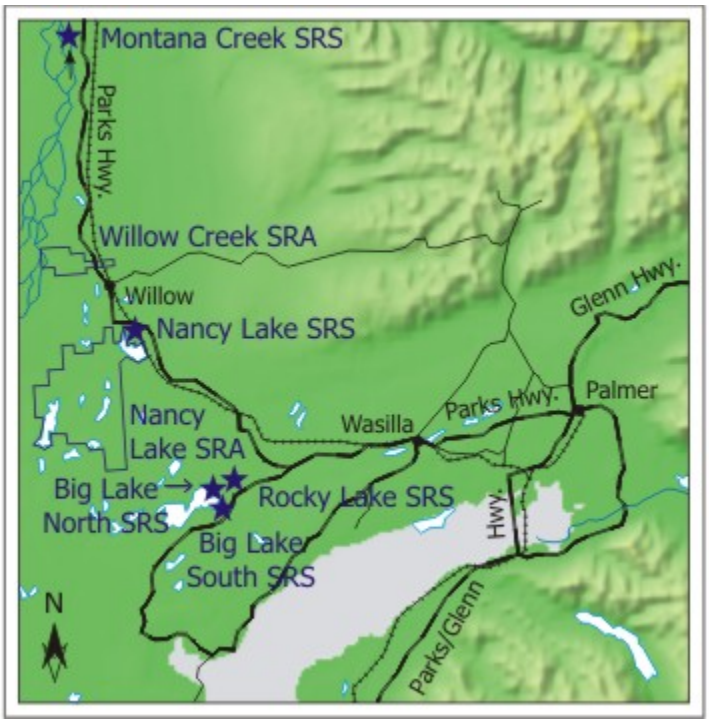
This map is not intended to be used as a navigational aid.

Park Unit	Acres	CS	CL	CF	P	T	W	S	Tr	H	B	C	D	F	Location
Kenai River SMA															
- *Bings Landing CG/DU*	126	37[1]	7	CF	6	T[1]	W[1]	S[1]	Tr		B		D	F[1]	79 Sterling Hwy.
- *Cooper Landing BL*	421					T[1]	W[1]				B[1]		D		47.8 Sterling Hwy.
- *Funny River CG*	336	10	7	CF		T	W							F	10 Funny River Rd.
- *Izaak Walton CG*	8	26[1]	7	CF	4	T[1]	W[1]				B			F	81 Sterling Hwy.
- *Morgans Landing CG*	279	42[1]	7	CF	4	T[1]	W[1]		Tr				D	F	85 Sterling Hwy.
Scout Lake SRS	164				10	T	W	S	Tr				D	F	85 Sterling Hwy.

[1] Facilities are ADA accessible

Alaska State Parks near Wasilla in the Susitna Valley

This map is not intended to be used as a navigational aid.



Park Unit	Acres	CS	CL	CF	P	T	W	S	Tr	H	B	C	D	F	Location
Big Lake North SRS	19	60	7	CF	24[1]	T[1]	W[1]	S[1]			B		D	F	5 N. Big Lake Rd.
Big Lake South SRS	22	20	7	CF	10	T[1]	W				B		D	F	5.2 S Big Lake Rd.
Nancy Lake SRA	22,685											C			67.2 Parks Hwy.
- *Canoe System TH*						T			Tr				D	F	4.8 Nancy Lk. Pkwy.
- *South Rolly Lake CG*		98	15	CF	20	T	W		Tr		B		D	F	6.5 Nancy Lk. Pkwy.
- *Winter TH*						T			Tr				D		2.2 Nancy Lk. Pkwy.
Nancy Lake SRS	36	30	15	CF	30	T	W	S			B			F	66.5 Parks Hwy.
Rocky Lake SRS	49	10	7	CF		T	W				B			F	3.5 Big Lake Rd.
Willow Creek SRA	3,583	140	5	CF		T[1]	W[1]		Tr[1]				D	F	70.8 Parks Hwy.

[1] Facilities are ADA accessible

KENAI FJORDS NATIONAL PARK: SENSITIVE RECREATION SITES DATA

Site Name	Use	Latitude (N)	Longitude (W)
Seward Visitor Center	Visitor Contact	60°07'05"	149°26'15"
Aialik Bay Ranger Station	Visitor Contact	59°51'00"	149°39'30"
Aialik Bay Public Use Cabin	Public Use Cabin	59°53'15"	149°39'15"
Holgate Public Use Cabin	Public Use Cabin	59°49'50"	149°46'15"
Delight Public Use Cabin	Public Use Cabin	59°32'43"	150°20'09"
North Arm Public Use Cabin	Public Use Cabin	59°33'45"	150°31'20"
Bulldog Cove	Campsite	59°53'55"	149°34'15"
North Porcupine	Landing	59°52'32"	149°34'59"
Porcupine Cove	Campsite	59°51'40"	149°35'05"
Three Hole Point	Campsite	59°46'10"	149°38'45"
Bear Cove	Campsite	59°47'30"	149°36'50"
South Tooth Cove	Campsite	59°48'29"	149°38'31"
Tooth Cove	Campsite	59°49'05"	149°38'35"
North Tooth Cove	Campsite	59°50'00"	149°38'20"
South Coleman Bay	Campsite	59°51'18"	149°39'28"
Abra Cove	Campsite	59°53'50"	149°38'45"
Aialik Head	Landing	59°56'40"	149°40'59"
Pederson Lagoon Spit	Campsite	59°49'50"	149°48'00"
Quicksand Cove	Campsite	59°47'15"	149°46'05"
McMullen Cove	Campsite	59°45'50"	149°45'55"
Verdant Cove	Campsite	59°42'00"	149°44'00"
NW East Morraine	Campsite	59°44'35"	149°52'10"
Northeastern Glacier	Campsite	59°47'30"	150°01'00"
Redstone Glacier	Campsite	59°49'00"	150°02'00"
NW Otter Cove North	Campsite	59°43'50"	149°58'10"
NW Otter Cove South	Campsite	59°41'10"	149°56'40"
Paguna East	Landing	59°38'15"	150°02'28"
Paguna Head	Landing	59°41'32"	150°07'58"
Paguna West	Landing	59°39'27"	150°06'20"
Taroka East	Landing	59°37'22"	150°08'15"
Taroka West	Landing	59°37'10"	150°09'45"
Cloudy Mountain Spit	Landing	59°35'20"	150°06'40"
Thunder Bay	Landing	59°34'48"	150°10'17"
Chance Cove	Landing	59°34'48"	150°18'45"
Delight Spit	Campsite	59°34'48"	150°20'39"
South Desire Creek	Landing	59°34'48"	150°18'31"
Desire Creek	Campsite	59°34'50"	150°18'16"
Delusion Creek	Campsite	59°38'25"	150°16'29
Upper McCarthy Fjord	Campsite	59°44'17"	150°12'50"
Dinglestadt Glacier	Campsite	59°39'13"	150°18'16"
James Lagoon	Campsite	59°33'39"	150°24'20"
Ariadne Cove	Campsite	59°28'27"	150°30'14"
Surprise Bay South	Landing	59°29'15"	150°29'15"
Palisade Lagoon	Campsite	59°31'45"	150°28'33"
Surprise Bay West	Campsite	59°30'20"	150°29'40"

Site Name	Use	Latitude (N)	Longitude (W)
Quartz Bay	Campsite	59^{0}31'17"	150^{0}31'07"
North Arm Cabin Site	Landing	59^{0}33'45"	150^{0}31'20"
North Arm Storm Mountain	Landing	59^{0}35'55"	150^{0}32'38"
Shelter Cove	Campsite	59^{0}30'20"	150^{0}38'09"
Shelter Cove South	Landing	59^{0}30'00"	150^{0}35'35"
Yalik Bay	Campsite	59^{0}28'20"	150^{0}39'12"
Agnes Cove	Anchorage	59^{0}46'15"	149^{0}34'00"
Paradise Cove	Anchorage	59^{0}45'40"	149^{0}35'00"
Three Hole Bay	Anchorage	59^{0}47'00"	149^{0}36'30"
Coleman Bay	Anchorage	59^{0}51'45"	149^{0}38'00"
Quicksand Cove	Anchorage	59^{0}47'00"	149^{0}46'30"
Verdant Cove	Anchorage	59^{0}42'00"	149^{0}44'50"
Northwestern Lagoon	Anchorage	59^{0}39'38"	149^{0}45'55"
Thunder Bay	Anchorage	59^{0}39'08"	149^{0}48'49"
McArthur Pass North Bay	Anchorage	59^{0}41'50"	149^{0}46'50"
Moonlight Bay	Anchorage	59^{0}46'30"	149^{0}56'45"
Midnight Cove	Anchorage	59^{0}30'45"	150^{0}11'00"
Desire Creek	Anchorage	59^{0}38'32"	150^{0}21'10"
Surprise Bay	Anchorage	59^{0}29'15"	150^{0}29'15"
Quartz Bay	Anchorage	59^{0}31'00"	150^{0}31'30"
Pilot Harbor	Anchorage	59^{0}35'00"	150^{0}30'00"
Shelter Cove	Anchorage	59^{0}31'20"	150^{0}38'09"
Fire Cove	Anchorage	59^{0}39'38"	149^{0}45'55"
Taz Basin	Anchorage	59^{0}39'08"	149^{0}48'49"
Crater Bay	Anchorage	59^{0}41'50"	149^{0}46'50"

Park Contact: Jeff Troutman, Chief, Resource Management Division, Kenai Fjords National Park, 907-224-3175

G. COMMERCIAL TOURISM

The organizations listed below can be contacted with requests for specific information on location and timing of recreation and tourism activities. Although providing such information is not the primary function of these organizations, the individual members will be quite knowledgeable about environmental conditions and may share information.

For additional information, contact the following:

Alaska Division of Tourism	(907) 465-2012
Alaska State Chamber of Commerce	(907) 586-2323
Alaska Native Tourism Council	(907) 274-5400
Alaska Wilderness Recreation & Tourism Association	(907) 463-3038

H. MARINAS AND PORTS

Consult the *Resources Section* of this plan.

I. FISH PROCESSING

The ADEC, Food Safety and Sanitation Program, issues Seafood Processing Permits statewide. Permits expire at the end of each calendar year, and some permittees only operate seasonally. A list of current

permit holders in the Cook Inlet Subarea is available at http://ak.healthinspections.us/alaska/seafood_listing.cfm or by contacting the Food Safety and Sanitation Program at (907) 269-7501.

The ADEC, Division of Water, issues wastewater discharge permits under their Alaska Pollutant Discharge Elimination System authority. An interactive mapper, Alaska DEC Seafood Processing, displays seafood processing facility and discharge locations, seafood processing vessels, and other related information at http://dec.alaska.gov/das/GIS/apps.htm. Information in the map is linked to the wastewater discharge permits, which can also be accessed using the Water Permit Search tool at http://dec.alaska.gov/Applications/Water/WaterPermitSearch/Search.aspx.

J. LOGGING FACILITIES

There are no tidewater logging operations in Cook Inlet at this time.

For information concerning upland timber harvesting, contact:

ADNR, Division of Forestry
Kenai/Kodiak Area Forester
(907) 262-4124 (Soldotna)

K. WATER INTAKE/USE

Public water system (PWS) sources are regulated by the ADEC. An interactive web map application, titled "Alaska DEC Drinking Water Protection Areas" (found at http://dec.alaska.gov/das/gis/apps.htm), dynamically displays the Drinking Water Protection Areas for PWS sources. Some layers are scale-dependent, such that they are activated by zooming in to an area of interest. Searches can be accomplished several ways: 1) city, state; 2) longitude, latitude; 3) PWS identification number (ex. AK2######); or 4) meridian, township, range section (MTRS). Click on the Drinking Water Protection Area for more information about the associated PWS, including a hyperlink to Drinking Water Watch where additional PWS information, such as sampling results can be found. Other ADEC layers are included in the map, and information about those can be accessed by clicking on the associated points or areas. Many of the layers in the map are also available as services and can be added individually to your local mapping application. Additional information regarding regulated PWS sources can be obtained from ADEC at (907) 451-2138 or at http://dec.alaska.gov/eh/dw/index.htm.

For private water systems, contact the ADNR at (907) 269-8645, and for additional information visit http://dnr.alaska.gov/mlw/water/.

L. AIR QUALITY

In 1970, Congress designated the former Tuxedni National Wildlife Refuge (NWR) (now part of the Alaska Maritime NWR) as a wilderness area, declaring that the area should remain undeveloped and "unimpaired" for future generations.

In 1977, Congress acknowledged the uniqueness of the Tuxedni Wilderness by designating it as a Class I air quality area. As a wilderness area, it is afforded special protection under the Clean Air Act. Congress gave the USFWS, as the Federal Land Manager of Tuxedni Wilderness, the responsibility to protect the air quality and air quality related values (AQRVs) of the area from man-made air pollution. For additional information, visit http://www.fws.gov/refuges/airquality/ARIS/TUXE/Index.html.

vii. SENSITIVE AREAS: PART FIVE – LAND MANAGEMENT

A. LAND MANAGEMENT DESIGNATIONS

1. *Access to Lands*

Land ownership must be determined, and landowners or managers should be 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. Applicable local borough governments are often the best source of private land ownership records.

B. STATE

The State of Alaska owns the majority of tide and submerged lands within the state. Tideland means those lands which are periodically covered by tidal waters between the elevation of mean high and mean low tides. Submerged lands means those lands covered by tidal waters between the line of mean low water and seaward to a distance of three geographic miles.

State Game Refuges, Sanctuaries, Ranges, and Critical Habitats. The Alaska State Legislature has classified certain areas as being essential to fish and wildlife populations and public uses of these resources. These areas are designated as a game refuge, critical habitat area, game sanctuary, or wildlife range. Management of these essential areas is the joint responsibility of the ADF&G and ADNR. Both agencies may require permits for land and water use access or activities. Legislation pertaining to these lands and legal descriptions of area boundaries may be found in Alaska Statutes Title 16, Chapter 20. Maps of area boundaries can be found in the ADF&G publication, State of Alaska Game Refuges, Critical Habitat Areas and Game Sanctuaries, June 2012; however, the most current maps and downloadable GIS files can be found at http://www.adfg.alaska.gov/index.cfm?adfg=conservationareas.locator.

Several of these areas exist in the Cook Inlet Subarea and are listed below, along with a brief summary of their biological and public use values.

McNeil River State Game Sanctuary was established in 1967 to protect concentrations of brown bears which gather to feed on migrating salmon in July and August at McNeil River. Wildlife viewing is popular, and ADF&G maintains a camp at McNeil Cove whose staff accompany bear viewers.

McNeil River State Game Refuge was created in January 1993, adjacent to the northern boundary of the McNeil River State Game Sanctuary and protects migrating salmon and bear feeding at Chenik Creek.

Kachemak Bay State Critical Habitat Area was established in 1974 to protect the rich marine habitat which supports numerous fish, shellfish, and marine mammals. Tens of thousands of waterfowl, shorebirds, and seabirds are present in the spring, summer, and fall. Many also overwinter in the area. The bay supports commercial and sport fishing, subsistence marine mammal hunting and fishing, and aquatic farming, as well as provides many boat and shore based recreational opportunities.

Fox River Flats State Critical Habitat Area was established in 1972 and serves as a resting and feeding area for thousands of migrating waterfowl and shorebirds during the spring and fall. The area is popular for waterfowl hunting in the fall.

Anchor River/Fritz Creek State Critical Habitat Area was established in 1985 and protects one of the few major moose overwintering areas on the southern Kenai Peninsula. The area also provides opportunities for hunting, fishing, wildlife viewing, and winter sports.

Clam Gulch Critical Habitat Area was established in 1976 to protect dense beds of razor clams. The area provides opportunities for clam digging and commercial and sport fishing.

Kalgin Island State Critical Habitat Area was established in 1972 to protect habitat used by migrating waterfowl and shorebirds during the spring and fall.

Redoubt Bay State Critical Habitat Area was established in 1989 to protect migrating and nesting waterfowl populations during the spring, summer, and fall. Tule white-fronted geese and trumpeter swans are species of special concern. Guided sport fishing and wildlife viewing occur in the summer, and waterfowl hunting occurs in the fall.

Willow Mountain State Critical Habitat Area was established in 1989 to protect exceptional fish and wildlife habitat, especially post-rut moose concentration areas, and to provide opportunities for hunting, trapping, and dispersed recreation.

Trading Bay State Game Refuge was established in 1976 to protect habitat used by large numbers of waterfowl migrating through in the spring and fall and nesting in the summer. The area is used for moose calving in the spring, as a spring and fall feeding area for bears, and as a salmon spawning and rearing area. The area is also used for hunting, especially waterfowl, and commercial and sport fishing. This area is of critical importance for subsistence waterfowl and moose hunting by Tyonek residents.

Susitna Flats State Game Refuge was established in 1976 to protect areas used by spring and fall concentrations of migrating shorebirds and waterfowl and summer populations of nesting waterfowl. The refuge also encompasses moose calving areas, spring and fall bear feeding areas, and salmon spawning and rearing areas. The area is popular for hunting, especially waterfowl hunting in the fall, wildlife viewing, and fishing. This area is also important for marine mammal feeding and resting, and it is used by beluga whales and harbor seals.

Goose Bay State Game Refuge was established in 1975 to protect the wetlands used as a spring and fall stopover for migrating waterfowl. The refuge is popular for waterfowl hunting in the fall.

Palmer Hay Flats State Game Refuge was established in 1975 and expanded in 1985 to protect dense spring and fall concentrations of migrating waterfowl. The area also provides moose habitat and salmon spawning and rearing areas. Sport fishing, hunting, and wildlife viewing are popular.

Anchorage Coastal Wildlife Refuge was originally established in 1971 and was expanded and re-named in 1988 to protect large and diverse bird populations. Peak numbers occur during the spring migration and include waterfowl and shorebirds. Migratory waterfowl and shorebirds also use the refuge during fall migration, and smaller numbers nest and rear young in Potter Marsh and along the base of the coastal bluff. The area is extremely popular for wildlife viewing.

Homer Airport Critical Habitat Area was created in 1996 and includes a portion of the Beluga Wetlands lying between the Homer Airport and Beluga Lake. This area is important habitat for migratory

waterfowl as well as nesting and feeding habitat for shorebirds, swans, terns, raptors, and song birds. This area also protects a critical overwintering area for moose.

Matanuska Valley Moose Range was created in 1984 to maintain, improve, and enhance moose populations and habitat and other wildlife resources of the area, as well as to perpetuate public multiple use of the area.

C. FEDERAL

Chugach National Forest is the nation's second largest National Forest at 5.38 million acres, which extends from the Kenai Peninsula for 200 miles to the Bering Glacier. Sport, subsistence, and commercial fishing; hunting; sightseeing; outdoor recreation; boating; hiking; and wildlife habitat are some of the primary uses of the forest.

Katmai National Park and Preserve encompasses about 120 miles of the lower Cook Inlet coast between Kamishak River and Sukoi Bay on Cape Douglas within the Cook Inlet Subarea; the park continues south of the subarea boundary. The endangered Steller sea lion hauls out just north of Cape Douglas. Shaw Island serves as a significant seabird colony and harbor seal haulout location. Most of the park's coast is designated wilderness. The park is known for its brown bears, sport fishing, volcanoes, and scenery. The coastal area has become increasingly popular for wilderness bear viewing and photography.

Kenai Fjords National Park features the Harding Icefield and a glacier-carved shoreline along the Gulf of Alaska. Moose, black bear, mountain goats, Steller sea lions, harbor seals, killer whales, many species of whales, porpoises, sea otters, and thousands of sea birds inhabit the park and its surrounding waters. There is designated critical habitat for the Steller sea lion in this area. The park is about 670,000 acres in size. Tour boat excursions, sport fishing, sailing, wilderness sea kayaking, hiking, and photography are popular activities.

Lake Clark National Park and Preserve is set along western Cook Inlet where the Alaska Range and the Aleutian Range meet; the 1.2 million acre area includes 50-mile long Lake Clark. Glaciers, two active volcanoes, waterfalls, and jagged peaks provide an array of scenery. An important sockeye salmon spawning ground, the area is habitat for brown and black bear, caribou, moose, Dall sheep, and trout. River running, hiking, and other outdoor recreation are available in the park and preserve. The coastal area has become increasingly popular for wilderness bear viewing and photography, particularly near Silver Salmon Creek and Chinitna Bay.

Alaska Maritime NWR, Gulf of Alaska Unit, encompasses approximately 10% of the refuge's landmass, including some of the islands, rocks, and forelands along the coast of the Gulf of Alaska. The entire Alaska Maritime NWR (established in 1980) 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 and west to the end of the Aleutian Islands. About 75% of Alaska's marine birds (15 to 30 million of 55 species) use the refuge. The Alaska Maritime NWR also is home to thousands of sea lions, seals, walrus, and sea otters. It includes designated critical habitat for the Steller sea lion. Wildlife viewing, photography, and backpacking are primary uses of the refuge.

Chisik Island is managed by the Alaska Maritime NWR. The island is 10.5 kilometers in length and is located at the mouth of Tuxedni Bay. Chisik and Duck islands support the largest black-legged kittiwake and horned puffin colonies in northern Cook Inlet. Chisik is protected with Wilderness status and has a

Class I Air Quality designation. Response efforts on Chisik Island must be conducted in direct consultation with the USFWS.

Barren Islands are located about equidistant between the southern tip of the Kenai Peninsula and Kodiak Island. There are seven sizeable islands that comprise the group. The largest colonies of storm-petrels, murres, puffins, and kittiwakes in Cook Inlet are located throughout the Barren Islands. These islands provide both cliff-face habitat for ledge-nesting murres and kittiwakes, as well as burrow-nesting habitat for puffins and storm-petrels. There is designated critical habitat for Steller sea lions at the Barren Islands, and there are special prohibitions that apply to the approach of Steller sea lion rookeries at the Barren Islands by people on land and in vessels (see above). While officially part of the Kodiak Subarea, the Barren Islands also are discussed here, given their proximity to the entrance to Cook Inlet, because some responders may look for information on these islands in the Cook Inlet Subarea Contingency Plan, and because they were discussed in previous versions of this document.

Kenai National Wildlife Refuge, located on the Kenai Peninsula, contains nearly 2 million acres, including 1.35 million acres designated as Wilderness. The spawning areas within the refuge support approximately 40% of the Cook Inlet commercial fishing industry, and the refuge is underlain with important oil and gas resources. From tidal marsh to alpine ridge, various natural habitats support a wide variety of wildlife, including wolves, moose, Dall sheep, mountain goat, caribou, coyotes, brown/grizzly bear, black bear, trumpeter swans, lynx, wolverine, beaver, many other small mammals, and 146 species of resident and migratory birds. Four species of salmon spawn here, and the refuge also supports many resident fish.

Kachemak Bay National Estuarine Research Reserve is one of 28 areas in the National Estuarine Research Reserve System that is protected for long-term research, water-quality monitoring, education, and coastal stewardship. Daily management and oversight of this reserve is provided by the University of Alaska Anchorage, Alaska Center for Conservation. For more information, including the reserve boundaries, see http://nerrs.noaa.gov/reserves/kachemak-bay.html.

D. LAND MANAGEMENT MAPS

The ADNR, under agreement with the ADEC, produced digital base and land management maps for each of the subareas using their ARC-INFO based GIS. 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 BLM's Spatial Data Management System website at http://sdms.ak.blm.gov/isdms/imf.jsp?site=sdms and click on the Generalized Land Status layer.

The ADNR hosts a mapping application that provides interactive access to State of Alaska land records. Although source documents remain the official record, the Alaska Mapper can provide information on land ownership and use at http://dnr.alaska.gov/MapAK/.

Cook Inlet Subarea Land Management Map Links:

http://www.asgdc.state.ak.us/maps/cplans/cook/CookMap1of6.pdf

http://www.asgdc.state.ak.us/maps/cplans/cook/CookMap2of6.pdf

http://www.asgdc.state.ak.us/maps/cplans/cook/CookMap3of6.pdf

http://www.asgdc.state.ak.us/maps/cplans/cook/CookMap4of6.pdf

http://www.asgdc.state.ak.us/maps/cplans/cook/CookMap5of6.pdf

http://www.asgdc.state.ak.us/maps/cplans/cook/CookMap6of6.pdf

viii. SENSITIVE AREAS: ATTACHMENT 1 - U.S. FISH AND WILDLIFE SERVICE

Seabird Colonies

The following information was generated by the USFWS, Division of Migratory Bird Management, and is the best current estimate of seabird colonies located in the Cook Inlet Subarea. This table was produced with data obtained from the North Pacific Seabird Colony Database. Additional information is available from the Division of Migratory Bird Management.

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Akumwarvik Bay Islands	59.0450	-154.1706	Pigeon Guillemot			2
			Glaucous-winged Gull	Breeding	58	56
			Black Oystercatcher	Breeding		2
			Glaucous-winged Gull	Breeding		67
			Pigeon Guillemot	Breeding		2
Akumwarvik Head	59.0711	-154.0675	Double-crested Cormorant	Breeding	24	14
			Glaucous-winged Gull			175
			Double-crested Cormorant	Breeding	24	
			Pigeon Guillemot	Unspecified		
			Glaucous-winged Gull	Breeding		175
Amakdedulia Cove	59.2014	-154.1462	Double-crested Cormorant	Breeding	254	145
			Glaucous-winged Gull			6
			Tufted Puffin	Unspecified		
			Double-crested Cormorant	Breeding	254	
			Glaucous-winged Gull	Unspecified		6
Amakdedulia Islands	59.1833	-154.1522	Glaucous-winged Gull	Unspecified		
			Black Oystercatcher	Unspecified		
APU Gravel Pit	61.1865	-149.8000	Bonaparte's Gull	Breeding		4
			Herring Gull	Not Applicable	0	0
			Mew Gull	Breeding		10
			Arctic Tern	Not Applicable		

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Barwell Island	59.8592	-149.2769	Red-faced Cormorant	Breeding	100	
			Glaucous-winged Gull	Breeding	400	
			Tufted Puffin	Breeding	600	
			Pelagic Cormorant	Breeding	40	
			Horned Puffin	Breeding	80	
			Common Murre	Breeding	17600	
			Black-legged Kittiwake	Breeding		2800
Bear Glacier Point	59.8847	-149.5522	Horned Puffin	Breeding	50	
Beautiful Island	59.5106	-150.5603	Glaucous-winged Gull	Breeding	6	
			Pelagic Cormorant	Breeding	16	
Beehive Island	59.6186	-149.6094	Unidentified Murre	Breeding		94
			Common Murre	Breeding		
			Thick-billed Murre	Breeding		
			Tufted Puffin	Breeding	11000	
			Horned Puffin	Breeding		6
			Glaucous-winged Gull	Breeding		2
			Black-legged Kittiwake	Breeding	4608	
Black Bay	59.5400	-150.1808	Tufted Puffin	Breeding	140	
			Pelagic Cormorant	Breeding	14	
			Horned Puffin	Breeding	60	
Bragaw Gravel Pit	61.1823	-149.8042	Mew Gull	Breeding		2
			Bonaparte's Gull	Not Applicable	0	0
			Herring Gull	Breeding		2
			Arctic Tern	Not Applicable	0	0
Brown Mountain	59.3350	-150.8594	Glaucous-winged Gull	Breeding	40	
			Tufted Puffin	Breeding	20	
Bruin Bay Islands	59.3611	-154.0008	Black Oystercatcher	Breeding and Roosting		20
			Horned Puffin	Breeding and Roosting		75
			Pigeon Guillemot	Breeding and Roosting		40
			Glaucous-winged Gull	Breeding and Roosting		300
			Tufted Puffin	Breeding and Roosting		25

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Burr Point	59.4182	-153.4256	Glaucous-winged Gull	Breeding	140	
			Tufted Puffin	Breeding and Roosting		375
			Black Oystercatcher	Breeding and Roosting		10
			Pigeon Guillemot	Breeding and Roosting		15
			Horned Puffin	Breeding and Roosting		425
Caines Head	59.9831	-149.3872	Pigeon Guillemot	Breeding		
			Horned Puffin	Breeding		8
			Double-crested Cormorant	Unspecified		
			Glaucous-winged Gull	Unspecified		
Callisto Head	59.9182	-149.4654	Double-crested Cormorant	Breeding		
			Tufted Puffin	Breeding		
			Pigeon Guillemot	Breeding		
			Glaucous-winged Gull	Breeding		
			Horned Puffin	Breeding	30	
Campbell / Klatt Bog	61.1197	-149.9245	Mew Gull	Breeding		4
			Herring Gull	Not Applicable	0	0
Cape Douglas	58.8559	-153.2543	Red-faced Cormorant	Breeding		4
			Black-legged Kittiwake	Breeding and Roosting		65
			Pelagic Cormorant	Unspecified		
			Tufted Puffin	Breeding		30
			Pigeon Guillemot	Breeding		2
			Horned Puffin	Breeding		8
			Black Oystercatcher	Breeding		2
			Glaucous-winged Gull	Breeding and Roosting		25
Cape Resurrection	59.8719	-149.2764	Common Murre	Breeding	4300	
			Glaucous-winged Gull	Breeding	400	
			Black-legged Kittiwake	Breeding	5840	
			Tufted Puffin	Breeding	40	
			Horned Puffin	Breeding	160	
Carl Island	58.8833	-152.3167	Red-faced Cormorant	Breeding	20	
			Tufted Puffin	Breeding and Roosting	1000	
			Horned Puffin	Breeding and Roosting	40	

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Chat Island	59.7000	-149.5606	Fork-tailed Storm-petrel	Unspecified		
			Red-faced Cormorant	Breeding	24	
			Common Murre	Breeding		14
			Black Oystercatcher	Breeding		2
			Pelagic Cormorant	Breeding	2	
			Double-crested Cormorant	Breeding and Roosting		17
			Tufted Puffin	Breeding		70
			Black-legged Kittiwake	Breeding and Roosting		67
			Horned Puffin	Breeding		76
			Glaucous-winged Gull	Breeding and Roosting		286
Cheval Island	59.7758	-149.5067	Pelagic Cormorant	Breeding	20	
			Glaucous-winged Gull	Breeding	140	
			Red-faced Cormorant	Breeding	100	
			Tufted Puffin	Breeding	140	
			Double-crested Cormorant	Breeding	36	
			Horned Puffin	Breeding	210	
Chisik & Duck Is.	60.1308	-152.5608	Black-legged Kittiwake	Breeding		28000
			Horned Puffin	Breeding		6000
			Glaucous-winged Gull	Breeding		2000
			Double-crested Cormorant	Unspecified		500
			Parakeet Auklet	Unspecified	6	
			Pelagic Cormorant	Unspecified		25
			Pigeon Guillemot	Breeding and Roosting		
			Tufted Puffin	Breeding and Roosting		875
			Common Murre	Breeding and Roosting		22500
			Common Eider	Unspecified	250	
			Black Oystercatcher	Unspecified	6	
Chiswell Island	59.6008	-149.5611	Common Murre	Breeding		
			Unidentified Murre	Breeding		396
			Thick-billed Murre	Breeding		
			Fork-tailed Storm-petrel	Unspecified		
			Double-crested Cormorant	Breeding	12	
			Tufted Puffin	Breeding		836
			Glaucous-winged Gull	Breeding		247

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Red-faced Cormorant	Breeding	16	
			Horned Puffin	Breeding		14
			Parakeet Auklet	Breeding		2
			Pelagic Cormorant	Breeding	12	
			Black-legged Kittiwake	Breeding	4022	
Cohen Island	59.5391	-151.4707	Black Oystercatcher	Breeding	2	
Cohoe River	60.3792	-151.2925	Arctic Tern	Breeding		150
			Aleutian Tern	Breeding	8	
Connors Lake	61.1658	-149.9294	Mew Gull	Breeding		26
			Herring Gull	Not Applicable	0	0
			Bonaparte's Gull	Not Applicable	0	0
			Arctic Tern	Not Applicable	0	0
			Mew Gull	Breeding		30
Contact Point	59.3578	-153.9561	Unidentified Cormorant (Genus Phalacrocorax)	Unspecified		
			Red-faced Cormorant	Breeding and Roosting		60
			Horned Puffin	Breeding and Roosting		12
			Pigeon Guillemot	Breeding and Roosting		24
			Tufted Puffin	Breeding and Roosting		6
			Pelagic Cormorant	Breeding and Roosting		200
			Double-crested Cormorant	Breeding and Roosting		250
			Common Murre	Unspecified		500
DeLong Lake	61.1634	-149.9594	Mew Gull	Breeding		6
			Arctic Tern	Not Applicable	0	0
			Bonaparte's Gull	Breeding		3
			Herring Gull	Not Applicable	0	0
Delta Island	61.2814	-150.5514	Glaucous-winged X Herring Gull Hybrid	Breeding	300	
			Glaucous-winged Gull	Breeding	400	
Dick 2	59.2068	-151.1907	Glaucous-winged Gull	Breeding	20	
			Black-legged Kittiwake	Breeding	800	
			Tufted Puffin	Breeding	60	
			Pelagic Cormorant	Breeding	100	

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Douglas River Islands	59.0744	-153.7575	Horned Puffin	Breeding and Roosting		4
			Tufted Puffin	Unspecified		
			Pigeon Guillemot	Breeding and Roosting		4
			Double-crested Cormorant	Breeding and Roosting		100
			Glaucous-winged Gull	Breeding	80	
			Unidentified Cormorant (Genus Phalacrocorax)	Breeding	140	
Dry Bay	59.6739	-153.1443	Glaucous-winged Gull	Breeding	24	
Duck Flats & Coffee Point	61.4900	-149.4806	Mew Gull	Breeding		1200
			Herring Gull	Breeding	60	
			Arctic Tern	Breeding		30
East Aialik Peninsula	59.7539	-149.5411	Horned Puffin	Breeding	150	
East Amatuli Island	58.9157	-151.9905	Northern Fulmar	Breeding	120	
			Pigeon Guillemot	Breeding	300	
			Fork-tailed Storm-petrel	Breeding	130000	
			Pelagic Cormorant	Breeding	80	
			Black-legged Kittiwake	Breeding	18300	
			Leach's Storm-petrel	Breeding		
			Horned Puffin	Breeding	1720	
			Red-faced Cormorant	Breeding	100	
			Glaucous-winged Gull	Breeding	600	
			Tufted Puffin	Breeding	74000	
			Black Oystercatcher	Breeding	30	
			Ancient Murrelet	Breeding	700	
			Common Murre	Breeding		35777
			Unidentified Cormorant (Genus Phalacrocorax)	Unspecified		30
East Arm	59.5619	-150.4036	Glaucous-winged Gull	Breeding	120	
East Arm North	59.6306	-150.3294	Glaucous-winged Gull	Breeding	40	
			Arctic Tern	Breeding	6	
East Chugach Island	59.1336	-151.4319	Tufted Puffin	Breeding	20	
			Glaucous-winged Gull	Breeding	40	

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Elizabeth Island	59.1600	-151.8311	Red-faced Cormorant	Breeding		
			Tufted Puffin	Breeding	20	
			Pelagic Cormorant	Breeding		
			Unidentified Cormorant (Genus Phalacrocorax)	Breeding	60	
Entrance Rock	59.6258	-153.4572	Black Oystercatcher	Breeding and Roosting		6
			Glaucous-winged Gull	Breeding	10	
Flat Island	59.3289	-151.9939	Tufted Puffin	Breeding and Roosting	3752	
			Pigeon Guillemot	Breeding and Roosting	22	
			Horned Puffin	Breeding and Roosting	4	
Fortification Bluff	59.4323	-153.7654	Pigeon Guillemot	Breeding and Roosting		12
			Glaucous-winged Gull	Breeding and Roosting		125
Fox River Flats	59.8056	-150.9814	Arctic Tern	Breeding	16	
Goose Bay Marsh	61.3858	-149.8969	Mew Gull	Breeding		45
			Arctic Tern	Breeding		12
			Arctic Tern	Breeding		8
			Mew Gull	Breeding	32	
Goose Lake	61.1950	-149.8169	Mew Gull	Breeding		23
			Herring Gull	Not Applicable	0	0
			Arctic Tern	Not Applicable	0	0
			Bonaparte's Gull	Not Applicable	0	0
			Mew Gull	Breeding	22	
Gore Point	59.1986	-150.9767	Tufted Puffin	Breeding	100	
			Pelagic Cormorant	Breeding	60	
			Glaucous-winged Gull	Breeding	50	
Granite Island	59.6419	-149.8010	Unidentified Cormorant (Genus Phalacrocorax)	Unspecified		500
			Red-faced Cormorant	Breeding	400	
			Black-legged Kittiwake	Breeding and Roosting		261
			Glaucous-winged Gull	Breeding and Roosting		1455
			Pelagic Cormorant	Breeding	8	
			Horned Puffin	Breeding		93
			Common Murre	Breeding		20
			Tufted Puffin	Breeding		14

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Black Oystercatcher	Breeding		3
			Pigeon Guillemot	Breeding		4
Grass Island	59.4986	-151.4903	Black-legged Kittiwake	Breeding	14	
Grewingk Glacier	59.6112	-151.1250	Arctic Tern	Breeding	60	
			Glaucous-winged Gull	Breeding	100	
			Mew Gull	Breeding	40	
Gull Island	59.5844	-151.3264	Unidentified Murre	Unspecified		
			Unidentified Cormorant (Genus Phalacrocorax)	Unspecified		
			Common Murre	Breeding and Roosting		5075
			Black-legged Kittiwake	Breeding	11368	
			Tufted Puffin	Breeding		28
			Horned Puffin	Unspecified		
			Red-faced Cormorant	Breeding	30	
			Pelagic Cormorant	Breeding	222	
			Thick-billed Murre	Unspecified		
			Double-crested Cormorant	Unspecified		
			Glaucous-winged Gull	Breeding and Roosting		713
			Pigeon Guillemot	Breeding		19
Gull Island (2)	59.8411	-152.9883	Black Oystercatcher	Unspecified		4
			Horned Puffin	Breeding		80
			Tufted Puffin	Breeding and Roosting		900
			Pelagic Cormorant	Breeding	2	
			Pigeon Guillemot	Breeding and Roosting		20
			Glaucous-winged Gull	Breeding	664	
			Common Eider	Breeding	4	
Gull Rock	60.9664	-149.7642	Glaucous-winged Gull	Breeding		28
Harbor Island	59.6697	-149.6536	Fork-tailed Storm-petrel	Unspecified		
			Pigeon Guillemot	Breeding		36
			Tufted Puffin	Breeding		268
			Rhinoceros Auklet	Breeding		7
			Horned Puffin	Breeding		513
			Common Murre	Breeding		2
			Glaucous-winged Gull	Breeding and Roosting		637

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Pelagic Cormorant	Breeding and Roosting		7
			Black-legged Kittiwake	Breeding and Roosting		334
			Double-crested Cormorant	Breeding and Roosting		15
Harrington Point	59.4560	-150.4979	Horned Puffin	Breeding	10	
			Pelagic Cormorant	Breeding	30	
Harris Bay Island	59.7731	-150.0422	Glaucous-winged Gull	Breeding	40	
			Mew Gull	Breeding	60	
			Arctic Tern	Breeding	80	
Headquarters Lake	60.4636	-151.0644	Mew Gull	Breeding		50
			Mew Gull	Breeding	30	
			Glaucous-winged Gull	Breeding		20
Heather Meadows	61.1778	-149.8864	Mew Gull	Breeding		86
			Arctic Tern	Not Applicable	0	0
			Bonaparte's Gull	Not Applicable	0	0
			Herring Gull	Not Applicable	0	0
			Mew Gull	Breeding		92
Hesketh Island: Upper Cook Inlet	59.5075	-151.5143	Pigeon Guillemot	Breeding		20
			Horned Puffin	Breeding	4	
Hive Island	59.8839	-149.3730	Glaucous-winged Gull	Breeding	100	
			Common Murre	Breeding	40	
			Horned Puffin	Breeding	100	
			Red-faced Cormorant	Breeding	40	
			Tufted Puffin	Breeding	270	
			Pelagic Cormorant	Breeding	20	
			Double-crested Cormorant	Breeding	10	
Homer Airport	59.6372	-151.4738	Aleutian Tern	Breeding		105
Homer Deepwater Dock	59.6025	-151.4131	Black-legged Kittiwake	Breeding	38	
Homer Spit	59.6150	-151.4475	Common Eider	Breeding	20	
Hood Lake	61.1786	-149.9600	Arctic Tern	Not Applicable	0	0
			Herring Gull	Not Applicable	0	0
			Bonaparte's Gull	Not Applicable	0	0
			Mew Gull	Breeding		176

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Hoof Point	59.4158	-150.3014	Pelagic Cormorant	Breeding	172	
			Tufted Puffin	Breeding and Roosting	1210	
			Glaucous-winged Gull	Breeding	170	
			Horned Puffin	Breeding and Roosting	1040	
			Red-faced Cormorant	Breeding	100	
Hope	60.9323	-149.6000	Glaucous-winged Gull	Breeding	300	
Iliamna Point	60.0431	-152.5811	Glaucous-winged Gull	Unspecified		15
Iniskin Island	59.6256	-153.4236	Glaucous-winged Gull	Breeding	438	
			Pelagic Cormorant	Breeding	2	
			Common Eider	Breeding	6	
			Tufted Puffin	Breeding	942	
			Black Oystercatcher	Breeding	4	
			Pigeon Guillemot	Breeding and Roosting		8
			Double-crested Cormorant	Breeding	98	
			Horned Puffin	Breeding	8	
Jim/Swan Lakes	61.5376	-148.9134	Mew Gull	Breeding		5
			Arctic Tern	Breeding		2
Kalifonsky	60.4367	-151.2500	Aleutian Tern	Breeding and Roosting		24
			Arctic Tern	Unspecified		10
			Mew Gull	Unspecified		15
Kamishak Islands	59.1103	-153.8819	Glaucous-winged Gull	Unspecified		300
			Black Oystercatcher	Unspecified		2
			Horned Puffin	Breeding	2	
			Tufted Puffin	Breeding	38	
			Pigeon Guillemot	Breeding	2	
Kenai Bridge	60.5339	-151.2039	Arctic Tern	Breeding and Roosting		12
			Mew Gull	Breeding and Roosting		16
			Aleutian Tern	Breeding and Roosting		30
Knoll Head	59.6381	-153.5186	Glaucous-winged Gull	Breeding	86	
			Tufted Puffin	Unspecified		15
			Black Oystercatcher	Breeding and Roosting		6
			Horned Puffin	Unspecified		40
			Pigeon Guillemot	Unspecified		10
			Black Oystercatcher	Unspecified		2

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Tufted Puffin	Breeding and Roosting		6
			Glaucous-winged Gull	Breeding	8	
			Pigeon Guillemot	Breeding and Roosting		10
			Pelagic Cormorant	Breeding	88	
			Double-crested Cormorant	Breeding	26	
			Horned Puffin	Breeding and Roosting		10
Lone Rock	59.5753	-149.6217	Horned Puffin	Breeding	40	
			Tufted Puffin	Breeding	80	
			Northern Fulmar	Breeding	14	
			Glaucous-winged Gull	Breeding		115
Matushka Island	59.6097	-149.6283	Tufted Puffin	Breeding		1061
			Black Oystercatcher	Breeding		2
			Pigeon Guillemot	Breeding		3
			Double-crested Cormorant	Breeding	2	
			Fork-tailed Storm-petrel	Breeding		
			Pelagic Cormorant	Breeding	12	
			Horned Puffin	Breeding		395
			Red-faced Cormorant	Breeding	26	
			Parakeet Auklet	Breeding		105
			Glaucous-winged Gull	Breeding and Roosting		853
			Common Murre	Breeding		
			Thick-billed Murre	Breeding		
			Unidentified Murre	Breeding		1044
			Rhinoceros Auklet	Breeding	1200	
			Black-legged Kittiwake	Breeding		920
McNeil Cove	59.1256	-154.2092	Double-crested Cormorant	Breeding	16	0
			Glaucous-winged Gull			4
			Double-crested Cormorant	Breeding	16	
			Horned Puffin	Unspecified		
			Glaucous-winged Gull	Breeding		4
			Pigeon Guillemot	Unspecified		

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
McNeil Head	59.1230	-154.1713	Glaucous-winged Gull	Breeding	24	
			Double-crested Cormorant	Breeding	30	
			Tufted Puffin			18
			Horned Puffin			4
			Glaucous-winged Gull	Breeding	24	21
			Double-crested Cormorant	Breeding	30	20
McNeil Islet	59.1264	-154.1558	Glaucous-winged Gull			12
			Common Murre			2200
			Common Murre	Breeding		1000
Middle Nuka	59.3631	-150.6206	Glaucous-winged Gull	Breeding	170	
			Tufted Puffin	Breeding	10	
			Double-crested Cormorant	Breeding	10	
Mushroom Islets	59.6433	-153.4381	Tufted Puffin	Breeding and Roosting	76	
			Black Oystercatcher	Breeding and Roosting		4
			Common Eider	Breeding	6	
			Glaucous-winged Gull	Breeding	48	
Mushroom Rock	59.1094	-154.1722	Double-crested Cormorant	Unspecified		
			Glaucous-winged Gull	Unspecified		
			Tufted Puffin	Unspecified		
Natoa Island	59.6433	-149.6019	Common Murre	Breeding		
			Unidentified Murre	Breeding		540
			Thick-billed Murre	Breeding		
			Fork-tailed Storm-petrel	Unspecified		
			Glaucous-winged Gull	Breeding and Roosting		1452
			Parakeet Auklet	Breeding		25
			Tufted Puffin	Breeding		88
			Horned Puffin	Breeding		302
			Pelagic Cormorant	Breeding	24	
			Black-legged Kittiwake	Breeding		310
Neck Triangle	59.5631	-150.1375	Pelagic Cormorant	Breeding	20	
			Red-faced Cormorant	Breeding	40	

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Nord Island	58.9667	-152.1500	Glaucous-winged Gull	Unspecified		
			Common Murre	Breeding		16423
			Ancient Murrelet	Unspecified		2
			Red-faced Cormorant	Unspecified		40
			Pigeon Guillemot	Unspecified		8
			Horned Puffin	Breeding	400	
			Tufted Puffin	Breeding	2000	
			Parakeet Auklet	Breeding	500	
			Black-legged Kittiwake	Breeding	28000	
			Black Oystercatcher	Breeding		
Nordyke Islands	59.1772	-154.0872	Unidentified Cormorant (Genus Phalacrocorax)	Unspecified		
			Common Eider	Unspecified		197
			Glaucous-winged Gull	Breeding and Roosting		886
			Horned Puffin	Unspecified		2
			Pigeon Guillemot	Breeding		18
			Tufted Puffin	Breeding		288
			Black Oystercatcher	Breeding		8
			Double-crested Cormorant	Roosting		6
			Horned Puffin			2
			Pigeon Guillemot			18
			Tufted Puffin	Breeding	200	288
			Glaucous-winged Gull	Breeding		886
North Douglas Point	58.9704	-153.4012	Unidentified Cormorant (Genus Phalacrocorax)	Unspecified		
			Glaucous-winged Gull	Unspecified		40
			Horned Puffin	Breeding		28
North Head	59.6264	-153.5544	Horned Puffin	Unspecified		15
			Glaucous-winged Gull	Breeding	12	
			Pelagic Cormorant	Breeding	26	
			Pigeon Guillemot	Unspecified		10
			Black Oystercatcher	Breeding		6

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Northwestern Lagoon	59.7319	-149.8961	Arctic Tern	Breeding	150	
			Pigeon Guillemot	Breeding		100
			Glaucous-winged Gull	Breeding	170	
			Mew Gull	Breeding	90	
Nw Glacier Island	59.7911	-150.0378	Glaucous-winged Gull	Breeding	16	
Oas	61.1781	-149.9719	Bonaparte's Gull	Not Applicable	0	0
			Mew Gull	Breeding		20
			Arctic Tern	Breeding		20
			Herring Gull	Not Applicable	0	0
Oil Reef	59.6286	-153.3064	Unidentified Cormorant (Genus Phalacrocorax)	Unspecified	8	
			Tufted Puffin	Breeding and Roosting		15
			Pigeon Guillemot	Breeding and Roosting		10
			Pelagic Cormorant	Breeding	20	
			Double-crested Cormorant	Breeding	12	
			Glaucous-winged Gull	Breeding	10	
			Horned Puffin	Breeding and Roosting		6
Otter Lake	61.2908	-149.7336	Bonaparte's Gull	Breeding		5
			Arctic Tern	Breeding		2
			Herring Gull	Not Applicable		0
			Mew Gull	Breeding		24
			Mew Gull	Breeding	24	
			Arctic Tern	Breeding	2	
Outer Island	59.3500	-150.4067	Glaucous-winged Gull	Breeding	940	
			Black-legged Kittiwake	Breeding	1060	
			Horned Puffin	Breeding and Roosting	900	
			Red-faced Cormorant	Breeding	50	
			Fork-tailed Storm-petrel	Breeding and Roosting		
			Pelagic Cormorant	Breeding	120	
			Tufted Puffin	Breeding and Roosting	4680	
Paint River	59.1577	-154.2368	Glaucous-winged Gull	Breeding	36	
			Glaucous-winged Gull	Breeding	36	41

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Palmer Hay and Duck Flats	61.5055	-149.3754	Bonaparte's Gull	Breeding		6
			Arctic Tern	Breeding		45
			Mew Gull	Breeding		1289
Passage Island: Port Graham	59.3696	-151.8856	Tufted Puffin	Breeding	26	
			Pigeon Guillemot	Breeding		24
Perl Island	59.0903	-151.6942	Tufted Puffin	Breeding	20	
Pilot Rock	59.7433	-149.4661	Glaucous-winged Gull	Breeding	20	
			Horned Puffin	Breeding	30	
			Tufted Puffin	Breeding	10	
Point Posibshi: Kenai Peninsula	59.4245	-151.8875	Tufted Puffin	Breeding	20	
Pomeroy Island	59.6172	-153.3733	Pigeon Guillemot	Breeding and Roosting		43
			Common Eider	Breeding	4	
			Tufted Puffin	Breeding and Roosting		500
			Horned Puffin	Breeding and Roosting		10
			Black Oystercatcher	Breeding and Roosting		6
			Glaucous-winged Gull	Breeding	116	
Port Of Anchorage	61.2303	-149.8897	Herring Gull	Breeding		4
			Arctic Tern	Breeding		8
			Mew Gull	Breeding		210
			Bonaparte's Gull	Not Applicable	0	0
			Arctic Tern	Breeding	6	
			Mew Gull	Breeding	146	
			Herring Gull	Breeding	4	
Postmark Bog	61.1817	-149.9897	Mew Gull	Breeding		20
			Arctic Tern	Not Applicable	0	0
			Bonaparte's Gull	Not Applicable	0	0
			Herring Gull	Not Applicable	0	0
Potter Marsh	61.0733	-149.8169	Mew Gull	Breeding	260	
			Arctic Tern	Breeding	14	
			Herring Gull	Breeding	2	
			Herring Gull	Breeding		2

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Mew Gull	Breeding		260
			Arctic Tern	Breeding		15
			Bonaparte's Gull	Not Applicable	0	0
			Glaucous-winged X Herring Gull Hybrid	Breeding		
Rabbit Island	59.3761	-150.3750	Horned Puffin	Breeding and Roosting	30	
			Pelagic Cormorant	Breeding	4	
Redoubt Bay	60.7214	-151.9564	Mew Gull	Unspecified		
			Arctic Tern	Unspecified		
Rocky Bay Island	59.2311	-151.3992	Tufted Puffin	Breeding	1600	
			Pelagic Cormorant	Breeding	46	
			Glaucous-winged Gull	Breeding	20	
Rocky Cove	59.4697	-153.7036	Red-faced Cormorant	Breeding	30	
			Glaucous-winged Gull	Breeding and Roosting		24
			Pelagic Cormorant	Breeding and Roosting		75
			Tufted Puffin	Breeding and Roosting		6
			Double-crested Cormorant	Breeding	32	
			Pigeon Guillemot	Breeding		15
			Horned Puffin	Breeding and Roosting		50
Rugged Island	59.8561	-149.3800	Pigeon Guillemot	Breeding		
			Red-faced Cormorant	Breeding		
			Black-legged Kittiwake	Breeding		
			Double-crested Cormorant	Breeding		
			Glaucous-winged Gull	Breeding	100	
			Pelagic Cormorant	Breeding	20	
			Tufted Puffin	Breeding	10	
			Common Murre	Breeding	400	
			Horned Puffin	Breeding	260	
Rusty Mountain	60.2600	-152.8883	Glaucous-winged Gull	Unspecified		18
S.E. Nuka Island	59.3017	-150.7003	Red-faced Cormorant	Breeding	50	
			Pelagic Cormorant	Breeding	40	
			Glaucous-winged Gull	Breeding	50	

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Scott Island	59.6375	-153.4322	Tufted Puffin	Breeding and Roosting	46	
			Black Oystercatcher	Breeding and Roosting		6
			Pigeon Guillemot	Breeding and Roosting		15
			Horned Puffin	Breeding and Roosting		15
Seal Rocks	59.5203	-149.6256	Red-faced Cormorant	Breeding	30	
			Northern Fulmar	Breeding		2
			Unidentified Cormorant (Genus Phalacrocorax)	Breeding	4	
			Tufted Puffin	Breeding		171
			Double-crested Cormorant	Breeding		3
			Black-legged Kittiwake	Breeding and Roosting		85
			Glaucous-winged Gull	Breeding		34
			Horned Puffin	Breeding		10
Seward	60.1236	-149.3975	Mew Gull	Breeding	14	
			Arctic Tern	Breeding	26	
Shadura Lake Island	60.7025	-151.0175	Glaucous-winged X Herring Gull Hybrid	Breeding and Roosting		275
			Herring Gull	Breeding and Roosting		200
Shaw Island	59.0042	-153.3850	Common Eider	Breeding		34
			Ancient Murrelet	Unspecified		
			Glaucous-winged Gull	Breeding		3600
			Tufted Puffin	Breeding		105
			Pelagic Cormorant	Unspecified		
			Black Oystercatcher	Breeding		47
			Red-faced Cormorant	Unspecified		
			Pigeon Guillemot	Breeding		19
			Horned Puffin	Breeding		190
Slate Island	59.9147	-149.7144	Mew Gull	Breeding	30	
			Black Oystercatcher	Breeding	10	
			Horned Puffin	Breeding	110	
			Pigeon Guillemot	Breeding	100	

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
South Head	59.5983	-153.5536	Pigeon Guillemot	Breeding and Roosting		15
			Double-crested Cormorant	Breeding and Roosting		25
			Horned Puffin	Breeding and Roosting		30
			Pelagic Cormorant	Breeding and Roosting		10
South Renard Island	59.8969	-149.3415	Pelagic Cormorant	Breeding	4	
			Tufted Puffin	Breeding	20	
			Horned Puffin	Breeding	50	
Squab Island	59.9356	-149.7142	Glaucous-winged X Herring Gull Hybrid	Breeding		2
			Mew Gull	Breeding	2	
			Black Oystercatcher	Breeding		2
			Horned Puffin	Breeding	10	
			Glaucous-winged Gull	Breeding	1162	
Steep Point	59.4850	-150.2561	Pelagic Cormorant	Breeding	40	
			Glaucous-winged Gull	Breeding	50	
Sud Island	58.8956	-152.2096	Black Oystercatcher	Unspecified		3
			Parakeet Auklet	Unspecified		20
			Rhinoceros Auklet	Breeding	1500	
			Tufted Puffin	Breeding	2400	
			Glaucous-winged Gull	Breeding	800	
			Pigeon Guillemot	Breeding	50	
			Pelagic Cormorant	Breeding		
			Fork-tailed Storm-petrel	Breeding	10000	
			Horned Puffin	Breeding	400	
Sugarloaf Island	58.8833	-152.0333	Unidentified Cormorant (Genus Phalacrocorax)	Breeding	50	
			Double-crested Cormorant	Breeding		
			Horned Puffin	Breeding	800	
			Red-faced Cormorant	Breeding		
			Tufted Puffin	Breeding	6000	
			Pigeon Guillemot	Breeding	30	
			Black Oystercatcher	Breeding	10	
			Pelagic Cormorant	Breeding		
			Ancient Murrelet	Breeding		

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Glaucous-winged Gull	Breeding	3400	
			Fork-tailed Storm-petrel	Breeding	10000	
			Parakeet Auklet	Unspecified		15
Surok Point	59.6168	-150.0371	Pelagic Cormorant	Breeding	140	
			Glaucous-winged Gull	Breeding	20	
Susitna Flats: Big Island to near Beluga River	61.2664	-150.7238	Arctic Tern	Breeding		21
			Mew Gull	Breeding		2172
			Glaucous-winged Gull	Unspecified		8
			Mew Gull	Breeding		2100
			Mew Gull	Breeding		3803
			Herring Gull	Breeding		
			Glaucous-winged Gull	Breeding		
			Arctic Tern	Breeding		
			Mew Gull	Breeding		3800
			Arctic Tern	Breeding		27
			Mew Gull	Breeding		1178
			Glaucous-winged Gull	Unspecified		4
			Arctic Tern	Unspecified		27
			Mew Gull	Breeding		1200
Taroka Arm	59.6025	-150.1200	Horned Puffin	Breeding	80	
			Tufted Puffin	Breeding	50	
Taylor Bay	59.2789	-151.0758	Black-legged Kittiwake	Breeding	30	
Toadstools	59.6294	-153.5042	Tufted Puffin	Breeding and Roosting		50
Trading Bay	60.9453	-151.6728	Mew Gull	Unspecified		1000
			Arctic Tern	Unspecified		
Try Triangle	59.7923	-149.7581	Horned Puffin	Breeding	10	
Turnagain Bog	61.1844	-149.9814	Mew Gull	Breeding		40
			Bonaparte's Gull	Not Applicable	0	0
			Herring Gull	Not Applicable	0	0
			Arctic Tern	Not Applicable	0	0
Tuxedni River	60.2208	-152.6531	Glaucous-winged Gull	Breeding	30	
Twin Islands	59.6694	-149.7153	Black-legged Kittiwake	Breeding		2
			Horned Puffin	Breeding		122

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Twin Rocks	59.7544	-153.4139	Glaucous-winged Gull	Breeding	104	
UAA-APU Bog	61.1902	-149.8131	Bonaparte's Gull	Not Applicable	0	0
			Herring Gull	Not Applicable	0	0
			Mew Gull	Breeding		6
			Arctic Tern	Not Applicable	0	0
Unnamed Bay	59.2092	-151.2169	Black-legged Kittiwake	Breeding	400	
Unnamed Chiswell A.	59.5956	-149.5847	Horned Puffin	Breeding		48
			Pelagic Cormorant	Breeding	6	
			Double-crested Cormorant	Breeding		7
			Glaucous-winged Gull	Breeding		155
			Tufted Puffin	Breeding		587
			Fork-tailed Storm-petrel	Unspecified		
			Common Murre	Breeding		
			Unidentified Murre	Breeding		320
			Thick-billed Murre	Breeding		
			Black-legged Kittiwake	Breeding		555
Unnamed Chiswell B.	59.6131	-149.5997	Unidentified Murre	Breeding		527
			Common Murre	Breeding		193
			Thick-billed Murre	Breeding		328
			Horned Puffin	Breeding		36
			Tufted Puffin	Breeding		1281
			Glaucous-winged Gull	Breeding		61
			Black-legged Kittiwake	Breeding	852	
			Pelagic Cormorant	Breeding		5
			Double-crested Cormorant	Breeding	2	
Unnamed I. E. Of Big I.	61.3503	-150.5661	Glaucous-winged X Herring Gull Hybrid	Breeding		1200
			Glaucous-winged Gull	Breeding and Roosting		2050
Unnamed I. S. Of Bell I.	61.3986	-150.5092	Glaucous-winged Gull	Breeding and Roosting		175
Ushagat Island	58.9257	-152.2647	Double-crested Cormorant	Unspecified		
			Black Oystercatcher	Breeding and Roosting		20
			Pelagic Cormorant	Unspecified		
			Unidentified Cormorant (Genus Phalacrocorax)	Unspecified		200

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Glaucous-winged Gull	Unspecified		240
			Red-faced Cormorant	Unspecified		
			Parakeet Auklet	Unspecified		10
			Pigeon Guillemot	Unspecified		100
			Horned Puffin	Breeding	500	
			Tufted Puffin	Breeding	400	
Vert Island	59.6314	-153.4403	Pigeon Guillemot	Breeding and Roosting		4
			Glaucous-winged Gull	Breeding	392	
			Tufted Puffin	Breeding and Roosting		125
			Black Oystercatcher	Breeding and Roosting		2
			Common Eider	Breeding	14	
West Amatuli Island	58.9333	-152.0500	Common Murre	Unspecified		10
			Parakeet Auklet	Unspecified		120
			Tufted Puffin	Breeding	50000	
			Black Oystercatcher	Breeding	20	
			Red-faced Cormorant	Breeding	300	
			Glaucous-winged Gull	Breeding	2000	
			Fork-tailed Storm-petrel	Breeding		
			Double-crested Cormorant	Breeding		
			Pelagic Cormorant	Breeding	1200	
			Horned Puffin	Breeding	1600	
			Unidentified Cormorant (Genus Phalacrocorax)	Breeding		
Westdahl Cove Island	59.3314	-150.7722	Horned Puffin	Breeding	40	
White Gull Island	59.6175	-153.5722	Black Oystercatcher	Unspecified	2	
			Tufted Puffin	Breeding and Roosting		300
			Horned Puffin	Breeding and Roosting		12
			Pigeon Guillemot	Breeding and Roosting		4
			Pelagic Cormorant	Breeding	8	
			Glaucous-winged Gull	Breeding	284	
Wildcat Pass	59.3850	-150.3978	Pelagic Cormorant	Breeding	40	
			Tufted Puffin	Breeding and Roosting	30	
			Horned Puffin	Breeding and Roosting	30	

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Windy Bay	59.2275	-151.4469	Black-legged Kittiwake	Breeding	30	
			Tufted Puffin	Breeding	80	
			Glaucous-winged Gull	Breeding	340	
10 Section	59.2347	-150.9403	Red-faced Cormorant	Breeding		
			Unidentified Cormorant (Genus Phalacrocorax)	Breeding	400	
			Double-crested Cormorant	Breeding		
			Pelagic Cormorant	Breeding		
16-21 Island	59.6531	-149.6272	Glaucous-winged Gull	Breeding		84
			Tufted Puffin	Breeding		51
			Common Murre	Breeding		10
			Parakeet Auklet	Breeding		12
			Horned Puffin	Breeding		172
			Black-legged Kittiwake	Breeding		4
			Red-faced Cormorant	Breeding and Roosting		4
			Unidentified Cormorant (Genus Phalacrocorax)	Breeding and Roosting		51
			Pigeon Guillemot	Breeding		4
17 Cove	59.8262	-149.6682	Horned Puffin	Breeding	10	
28 Section	59.4486	-150.2969	Tufted Puffin	Breeding and Roosting	150	
			Pelagic Cormorant	Breeding	10	
300 Island	59.7194	-149.5058	Glaucous-winged Gull	Breeding	70	
			Tufted Puffin	Breeding	500	
			Horned Puffin	Breeding	60	
35 Point	59.4372	-150.5958	Glaucous-winged Gull	Breeding	30	
			Red-faced Cormorant	Breeding	10	
60 Foot Rock	59.5497	-151.4639	Red-faced Cormorant	Breeding	2	
			Tufted Puffin	Breeding		2
			Pelagic Cormorant	Breeding	12	
			Common Murre	Breeding and Roosting		190
			Black-legged Kittiwake	Breeding	602	
			Glaucous-winged Gull	Breeding and Roosting		80
			Pigeon Guillemot	Breeding		3

INTERIOR ALASKA SUBAREA CONTINGENCY PLAN
SENSITIVE AREAS
SECTION

i. 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 the Interior 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 Contingency 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:

- ARRT 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, Appendix 1)
- 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 (NMFS) 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, the *Unified Plan, Annex N* includes *Shoreline Cleanup and Assessment Guidelines*, which provide helpful information on cleanup options by shoreline type.

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 online at:
www.asgdc.alaska.gov/maps/cplans/subareas.html
Suggestions, comments, and more current information are requested. Please contact either:

U.S. Department of the Interior
Office of Environmental Policy and Compliance
1689 C Street, Room 119
Anchorage, Alaska 99501
Phone: 271-5011
Fax: 271-4102

Alaska Department of Fish and Game
Divison of Habitat
1300 College Road
Fairbanks, Alaska 99701
Phone: 459-7289
Fax: 459-7303

ii. SENSITIVE AREAS: PART ONE – INFORMATION SOURCES

AGENCY	RESOURCES	POINT OF CONTACT
Fish and Wildlife and Habitat Resources		
Alaska Department of Fish and Game	Fish, birds, terrestrial mammals	Division of Habitat Fairbanks - 459-7280
U.S. Department of the Interior	Migratory birds, endangered species, anadromous fish in freshwater, bald eagles, wetlands	Office of Environmental Policy & Compliance Anchorage - 271-5011
University of Alaska	Rare and endangered plants	Alaska Natural Heritage Program Anchorage - 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 - 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 - 271-5011
Shoreline Types		
U.S. Department of Commerce, National Oceanic & Atmospheric Administration	Shoreline types, environmental sensitivity index maps	Scientific Support Coordinator Anchorage - 428-4143
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 - 269-8565
Alaska Department of Fish and Game	State game refuges and critical habitats	Division of Habitat Fairbanks - 459-7280
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 - 271-5011
U.S. Department of Defense	Military installations and reservations	Alaska Command Anchorage - 552-3944

AGENCY	RESOURCES	POINT OF CONTACT
Local Governments: – Fairbanks Northstar Borough – Denali Borough	Municipal and private lands, and rights-of-way	For the current local government contact information, go to *Resources Section, Part One Community Profiles* For the current tribal contact information, go to *Resources Section, Part Three Information Directory, Native Organizations and Federally Recognized Tribes*
Commercial Harvest		
Alaska Department of Fish and Game	Commercial, subsistence and personal use seasons/schedules	Division of Commercial Fisheries Fairbanks - 459-7387
Alaska Department of Natural Resources	Tideland leases	Division of Mining, Land, and Water Anchorage - 269-8565
Alaska Department of Environmental Conservation	Seafood processing	Division of Environmental Health Juneau - 269-7644
U.S. Department of Commerce National Marine Fisheries Service	Fishing permits, seasons	Protected Resources Division Anchorage - 271-5006
Subsistence, Personal, and Sport Uses		
Alaska Department of Fish and Game	Subsistence, personal uses, navigable waters, sport hunting and fishing	Information Desk Fairbanks - 459-7206
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 - 271-5011
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 - 451-2695
Alaska Department of Fish and Game	Sport hunting and fishing	Information Desk Fairbanks 907-459-7206
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 - 271-5011

AGENCY	RESOURCES	POINT OF CONTACT
Water Intake and Use Facilities		
Alaska Department of Environmental Conservation	Public drinking water wells, treatment, and storage, fish processing facilities	Division of Water Anchorage - 269-7601
Alaska Department of Fish and Game	Hatcheries	Division of Sport Fish Fairbanks - 459-7228
Alaska Department of Natural Resources	Tidelands leases, aquaculture sites, private logging camps and log transfer facilities	Division of Mining, Land, and Water Juneau - 465-3400
U.S. Coast Guard	Marinas and docks, mooring buoys	Sector Anchorage Anchorage - 271-6700

iii. SENSITIVE AREAS: PART TWO – AREAS OF ENVIRONMENTAL CONCERN

A. BACKGROUND/CRITERIA

The following relative priority listing was developed by the Sensitive Areas Workgroup, with representatives from state and federal agencies and the private sector. The list identifies priorities for resources by 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 OSCs for protecting cultural resources is contained in the *Unified Plan, Annex M*.

The following criteria were developed as a tool 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 (number 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 countermeasure

B. AREAS OF MAJOR CONCERN

- Threatened or Endangered Species Habitat
- Waterfowl Molting and Spring Concentration Areas
- Eagle Nest Sites
- Anadromous Fish Habitat (spawning and rearing streams, overwintering fish habitat, migratory corridors)
- Caribou Insect Relief and Calving 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
- Subsistence Harvest Areas
- High Use Commercial Salmon Harvest Areas
- High Recreational Use Areas

C. AREAS OF MODERATE CONCERN

- Waterfowl Nesting and Fall Concentration Areas
- Resident Fish Habitat (spawning and rearing streams, migratory corridors, overwintering fish habitat)
- Moose Calving Concentration Areas
- Bear Concentration Areas (berries; salmon)
- Land Management Designations:
  - Federal:
    - National Parks
    - National Wildlife Refuges
  - State:
    - Ranges and Areas Designated Primarily For Wildlife Habitat
- Cultural Resources/Archaeological Sites:
  - National Register Eligible Sites (other than village sites)
  - Sites Adjacent to Shorelines
- Commercial Salmon Harvest Areas
- Recreational Use Areas

D. AREAS OF LESSER CONCERN

- General Freshwater Fish Habitat
- Waterfowl General Distribution
- Land Management Designations:
  - Federal:
    - Public Lands
    - National Preserves
  - State:
    - General Public Lands

E. AREAS OF LOCAL CONCERN

Goldstream Creek/Chatanika River

Harvest of pike is significant at the confluence of Goldstream Creek and Chatanika River from February through March during aggregation of larger females. This area is an identified special harvest area for pike which requires an Alaska Department of Fish & Game (ADF&G) subsistence use permit with harvest restrictions; there are very few other such locations in the State with this level of pike management interest. This is a congregating area for large pre-spawning female pike which will later disperse throughout the Minto Lakes area. Fairbanks residents know about the area and at times, intensively target the fishing opportunity. Minto residents have subsistence fish camps that target pike near that area. Goldstream Creek is the drainage for Borough residential, mining and includes the rail corridor

which all could source an oil spill. The Chatanika River has the highway crosssing, TAPs, and Fort Knox as potential sources for a spill.

iv. 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: NMFS, U.S. Fish and Wildlife Service (USFWS), National Park Service, Bureau of Land Management (BLM), ADF&G, and Alaska Department of Natural Resources (ADNR). 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. Susceptibility for each group of animals is year round unless otherwise noted in the Seasonal Sensitivity row that is added for the appropriate animal group.

Geomorphology

Category	Low	Medium	High
Lake and River Habitat Types	Rocky cliffs, bedrock, sandy beaches	Gravel beaches, exposed flats	• Marshes • Vegetated low banks • Flowing fish-bearing Freshwater • Riparian habitats
Upland Habitat Types			Riparian habitats

Brown Bear/Black Bear

Category	Low	Medium	High
Seasonal Sensitivity [1]	Nov 1 - April 30	May 1 - Oct 31	
Human Harvest	Jun 1 - Aug 30 (brown bear) Oct 31 - Mar 31(brown & black bears)		April 1 - May 31 Sept 1 - Oct 30 (brown bear) April 1 - Oct 30 (black bear)

1. - Some bears may emerge from their dens in April. All non-denning bears are of moderate concern, but for practical reasons, protection measures will likely focus on concentration areas.

Brown Bear/Black Bear Critical Life Periods

Denning	Nov – May
Berry Area Concentrations	June – Sept
Salmon Stream Concentrations	July - Oct

Caribou

Category	Low	Medium	High
Abundance[2]			
Seasonal Sensitivity	Sept 1 – May 20		May 20 – Sept 30
Human Harvest	Oct 1 – Aug 10		Aug 10 – Sept 30

[2] - There are thirteen caribou herds that utilize various portions of this region. Depending on the herd, abundance may vary widely. As a result, specific abundance figures have not been established for use in prioritizing protection sites.

Caribou Critical Life Periods

Calving	June
Insect Relief Habitat	July - Sept

Moose

Category	Low	Medium	High
Abundance			
Seasonal Sensitivity	Nov 1 – May 15	June 16 – Oct 31	May 16 – June 15
Human Harvest	Oct 1 – Feb 28		Aug 15 – Sept 30

Moose Critical Life Periods

Calving	May - June
Wintering Areas	Oct - April

Waterfowl

Category	Low	Medium	High
Abundance	Oct 15 – Apr 1	May 15 – Oct 15	Apr 2 – June 14
Seasonal Sensitivity	Oct 15 – Apr 1	May 15 – Oct 15	Apr 16 – August 31
Human Harvest	Nov 1 – Apr 1	July 15 – Aug 31	Apr 2 – Jun 14 Sept 1 – Oct 15

Waterfowl Critical Life Periods

Arrival/Nesting/Broodrearing	April - Aug
Molting Concentrations	July - Aug
Spring Migration	March - May
Fall Migration	Aug - Oct

Bald Eagle/Peregrine Falcon

Category	Low	Medium	High
Abundance			
Seasonal Sensitivity	Oct 1 – Mar 31		Apr 1 - Sept 30[3]

[3] - The period of high susceptibility for bald eagles includes not only the nesting period but also: 1) the month preceding when birds concentrate in limited areas of open water; and 2) the month following the nesting/rearing period when the young of the year are on their own for the first time and somewhat inexperienced.

Bald Eagle/ Peregrine Falcon Critical Life Periods

Nesting/Rearing	May - Aug
Present in the Area[4]	March - Oct

[4] A few eagles are known to stay in the area at selected open water sites throughout the year.

Freshwater Resident Fish

Category	Low	Medium	High
Seasonal Sensitivity		May 1 - Oct 31	Nov 1 – Apr 30
Human Harvest		Dec 1 - May 31	June 1 – Sept 30

Freshwater Resident Fish

Spawning	May-June Sept - Nov
Overwintering	Nov - May

Salmon (Chum, Chinook, Coho)

Category	Low	Medium	High
Abundance[5]			
Seasonal Sensitivity			Jan 1 – Dec 31
Human Harvest	Oct 21 – May 31		June 1 – Oct 20

[5] - Limited abundance information is available for streams located within the Interior Alaska Region. Additionally, because spilled oil will spread downstream in a predictable manner, abundance information will probably not be used in prioritizing protection sites.

Salmon Critical Life Periods

Egg/Fry/Smolt/Overwintering	Year Round
Chinook & Coho Rearing	Year Round
Chinook Spawning	June - Aug
Summer Chum Spawning	June - Sept
Fall Chum Spawning	Sept - Nov
Coho Spawning	Sept - Dec

Anadromous Sheefish

Category	Low	Medium	High
Abundance	June 1 – July 30		Aug 1 - May 31
Seasonal Sensitivity	May 1 – July 30		Aug 1 - Apr 30
Human Harvest		Jun 1 - Jun 30	Jul 1 - Sep 30

Anadromous Sheefish Critical Life Periods

Spawning	Aug - Nov
Overwintering (Eggs/Fry)	Oct - June
Fall Migration	Aug - Oct

Legislatively Designated Land Status

Category	Low	Medium	High
Federal Lands (including military lands)	Public Land	• Recreational Areas • National Park • Wildlife Refuges	• Wild & Scenic Rivers • Critical Habitats • Wilderness Areas
State Lands	Public Land[6]	Recreation Areas	Critical Habitats/ Refuges

[6] Includes navigable waterways

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

v. SENSITIVE AREAS: PART FOUR – BIOLOGICAL 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. Industry or local government-generated references, such as those listed below, that have had agency input and review are incorporated by reference.

See the *Environmental Atlas of the Trans Alaska Pipeline System* (1993), by Alyeska Pipeline Service Company.

The Alyeska Atlas consists of 25 maps covering the length of the Trans-Alaska Pipeline System (TAPS) and brief narratives about mammals, birds and fish found along the TAPS corridor. Each map has an overlay with the following types of information identified:

1. Recreation Sites/Areas
2. Scenic Areas
3. Special Areas
4. Subsistence Use Areas
5. Wildlife Areas (bears, bison, caribou, sheep, fox, wolf, grouse, moose, otter, raptor, swan, waterfowl, whale)
6. Fish Hatchery
7. Fish Stream (Anadromous, Non-anadromous, Overwinter)
8. Site, Den or Nest
9. Direction of View, Migration, Movement or Distribution
10. Oil Spill Containment Site

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 in *Environmental Sensitivity Index Guidelines* (October 1997). Updated ESI information can be found on the internet at: www.response.restoration.noaa.gov/maps-and-spatial-data/environmental-sensitivity-index-esi-maps.html Note: There are no ESI maps for this subarea.

1. *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 between 5 and 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 traffic ability, 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 gravel, slope between 8 to 15 degrees, sediment mobility is high during storms, sediments are soft with low traffic ability, 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 traffic ability 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 traffic ability, 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 traffic ability, infaunal densities are high.

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

ESI Habitat Ranking

ESI	Estuarine (Marine)	Lacustrine (Lake)	Riverine (Large Rivers)
1 A	Exposed rocky shores	Exposed rocky shores	Exposed rocky banks
1 B	Exposed, solid man-made structures	Exposed, solid man-made structures	Exposed, solid man-made structures
1C	Exposed rocky cliffs with boulder talus base	Exposed rocky cliffs with boulder talus base	Exposed rocky cliffs with boulder talus base
2A	Exposed wave-cut platforms in bedrock, mud, or clay	Shelving bedrock shores	Rock shoals; bedrock ledges
2B	Exposed scarps and steep slopes in clay		
3A	Fine to medium-grained sand beaches		
3B	Scarps and steep slopes in sand	Eroding scarps in unconsolidated sediments	Exposed, eroding banks in unconsolidated sediments
3C	Tundra cliffs		
4	Course-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
6A	Gravel beaches	Gravel beaches	Gravel bars and gently sloping banks
6B	Riprap	Riprap	Riprap
7	Exposed tidal flats	Exposed flats	
8A	Sheltered scarps in bedrock, mud, or clay; Sheltered rocky shores (impermeable)*	Sheltered scarps in bedrock, mud, or clay	
8B	Sheltered, solid man-made structures; Sheltered rocky shores (permeable)*	Sheltered, solid man-made structures	Sheltered, solid man-made structures
8C	Sheltered riprap	Sheltered riprap	Sheltered riprap
8D	Sheltered rocky rubble shores		
8E	Peat shorelines		
8F			Vegetated, steeply-sloping bluffs
9A	Sheltered tidal flats	Sheltered sand/mud flats	
9B	Vegetated low banks	Vegetated low banks	Vegetated low banks
9	Hypersaline tidal flats		
10A	Salt- and brackish-water marshes		
10B	Freshwater marshes	Freshwater marshes	Freshwater marshes
10C	Swamps	Swamps	Swamps
10D	Scrub-shrub wetlands; Mangroves	Scrub-shrub wetlands	Scrub-shrub wetlands
10E	Inundated low-lying tundra		

* A category or definition that applies on in Southeast Alaska.

Table from www.response.restoration.noaa.gov/maps-and-spatial-data/shoreline-sensitivity-rankings-list.html.

2. ***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 USFWS, National Wetlands Inventory, in Anchorage. Considerable mapping of wetlands has been completed, some of which are available in a GIS database (see the following figure). Updated map data is being placed on the National Wetlands Inventory Internet web site at: www.fws.gov/wetlands/ .

The Wetlands Status map may be viewed at the USFWS Wetlands Data Mapper Service.

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 (FOSC) will need to immediately consult with the USFWS and/or the NMFS (as appropriate) regarding the proposed strategies, in accordance with the Endangered Species Act Memorandum of Understanding (see the *Unified Plan, Annex K*). Currently there are no threatened or endangered species present in the subarea.

For updated information on the Internet:
USFWS National Threatened and Endangered Species web site: www.fws.gov/endangered/

USFWS Regional Threatened and Endangered Species web site:
www.fws.gov/alaska/fisheries/endangered/

ADF&G Threatened and Endangered Species web site:
www.adfg.alaska.gov/index.cfm?adfg=specialstatus.akendangered

2. *Fish and Wildlife*

(a) FISH

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 NMFS on any action they authorize, fund, or undertake that may adversely affect EFH, and the NMFS 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 NMFS, 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://www.habitat.noaa.gov/protection/efh/efhmapper/

Almost all of the Interior Subarea is drained by the Yukon River and its tributaries. A few small headwater tributaries of the Kuskokwim River also occur within this region. Most of the flowing waters and many of the lakes support populations of anadromous or resident species of fish. 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. Deep lakes and rivers, and spring-fed stream systems serve as overwintering areas. ADF&G regularly stocks selected lakes and gravel pits along the road system (and a few remote lakes southeast and west of Fairbanks) with arctic grayling, coho salmon, rainbow trout, and arctic char for increased public fishing opportunities.

The most common resident fish found in rivers and lakes in the Interior Subarea include arctic grayling, northern pike, burbot, and whitefishes. Whitefish species include sheefish, humpback, round, and broad whitefish; and least and Bering cisco. Other species that occur in the region include lake trout, slimy sculpin, resident Dolly Varden, longnose sucker, Alaska blackfish, and arctic lamprey.

Resident Fish

Arctic Grayling are distributed widely in most clearwater streams and some of the deeper lakes in the subarea. They 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 (e.g., Minto, Yukon, and Dulbi Flats), and the lower reaches of large rivers. Round whitefish are found more commonly in streams or lakes. Bering cisco are found in the Yukon River. These five species of whitefish spawn in late September and early October over sand and gravel bottoms of streams and lakes. They generally overwinter in deep, large rivers or lakes.

Sheefish: Populations of resident (non-anadromous) sheefish occur in the Nowitna and Tanana Rivers, and in rivers of the Yukon River drainage upstream of the Dalton Highway to the Alaska-Canada border. Nonanadromous sheefish may occur with anadromous sheefish in the Middle Yukon River or at the mouths of some of its tributaries. Sheefish feed in summer in slow-moving waters of sloughs and interconnected lakes (e.g., Minto Flats), and in the lower reaches of larger rivers. Resident sheefish spawn in late September and early October.

Northern Pike are found commonly in summer in slow-moving waters of sloughs, and interconnected lakes (e.g., Minto, Yukon, and Dulbi Flats), and the lower reaches of large rivers. Northern pike spawn in the spring shortly after breakup in shallow water with emergent vegetation and little current. They 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 at isolated locations in small mountain streams within the Yukon, Koyukuk, and Tanana River drainages. They spawn in late September or October.

Burbot are found throughout the subarea, in both clearwater and turbid streams, and in deep lakes. They also are found in summer in interconnected lakes and sloughs in lowland areas such as the Yukon and Minto Flats. 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 of the Brooks and Alaska mountain ranges. They spawn in September.

Alaska Blackfish are found in the Yukon-Tanana River drainage as far upstream as Fairbanks. Blackfish occur in ponds, sloughs, and lakes with abundant vegetation. This species tolerates water with low concentrations of oxygen and often occur where no other fish species overwinter.

Longnose sucker

Slimy sculpin
Anadromous Fish: The ADF&G Anadromous Waters Catalog Fish Resource Monitor and Maps may be found at the following web sites: www.extra.sf.adfg.state.ak.us/FishResourceMonitor/ and www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?adfg=maps.maps

Additional information on Anadromous fishes may be found at:
www.gis.sf.adfg.state.ak.us/flexmaps/fishresourcemonitor.html

Sheefish: The Yukon River supports a population of anadromous sheefish that spawn in the Koyukuk, Alatna, and Yukon Rivers. They overwinter in the lower Yukon River and nearby brackish water. Fish that will spawn in the current year migrate upstream from the lower Yukon River during breakup. Sheefish enter the Koyukuk River in August and early September and spawn in the Koyukuk River near Hughes and about 55 miles up the Alatna River in late September/early October. Rearing sheefish have not been found in the Koyukuk River, which indicates rearing and overwintering occur in the Yukon River. A portion of the Yukon River anadromous sheefish population spawns in the Yukon Flats, upstream of the Dalton Highway bridge.

Salmon Chinook (king), coho (silver), and chum (dog) salmon occur within the Interior Subarea. Chinooks spawn from early July to mid August in the Koyukuk, Yukon, and Tanana River drainages. *Many Chinook salmon populations are experiencing low production and/or escapement rates. Chum salmon are the most abundant species of salmon and arrive in distinct summer and fall spawning runs. Summer chums spawn from early July through late August in the middle portion of the Yukon River drainage and some tributaries of the Koyukuk and Tanana Rivers. Fall chums spawn from early September through mid November, primarily in spring-fed upwelling areas of the Chandalar, Porcupine and Tanana River drainages. Coho salmon spawn from late September through early December in the Tanana and Upper Yukon River drainages. Known coho salmon spawning areas are located in tributaries of the Upper Tanana River drainage (including the Kantishna, Toklat, Nenana, Delta, and mouth of the Delta Clearwater Rivers). Salmon eggs incubate in the stream gravels over the winter and hatch in late winter. Chum fry migrate to sea following breakup in early May to late June. Chinook and coho fry may remain in fresh water for one or two years before migrating to sea.

Bering cisco

Arctic lamprey

(b) BIRDS:
The Interior Subarea provides some of North America's most important wetland areas for nesting waterfowl (ducks, geese, and swans) (see the following figure) 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 or westerly feeding and nesting areas. The Tanana River valley serves as an important migratory pathway for ducks, geese, tundra and trumpeter swans, sandhill cranes and other birds that spend the summer in the Interior and for those that continue flying to other areas. The upper Yukon River valley also serves as a migration route for waterfowl. Major wetland areas used by waterfowl and other birds in the subarea include Minto Flats, Yukon Flats, Koyukuk Flats, Dulbi Flats, Nowitna Flats, Kanuti Flats, Kaiyuh Flats, and small wetland areas along the major rivers. The state's largest concentration of breeding and nesting canvasbacks can be found each summer on small lakes with the Yukon Flats. Waterfowl are concentrated on areas of open water along the major rivers in spring before

wetland areas thaw. Islands in the major rivers provide important nesting habitat for geese. Small, isolated springs that remain ice-free year-round may support concentrations of ducks throughout the winter (e.g., 500-600 mallards may winter at Toklat River Springs). In addition to important wetland areas for waterfowl, the Interior Subarea supplies important nesting habitat for passerine birds, and waterbird species, such the wandering tattler, surfbird, spotted sandpiper, and new, herring, and bonaparte's gulls.

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. Most ducks nest along ponds and lakes that have emergent vegetation. Some ducks (bufflehead, goldeneye, and mergansers) nest in cavities in trees and therefore nest in areas with large trees next to wetlands or streams. Broods are reared on lakes, ponds, flooded wetlands, and rivers. Some ducks begin molting in mid June, most during July, and a few are still in molt condition in late August. Some ducks begin their fall migration in mid July, although most leave from mid August through mid September. Some ducks remain until mid October before leaving at freeze-up.

Geese: Canada and white-fronted geese nest and rear young along lakes, wetlands, and rivers within the subarea. Both Canada and white-fronted geese nest on vegetated river bars. Canada geese also nest in damp meadows. White-fronted geese may nest along the wooded banks of rivers. Both species rear broods along rivers and make extensive use of sedge-lined lakes, exposed mudflats, and river oxbows. Geese begin nesting in mid-to-late May, and most eggs hatch by early July. Molting is from early July through mid August. Most geese leave by late September.

Swans: Both tundra and trumpeter swans occur in the subarea. Concentration areas used by swans include the Tanana Flats, Minto Flats, Yukon Flats, Nowitna Flats, and the Koyukuk Flats. Trumpeter swans generally occupy the central portions of the Interior Subarea (the Minto Flats-Kantishna River area, Yukon Flats), whereas tundra swans occur most commonly in the western Interior (the Koyukuk Flats). Swans nesting in the Kanuti and Nowitna Flats are roughly an equal mixture of tundra and trumpeter swans. Trumpeter swans currently are expanding their breeding range into the Yukon Flats. Swans begin nesting around mid May, and eggs hatch from mid-to-late June. Molting occurs in July and August. Young swans are unable to fly until mid or late September. Swans leave the subarea from late September to mid October.

For more information on waterfowl in Alaska, see the USFWS website at:
www.alaska.fws.gov/mbsp/mbm/waterfowl/waterfowl.htm

Other Waterbirds: Shorebirds, gulls, terns loons, and grebes also nest in wetland areas throughout the subarea.

Grouse and Ptarmigan are year-round residents and are found in habitats ranging from mountains to lowlands. They nest from late May through June.

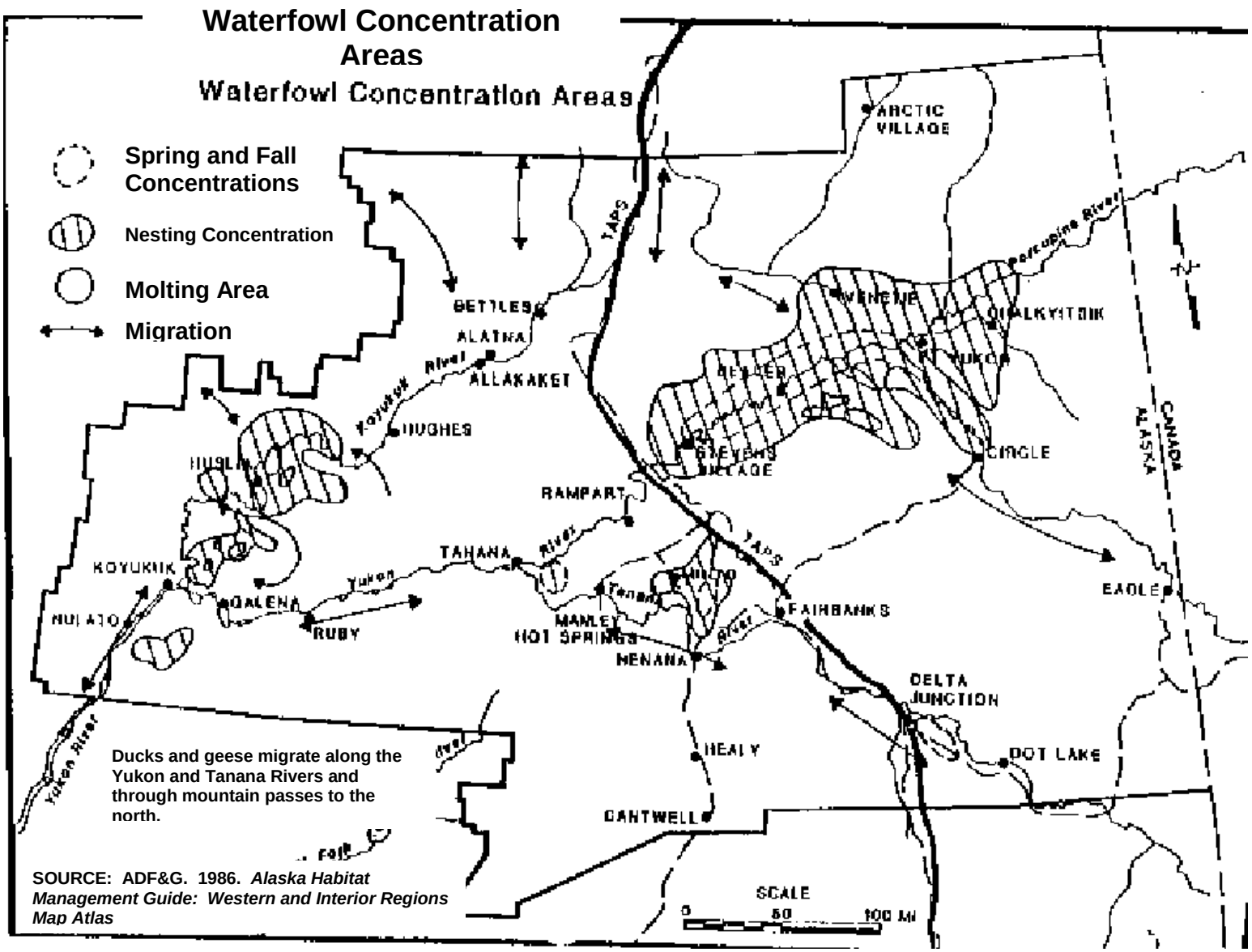
Raptors commonly occurring in the subarea include golden and bald eagles; osprey; gyrfalcons; peregrine and other falcons; goshawks and other hawks; and owls. Golden eagles, peregrine falcons, gyrfalcons, and rough-legged hawks nest on cliffs, bluffs, or other steep terrain. Hawks and owls commonly use woodlands, forests, and forested wetland areas for nesting areas. Feeding areas used by raptors include most habitats found in the Interior Subarea. Both resident and migratory raptors are found in the subarea.

Bald eagles are regularly distributed along the Tanana River and breeding pairs are found at scattered locations along the middle Yukon River, particularly at the mouths of major tributary rivers. A few bald eagles are year-round residents in the Tanana River drainage near Delta, the Delta Clearwater River, and near Harding Lake. Non-resident bald eagles begin arriving in the Interior Subarea in mid March. Nesting begins in late April or early May. Non-resident bald eagles generally leave the subarea from September through November.

Peregrine falcons begin arriving in the subarea in mid-April and remain in the region through September. About 40 pairs nest on cliffs and bluffs along the Yukon River from the Canada-Alaska border to Circle. About 20 pairs nest along the Yukon River from the Fort Hamlin Hills to Tanana. Peregrine falcons also are found at suitable nest sites along the Yukon River downstream of Ruby. The Tanana River has nesting or the potential for nesting peregrine falcons at any bluff or steep slope along its course. Peregrine falcons may be found nesting along other rivers and other locations that have suitable nesting and feeding areas. Prime feeding areas include wetlands containing waterfowl, shorebirds, and other small birds.

Ospreys nest in wetland areas in the Tanana drainage, primarily near Tetlin, but pairs are known to nest north of Tetlin at George Lake and at Shaw Creek Flats.

For more information on landbirds and raptors, see the USFWS web site at:
www.alaska.fws.gov/mbsp/mbm/landbirds/landbirds.htm



SOURCE: ADF&G. 1986. ***Alaska Habitat Management Guide: Western and Interior Regions Map Atlas***

(c) MARINE MAMMALS

The Interior Subarea is not bordered by marine ecosystems, however, beluga whales have occasionally traveled up the Yukon River many hundreds of miles from the mouth.

(d) TERRESTRIAL MAMMALS

Bison: An introduced herd of bison occur in the Delta area and Copper River valley. The main bison late winter range, summer range and calving grounds are along the Delta River southwest of Donnelly Dome. The fall-early winter range (September through January) is mainly on the east side of the Delta River on the Delta Bison Range, on Fort Greely and in the agricultural areas near Delta. From mid February until mid September, bison occur near or on the Delta River. Calving begins in mid April, peaking from late May through early June. Some bison may calve as late as August.

Caribou are distributed widely in the Interior Subarea. Some herds occur as relatively small, discrete herds occupying a limited area. Other larger herds undertake significant seasonal migrations that may take them out of the region. Calving occurs in late May and early June for the herds that use the subarea. 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.

The Fortymile Caribou Herd occupies the Tanana-Yukon Uplands between the Yukon and Tanana Rivers during summer and winter, and may range into the Yukon Territory during winter. Calving occurs in the headwater regions of the Charley, Salcha, Goodpaster, and Fortymile Rivers.

The Delta Caribou Herd occupies the mountains and foothills of the north side of the Alaska Range between the Delta and Nenana Rivers. The traditional calving area of this herd lies between the East Fork of the Little Delta River and the Delta River, and calving occurs in the Yanert River valley. Summer range includes mountain and foothill areas; winter range includes these areas plus spruce wetlands of the Tanana Flats.

The Porcupine Caribou Herd is found in northeastern Alaska. Portions of this herd may occur within the Interior Subarea during mid-to-late summer and during winter. In July and August, portions of this herd may be found on the southern slopes of the Brooks Range between Chandalar and the Alaska-Canada border. A portion of the herd may winter on the southern slopes of the Brooks Range in the vicinity of Arctic Village.

The Central Arctic Herd is found in northcentral Alaska. During some winters, a portion of this herd may winter on the south side of the Brooks Range in the vicinity of Chandalar.

The Western Arctic Herd ranges throughout northwestern Alaska. Portions of this herd may winter in some of the major river valleys on the south side of the western and central Brooks Range. Some caribou from this herd occasionally may winter in the Koyukuk River drainage.

Several smaller caribou herds also occur within the Interior Subarea. The Yanert Herd occupies the Yanert River drainage and adjacent headwaters of the Wood River. The Macomb Herd occupies the northern slopes of the Alaska Range between the Delta and Robertson Rivers. The Denali caribou herd occupies the north side of the Alaska Range in the vicinity of Denali National Park. The Sunshine Mountain Herd occupies an area at the headwaters of the Nowitna and Susulatna Rivers and the Nixon

Fork Flats. The White Mountains Herd occupies habitat primarily within the Beaver and Victoria Creek drainages in the White Mountains northeast of Fairbanks. North of the Yukon River, the Ray Mountains Herd inhabits the upper Tozitna and Kanuti Rivers in the Ray Mountains between Rampart and Tanana. The Galena Mountain and Wolf Mountain Herds inhabit portions of the Melozitna and Dulbi Rivers, and the lower Koyukuk Flats.

Black Bear are most common in forested river floodplains and lowlands in the Yukon, Tanana, and Koyukuk River drainages, although black bears occasionally may occur in alpine areas. Important summer habitats include sedge meadows, and areas of shrubs and forest containing berries. They also may feed at salmon spawning areas and in moose calving areas. Black bears begin entering dens for the winter in late September and emerge from dens in the spring from mid April through mid May.

Brown Bear (grizzly bears) primarily occur in upland and mountainous areas of the Interior Subarea, but may occur in lowland areas. Salmon spawning areas (e.g., Toklat River springs, Sheenjek River) and moose calving areas are important feeding areas for some bears. Brown bears enter dens from mid October through November and emerge from early April through late May.

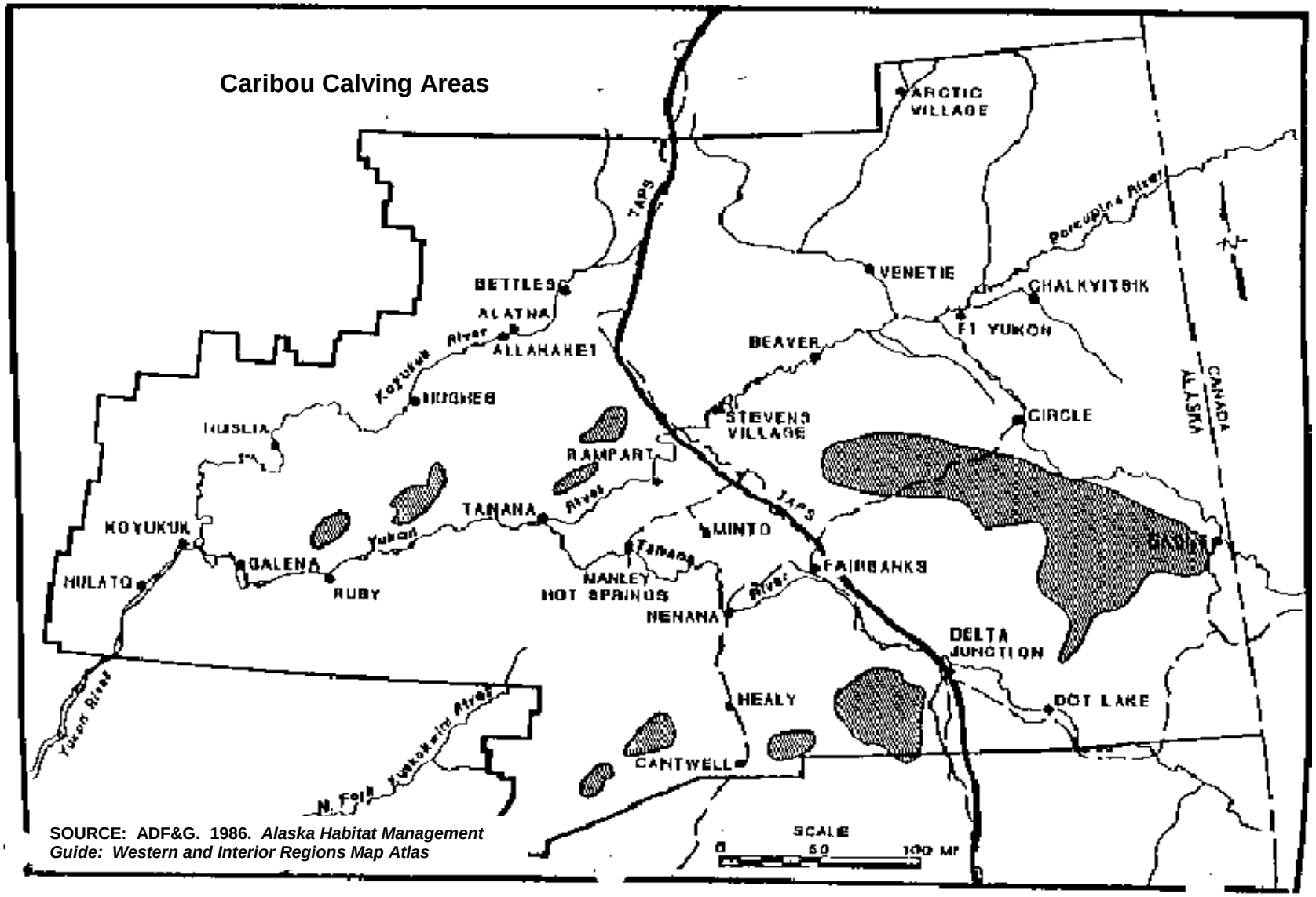
Moose occur in habitats throughout the subarea, ranging from aquatic and riparian floodplain areas to sub-alpine willow-dominated areas. Sedge meadows, ponds and lakes with extensive aquatic vegetation, riparian and subalpine willow stands, and forested areas provide important summer habitat for moose. Important winter habitat includes shrub-dominated uplands and riparian areas, and forested areas. Riparian areas along the major rivers and tributary streams are particularly important during winter. Areas recently burned (11-30 years old: Maier et al., 2005) also provide important feeding areas throughout the year. Calving occurs in late May and early June.

Dall Sheep are found throughout the southern slopes of the eastern and central Brooks Range, and the northern slopes of the eastern and central Alaska Range. Small populations of sheep are present in the Ogilvie Mountains and in limited, discontinuous alpine habitat in the White Mountains and Tanana-Yukon Uplands. Sheep often are concentrated during winter on windblown slopes and ridges along major river valleys where shallow snow cover allows feeding on low-growing plants. During summer, sheep disperse to smaller valleys, mountain peaks, and other areas inaccessible to them during winter. 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.

Wolves and Foxes (red foxes) are found throughout the Interior Subarea. Wolves and foxes select den sites where unfrozen, well-drained soils occur (e.g., dunes, river banks, moraines, hillsides). Wolves generally initiate den construction in early-to-mid May. Pups are born from mid May through early June, and generally leave the den by mid July, although dens may be occupied until August. 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. Females and young are in dens during spring, generally from mid April through June, depending on the species and location.

For more information on terrestrial mammals, see the ADF&G web site at:
http://www.adfg.alaska.gov/index.cfm?adfg=animals.listmammals



SOURCE: ADF&G. 1986. ***Alaska Habitat Management Guide: Western and Interior Regions Map Atlas***

3. *Vegetation*

Rare plant species are identified below. The following map identifies general locations of rare plants. For further information, contact the Alaska Natural Heritage Program.

Rare Plants Known in the Interior Subarea

Global Rank	State Rank	Scientific Name	Common Name
G1	SP	*Claytonia ogilviensis*	
G1Q	S1	*Cryptantha shackletteana*	Shacklettes' catseye
G2	S2	*Douglasia beringensis*	
G2	S2	*Draba murrayi*	Murray's whitlow-grass
G2	S2	*Draba ogilviensis*	
G2	S1	*Podistera yukonensis*	Yukon podistera
G2G3	S2	*Botrychium ascendens*	
G2G3	S2S3	*Phacelia mollis*	Macbride phacelia
G2G3Q	S2S3	*Oxytropis tananensis*	
G2G3Q	S1	*Ranunculus turneri*	Turner's butter-cup
G3	S1S2	*Antennaria densifolia*	
G3	S3	*Aphragmus eschscholtzianus*	
G3	S3	*Claytoniella bostockii*	Bostock's miner's-lettuce
G3	S3	*Douglasia alaskana*	Alaska rock-jasmine
G3	S2S3	*Douglasia arctica*	Mackenzie river douglasia
G3	S3	*Draba ruaxes*	Rainier whitlow-grass
G3	S2	*Lupinus kuschei*	Yukon lupine
G3	S2S3	*Oxytropis huddelsonii*	
G3	S3	*Oxytropis kokrinensis*	Kokrines oxytrope
G3	S2	*Poa porsildii*	
G3	S3	*Stellaria alaskana*	Alaska starwort
G3	S3	*Symphyotrichum yukonense*	Yukon aster
G3	S3	*Symphyotrichum yukonense*	Yukon aster
G3	S3	*Thlaspi arcticum*	Arctic pennycress
G3G4	S1S2	*Draba porsildii*	Porsild's whitlow-grass
G3G4	S3S4	*Draba stenopetala*	Anadyr whitlow-grass
G3G4	S2S3	*Elymus calderi*	
G3G4	S1S2	*Lesquerella calderi*	Calder's bladder-pod
G3G4	S3	*Papaver alboroseum*	Pale poppy
G3G4Q	S3S4	*Castilleja annua*	Annual indian-paintbrush
G3G4T2?Q	S2?	*Corispermum ochotense var alaskanum*	
G3Q	S3	*Arenaria longipedunculata*	Low sandwort
G3Q	S1	*Artemisia laciniatiformis*	
G3Q	S3	*Taraxacum carneocoloratum*	Pink-flower dandelion
G4	S1S2	*Arnica lonchophylla*	Northern arnica
G4	S2S3	*Carex heleonastes*	Hudson bay sedge
G4	S1	*Carex sychnocephala*	Many-headed sedge
G4	S3	*Douglasia gormanii*	Gorman's douglasia
G4G5	S1S2	*Aster commutatus*	White prairie aster
G4G5	S3S4	*Carex peckii*	White-tinged sedge
G4G5	S1	*Carex sartwellii*	Sartwell's sedge
G4G5	S2S3	*Ranunculus kamchaticus*	
G4G5Q	S2	*Carex lapponica*	
G4G5T4T5	S1	*Carex sartwellii var sartwellii*	Sartwell's sedge

Global Rank	State Rank	Scientific Name	Common Name
G4T2T3Q	S2?	*Phlox richardsonii ssp richardsonii*	Richardson's phlox
G4T3T4	S2	*Ranunculus glacialis var chamissonis*	
G5	S1	*Carex bebbii*	Bebb sedge
G5	S3	*Carex crawfordii*	Crawford sedge
G5	S1S2	*Carex deflexa*	Short-stemmed sedge
G5	S2?	*Carex deweyana*	Short-scale sedge
G5	S3	*Carex eburnea*	Ivory sedge
G5	S1	*Carex praegracilis*	Clustered field sedge
G5	S1	*Carex sabulosa*	Sand sedge
G5	S1	*Ceratophyllum demersum*	Common hornwort
G5	S1	*Chenopodium salinum*	
G5	S1S2	*Cicuta bulbifera*	
G5	S2S3	*Cryptogramma stelleri*	Slender cliff-brake
G5	S2S3	*Cypripedium parviflorum*	Small yellow ladyslipper
G5	S1S2	*Draba paysonii*	Payson's whitlow-grass
G5	S1S2	*Erigeron ochroleucus*	
G5	S2	*Juncus nodosus*	Knotted rush
G5	S2S3	*Juncus tenuis*	Slender rush
G5	SE	*Lactuca tatarica*	Tartarian lettuce
G5	S3S4	*Minuartia biflora*	
G5	S2	*Phacelia sericea*	Silky scorpion-weed
G5	S3	*Phalaris arundinacea*	Reed canary grass
G5	S1	*Polygonum hydropiperoides*	A smartweed
G5	S1	*Potamogeton robbinsii*	Flatleaf pondweed
G5	S2	*Ranunculus auricomus*	
G5	S1	*Schoenoplectus pungens*	
G5	S1	*Scolochloa festucacea*	Sprangle-top
G5	S1	*Sphenopholis intermedia*	
G5	S4	*Tanacetum bipinnatum*	Lake huron tansy
G5	S1	*Townsendia hookeri*	Hooker townsendia
G5?	S1	*Carex sprengelii*	
G5?	S3	*Viola selkirkii*	Selkirk violet
G5T2	S2	*Eriogonum flavum var aquilinum*	Yukon wild-buckwheat
G5T2	S1S2	*Erysimum asperum var angustatum*	A wallflower
G5T3	S3	*Mertensia eastwoodiae*	
G5T3T4	S2	*Saxifraga nelsoniana ssp porsildiana*	Heart-leaf saxifrage
G5T4Q	S2	*Trisetum sibiricum ssp litorale*	Siberian false-oats
G5T4T5	S1S2	*Symphyotrichum falcatum var falcatum*	White prairie aster
G5T5Q	S2	*Glyceria striata var stricta*	

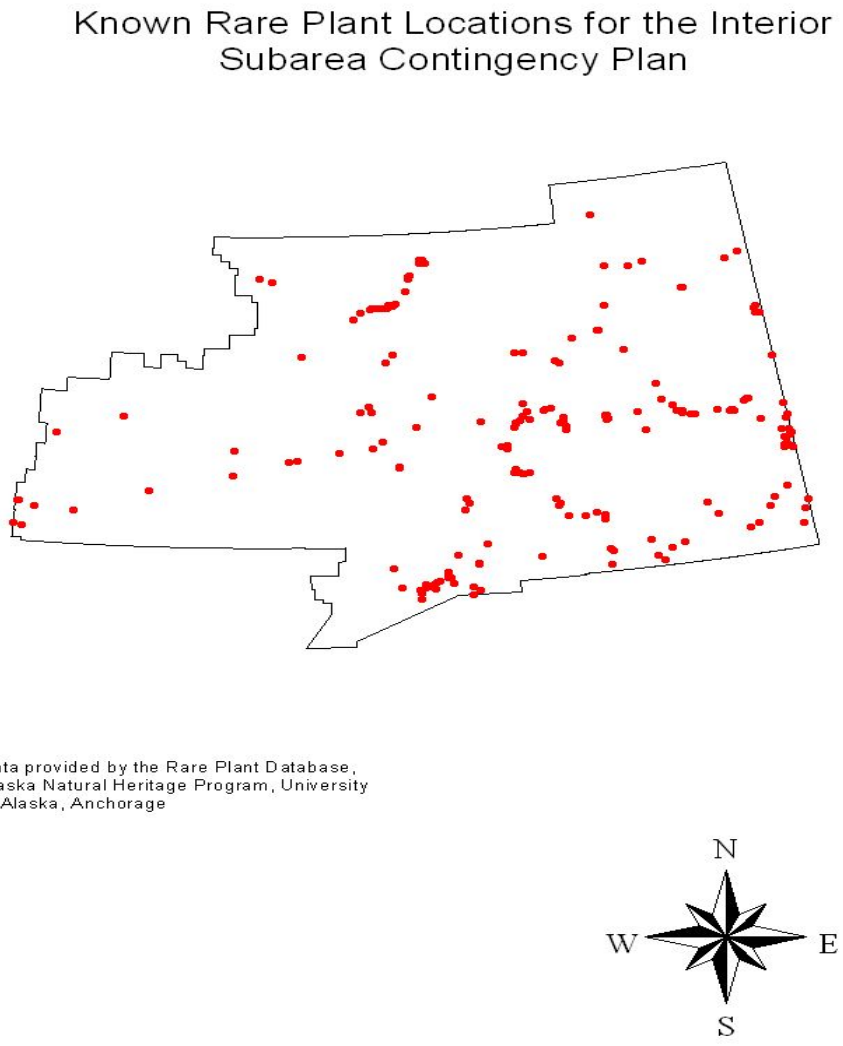
Global Rankings

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.

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 occurrences)
S5: Demonstrably secure in state.
S#S#: State rank of species uncertain, best described as a range between the two ranks



This map may be viewed at: www.asgdc.state.ak.us/maps/cplans/subareas.html#interior

D. HUMAN USE RESOURCES

1. *Fish Hatcheries and Associated Ocean Net Pens*
There is a hatchery in Fairbanks and Paxon on the Gulkana River.

2. *Aquaculture Sites*
There are no known aquaculture sites located in the Interior Subarea.

3. *Subsistence and Personal Use Harvests*
Subsistence-related uses of natural resources play an important role in the economy and culture of many communities in the Interior 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 and the Alaska Boards of Fisheries and Game made all decisions regarding the management of subsistence resources and harvest rights. In 1990, however, the federal government became responsible for assuring a federal subsistence priority on federal public lands, and in 1999 on federal reserved waters. The Federal Subsistence Board adopts subsistence regulations that are administered by the various federal agencies on federal public lands. State regulations still apply to state and private lands and for non-subsistence harvests on all lands. As a consequence, the number of agencies involved in managing subsistence resources and 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 regular modification. Current information on harvest regulations can be obtained from ADF&G, Subsistence Division in Anchorage; or USFWS, Office of Subsistence Management in Anchorage.

There are numerous communities in the Interior Subarea which engage in subsistence harvest activities. Generally, the harvest area used by each community includes the land and waters within a fifty mile or more radius of the community during summer. In winter, the harvest area may expand considerably as travel conditions improve. Rivers and streams within this area are fully utilized. More specific information, including maps of subsistence use areas, can be obtained from subsistence resource managers.

Communities near the major river systems rely heavily on salmon, whitefish and sheefish as subsistence food sources. Salmon are commonly harvested with gillnets or fishwheels. The timing of subsistence fishing seasons on the Yukon and Tanana Rivers and the fisheries management districts may vary. Fishing seasons are set by the Board of Fisheries and are subject to change. ADF&G may also close seasons by emergency order. For the latest information on all subsistence activities, contact the ADF&G, the USFWS, and/or the following Native/subsistence organizations:

Subsistence Organizations

Organization	Phone
Doyon Limited	452-4755
Koyukon Development Corp. Inc.	243-4189
Tanana Chiefs Conference	452-8251
Gwitcha-Gwitchen-Ginkhye	662-2415
Baan-O-Yeel Kon Corp. (Rampart)	456-6259
Bean Ridge Corp. (Manley Hot Springs)	672-3177
Beaver Kwit'Chin Corp.	456-2464
Chalkyitsik Native Corp.	662-2563
Danzhit Hanlaii Corp. Circle)	773-1280
Deloycheet Inc. (Holy Cross)	476-7177
Dineega Corp. (Ruby)	468-4405
Dinyea Corp. (Stevens Village)	474-8224
Dot Lake Native Corp.	882-2695
Evansville Inc.	451-8008
Gana-a 'Yoo Ltd. (Galena)	656-1609
Gwitchyaa Zhee Corp. (Fort Yukon)	662-2322
Hee-Yea-Lindge Corp. (Grayling)	453-5133
Hungwitchin Corp. (Eagle)	479-2619
K'Oyitl'Ots'Ina Ltd. (Hughes)	452-8110
Ingalilk Inc. (Anvik)	663-6312
MTNT Ltd. (McGrath, Telida, Nikoli, Takotna)	524-3391
Mendas Chaag Native Corp. (Healy Lake)	452-3094
Northway Natives Inc.	778-2297
Seth-De-Ya-Ah Corp. (Minto)	456-8174
Tanacross Inc.	883-4129
Tihteet'aii Inc. (Birch Creek)	221-9113
Toghotthele Corp. (Nenana)	832-5461
Tozitna Ltd. (Tanana)	366-7255
Zho-Tse Inc. (Shageluk)	473-8229
Council of Athabaskan Tribal Governments	662-2587
Yukon River Drainage Fisheries Association	279-6519

Subsistance Fisheries Timing for the Interior Subarea

Lower Yukon (Districts 1,2, and 3)	
Chinook Salmon	Early June thru End of August
Chum Salmon	Early June thru Late August
Coho Salmon	Mid-July thru Mid-September
Sheefish & Whitefish	Early June thru Early September
Upper Yukon (District 4 & 5)	
Chinook Salmon	Late June thru Mid- August
Chum Salmon	Late June thru Early October
Coho Salmon	Late July thru Mid-September
Sheefish & Whitefish	Early June thru Late October
Tanana River Drainage (District 6)	
Chinook Salmon	Early July thru Mid-August
Chum Salmon	Early July thru Mid-October
Coho Salmon	Late August thru Late October
Sheefish & Whitefish	Early July thru Late October

4. *Cultural Resources*

The Interior 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. These sites are not identified here, in order to protect them from scavenging. Oil spills and hazardous substance releases may result in direct and/or indirect impacts to those sites. FOSCs 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. The *Unified Plan, Annex M* outlines FOSC 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.

5. *Commercial Fishing*

Commercial salmon fisheries occur along 1,200 miles of the mainstem Yukon River and the lower 200 miles of the Tanana River. The following depicts the timing of these fisheries, as established by the Board of Fisheries. These seasons are subject to change and may also be closed by emergency order of ADF&G. For the latest information on commercial fishing regulations, contact ADF&G. The Interior Subarea fisheries management areas and information may be found at the following web site: www.adfg.alaska.gov/index.cfm?adfg=fishingCommercialByArea.interior

Only districts 4, 5 and 6 (Upper Yukon) are located within the region covered by this contingency plan, although downstream areas may be impacted by spills into the river.

Upper Yukon and Tanana commercial fisheries may harvest salmon by using set gillnets or fishwheels. Lower Yukon fisheries are conducted with set and drift gillnets. Chum salmon are the most abundant species and are harvested during distinct summer and fall runs. Chinook salmon are the next most abundant species harvested. Chinooks are harvested concurrently with chum salmon in the summer fishery. Small numbers of coho salmon are caught during the fall chum fishery.

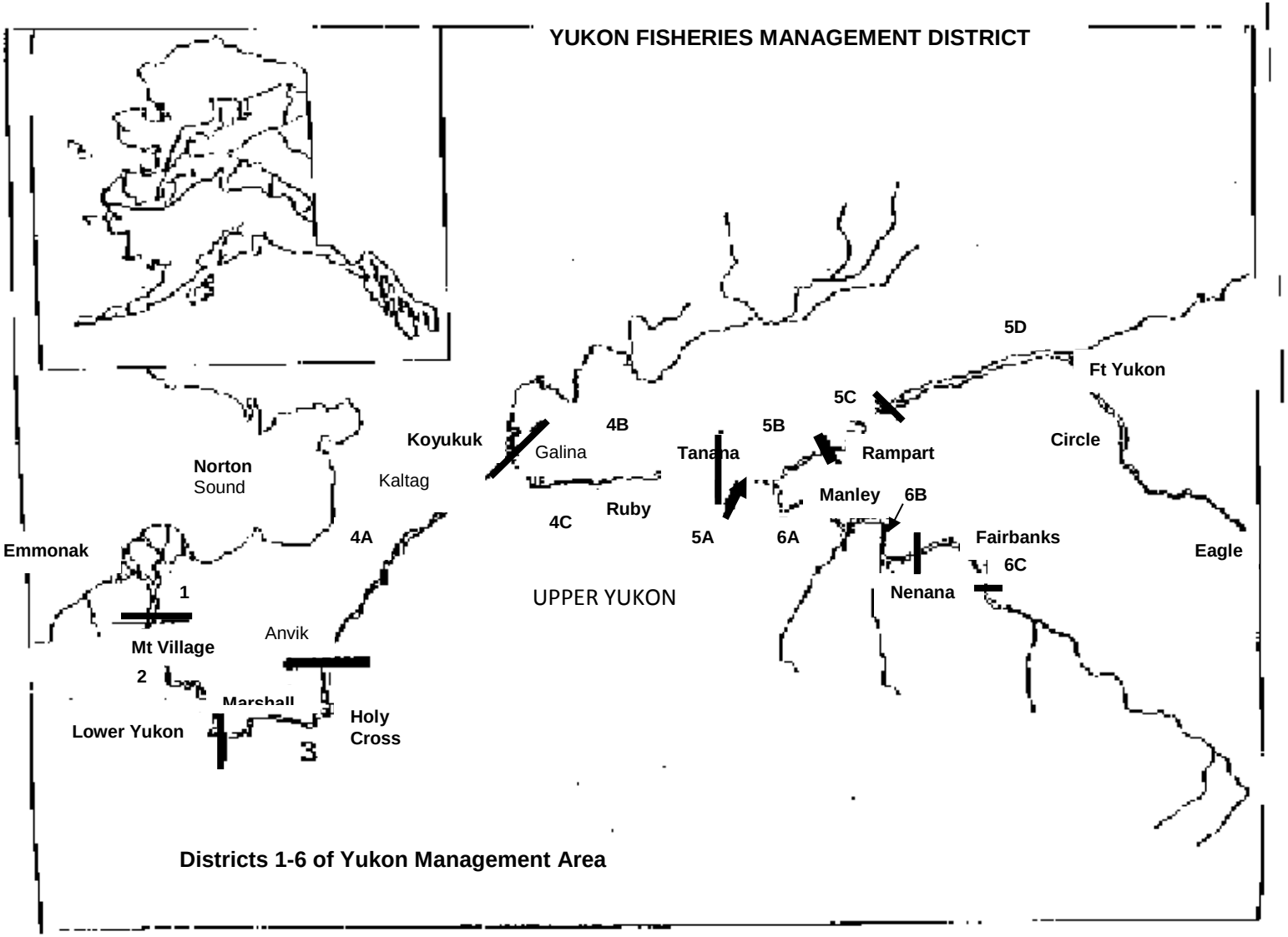
Commercial Fisheries Timing Interior Region

Lower Yukon (Districts 1,2, and 3)	
Chinook Salmon	Early June thru Late August
Chum Salmon	Early June thru Late August
Coho Salmon	Mid-July thru late August
Upper Yukon (District 4 & 5)	
Chinook Salmon	Late June thru End of July
Chum Salmon	Late June thru Early September
Coho Salmon	Late August thru Early September
Tanana River Drainage (District 6)	
Chinook Salmon	Early July thru Mid-August
Chum Salmon	Early July thru Late September
Coho Salmon	Early thru Late September

6. *Sport Fishing and Hunting*

ADF&G Game Management Units (GMU) located in the Interior Subarea are: GMU 20 A,B,C,D,E,& F; GMU 21 B,C,D, and a small part of A; GMU 24; and GMU 25 A,B,C, and D. The sport fishing areas located in the subarea are the Arctic Yukon Kuskokwim area and the Tanana River Drainage areas. The fishing and hunting seasons may vary in duration, may be restricted in certain locations and are subject to closure. Due to the overlapping of sport, commercial and subsistence hunting and fishing, these

activities take place year round. Hunting and Sport Fishing information may be found at the following web sites: www.adfg.alaska.gov/index.cfm?adfg=SportByAreaInterior.main and www.adfg.alaska.gov/index.cfm?adfg=hunting.main


YUKON FISHERIES MANAGEMENT DISTRICT
Norton
Sound
Koyukuk
Galina
Kaltag
4B
4C
Ruby
Tanana
5A
5B
6A
5C
Rampart
5D
Ft Yukon
Circle
Manley
6B
Fairbanks
6C
Nenana
Eagle
Emmonak
4A
1
Mt Village
2
Anvik
Marshall
Lower Yukon
3
Holy
Cross
UPPER YUKON
Districts 1-6 of Yukon Management Area

7. *Recreational Sites and Facilities*

Recreation Site	Location
State of Alaska Recreation Sites and Areas	
Big Delta State Historical Park	Mile 274.5, Richardson Highway
Birch Lake State Recreation Site	Mile 305.2, Richardson Higway
Chena River State Recreation Site	3530 Geraghty Ave, Fairbanks
Chena River State Recreation Area	Mile 26.6 to 50.5, Chena Hot Springs Road
Clearwater State Recreation Site	Clearwater Road
Delta State Recreation Site	Mile 267, Richardson Highway
Donnelly Creek State Recreation Area	Mile 238, Richardson Highway
Eagle Trail State Recreation Site	Mil 109.5, Tok Cut-Off Highway
Fielding Lake State Recreation Area	Mile 200.5, Richardson Highway
Harding Lake State Recration Area	Mile 323, Richardson Highway
Lower Chatanika State Recreation Area	Mile 11, Elliott Highway
Moon Lake State Recreation Site	Mile 1332, Alaska Highway
Quartz Lake State Recreation Area	Mile 277.8, Richardson Higway
Salcha River State Recreation Site	Mile 323.3, Richardson Highway
Tok River State Recreation Site	Mile 1309, Alaska Highway
Upper Chatanika River State Recreation Area	Mile 39, Steese Highway
Bureau of Land Management	
Coldfood Interagency Visitor Center	Mile 175, Dalton Highway
Marion Creek Campground	Mile 180, Dalton Highway
Arctic Circle Campground	Mile 115, Dalton Highway
Yukon River Visitor Contact Point	Mile 60, Dalton Highway
Cripple Creek Campground	Mile 60, Steese Highway
Eagle Campground	Mile 160, Taylor Highway
Walker Fork Campground	Mile 82, Taylor Highway
West Fork Campground	Mile 49, Taylor Highway
National Park Service	
Riley Creek Campground	Denali National Park
Visitor Access Center	Denali National Park
Denali Hotel, Train Depot & Visitor Center	Denali National Park
Savage River Campground	Denali National Park
Sanctuary Campground	Denali National Park
Teklanika Campground	Denali National Park
Igloo Creek Campground	Denali National Park
Polychrome Pass Wayside	Denali National Park
Stony Hill Wayside	Denali National Park
Eielson Visitor Center	Denali National Park
Wonder Lake Campground	Denali National Park
Gates of the Arctic National Park and Preserve	Bettles
Kanuti National Wildlife Refuge Visitor Center	Bettles

8. ***Commercial Tourism***

The travel to the Interior Subarea is dictated by seasonal changes most 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
Alaska Public Lands Information Center.....883-5667
Alaska Railroad Corporation.....265-2300 or 456-4155
City of Nenana.....832-5441
Delta Junction Chamber of Commerce.....895-5068
Fairbanks Convention and Visitors Bureau.....327-5774
Healy Chamber of Commerce.....683-4636

9. *Marinas and Ports*
(See the *Resources Section*)

10. *Fish Processing*
There are fish processing facilities in the communities of Kaltag, Galena, Manley Hot Springs, Nenana, Fairbanks, and Circle. Contact ADF&G for more information.

11. *Logging Facilities*
There are a variety of logging activities which take place in the Interior Subarea. These activities vary from season to season. More detailed information can be obtained from the ADNR, Division of Forestry at the following web site: www.forestry.alaska.gov/index.htm

12. *Water Intake and Use*
The following table was generated by the Alaska Department of Environmental Conservation (ADEC), Division of Environmental Health – Drinking Water Program. The table includes all regulated sources as well as community systems:

- Community & Non-Transient/Non-Community (Formerly referred to as Class A Water Systems)
- Transient/Non-Commnuity (Formerly referred to as Class B Water Systems)
- Non-Public (Formerly referred to as Class C Water Systems)

This list is best used when combined with the internet web application
www.dec.alaska.gov/eh/dw/DWP/protection_areas_map.html

Table key:
GW = Groundwater
GWP = Purchased Groundwater
SWP = Purchased Surface Water
GU = Groundwater Under the District Influence of Surface Water

Water Sources

System No.	Water System Name	Location	Source
AK2391265	A - FRAME SERVICE	Yukon - Koyukuk	
AK2391655	ALASKA BASICS	Yukon - Koyukuk	GW
AK2312643	ALASKA PANACHE	Yukon - Koyukuk	GW
AK2300816	ALLAKAKET PUBLIC WATER SYSTEM	Yukon - Koyukuk	GW
AK2280171	ANVIK WATER SYSTEM	Yukon - Koyukuk	GW
AK2300222	ARCTIC VILLAGE WATER SYSTEM	Yukon - Koyukuk	SW
AK2360230	BEAVER WATER SYSTEM	Yukon - Koyukuk	GW
AK2300581	BETTLES LODGE	Yukon - Koyukuk	GW
AK2300468	BIRCH CREEK VILLAGE	Yukon - Koyukuk	SW
AK2334255	BLM ARCTIC INTERAGENCY VISITOR CENTER	Yukon - Koyukuk	GW
AK2300719	BROOKS RANGE WILDERNESS TRIP	Yukon - Koyukuk	GW
AK2300345	CENTRAL CORNER	Yukon - Koyukuk	GW
AK2300183	CHALKYITSIK VILLAGE WATER	Yukon - Koyukuk	SW
AK2300109	CIRCLE HOT SPRINGS RESORT	Yukon - Koyukuk	
AK2391613	CLEAR AIR STATION - BLDG 106	Yukon - Koyukuk	
AK2391710	CLEAR AIR STATION - BLDG 800	Yukon - Koyukuk	GW
AK2390756	CLEAR AIR STATION - MAIN	Yukon - Koyukuk	GW

System No.	Water System Name	Location	Source
AK2390510	CLEAR TRAILER COURT	Yukon - Koyukuk	GW
AK2360735	DAINTY ISLAND FISHERIES	Yukon - Koyukuk	GW
AK2300612	EVANSVILLE CLINIC / COMM. HALL	Yukon - Koyukuk	GW
AK2390489	FIREWEED 288 ROADHOUSE	Yukon - Koyukuk	GW
AK2360256	FT. YUKON PUBLIC WATER SYSTEM	Yukon - Koyukuk	GU
AK2360272	GALENA WATER SYSTEM WTP-1	Yukon - Koyukuk	GW
AK2360638	GANA-A YOO APARTMENTS	Yukon - Koyukuk	GW
AK2311003	GEORGE HALL	Yukon - Koyukuk	GW
AK2280066	GRAYLING WATER SYSTEM	Yukon - Koyukuk	SW
AK2300620	H.C. COMPANY STORE	Yukon - Koyukuk	GW
AK2360565	HAROLDS AIR SERVICE/GALENA	Yukon - Koyukuk	GW
AK2300890	HOLLY HOLLOW CABINS	Yukon - Koyukuk	GW
AK2280074	HOLY CROSS WATER SYSTEM	Yukon - Koyukuk	GW
AK2280090	IASD BLACKWELL SCHOOL	Yukon - Koyukuk	GW
AK2280058	IASD INNOKO RIVER SCH SHAGELUK	Yukon - Koyukuk	GW
AK2270053	IASD LIME VILLAGE SCHOOL	Yukon - Koyukuk	GW
AK2280260	IASD TELIDA SCHOOL	Yukon - Koyukuk	GW
AK2280016	IASD TOP OF KUSKOKWIM NIKOLAI	Yukon - Koyukuk	GW
AK2360751	INTERIOR TRADING COMPANY	Yukon - Koyukuk	GW
AK2360214	KOYUKUK SAFEWATER FACILITY	Yukon - Koyukuk	GW
AK2300484	MANLEY COMMUNITY WATER SYSTEM	Yukon - Koyukuk	GW
AK2300010	MANLEY HANGER - DRINKING	Yukon - Koyukuk	SWP
AK2300028	MANLEY HOT SPRINGS (OLD)	Yukon - Koyukuk	GW
AK2300060	MANLEY HOT SPRINGS ROADHOUSE	Yukon - Koyukuk	GW
AK2300913	MANLEY VILLAGE	Yukon - Koyukuk	GW
AK2370715	MARION CREEK RANGER STATION	Yukon - Koyukuk	GW
AK2280155	MCGRATH WATER SYSTEM	Yukon - Koyukuk	SW
AK2300159	MINTO COMMUNITY WATER SYSTEM	Yukon - Koyukuk	GW
AK2390706	NENANA / OLD AKRR BLDG	Yukon - Koyukuk	GW
AK2390065	NENANA MUNICIPAL WATER	Yukon - Koyukuk	GW
AK2280236	NIKOLAI - WASHETERIA	Yukon - Koyukuk	GW
AK2280286	NIKOLAI BUNKHOUSE	Yukon - Koyukuk	GW
AK2300557	NPS - HOUSING / CHIEFS HOUSE	Yukon - Koyukuk	GW
AK2300515	NPS - VISITOR CENTER	Yukon - Koyukuk	GW
AK2300785	NPS - WELLHOUSE / NPS HOUSING	Yukon - Koyukuk	GW
AK2390112	PETERSON APARTMENTS	Yukon - Koyukuk	GW
AK2360816	RAMPART WASHETERIA	Yukon - Koyukuk	GW
AK2360345	RIVERSIDE INN	Yukon - Koyukuk	GW
AK2360654	RUBY HEADSTART SCHOOL	Yukon - Koyukuk	GW
AK2360484	RUBY MUNICIPAL BUILDING	Yukon - Koyukuk	GW
AK2360329	RUBY ROADHOUSE	Yukon - Koyukuk	GW
AK2280040	SHAGELUK WATER SYSTEM	Yukon - Koyukuk	GW
AK2390243	SKINNY DICKS HALFWAY INN	Yukon - Koyukuk	GW
AK2300701	SOURDOUGH OUTFITTERS	Yukon - Koyukuk	GW
AK2391184	STEVENS FISHERIES	Yukon - Koyukuk	GW
AK2360442	STEVENS VILLAGE WATER SYSTEM	Yukon - Koyukuk	GW
AK2280163	TAKOTNA WATER SYSTEM	Yukon - Koyukuk	SW
AK2360395	TANANA TRIBAL COUNCIL	Yukon - Koyukuk	GW
AK2391461	TATLANIKA TRADING / RV PK.	Yukon - Koyukuk	GW

System No.	Water System Name	Location	Source
AK2360109	TOO'GHA INC - IN TANANA	Yukon - Koyukuk	SW
AK2280105	USAF TATALINA	Yukon - Koyukuk	GW
AK2300248	VENETIE WATER SYSTEM	Yukon - Koyukuk	GU
AK2310609	WOODLAND PARK APARTMENTS	Yukon - Koyukuk	GW
AK2300442	YFSD - FAR NORTH SCHOOL	Yukon - Koyukuk	GW
AK2300206	YKSD - ALLAKAKET SCHOOL	Yukon - Koyukuk	GU
AK2300044	YKSD - MANLEY H.S. SCH.	Yukon - Koyukuk	GW
AK2360248	YKSD - MERRELINE KANGAS / RUBY	Yukon - Koyukuk	GW
AK2360468	YUKON RIVER RESTAURANT	Yukon - Koyukuk	GW
AK2381333	AK DIV OF FORESTRY / FIRE WELL	Southeast Fairbanks	GW
AK2381325	AK DIV OF FORESTRY / OFFICE	Southeast Fairbanks	GW
AK2372499	AK DIV PARKS - BIRCH LAKE	Southeast Fairbanks	GW
AK2372017	AK DIV PARKS - RIKAS PAVILION	Southeast Fairbanks	GW
AK2380191	AK GATEWAY SD - DOT LAKE SCH.	Southeast Fairbanks	GW
AK2380303	AK GATEWAY SD - NORTHWAY SCH	Southeast Fairbanks	GW
AK2380913	AK GATEWAY SD - TOK SCHOOL FLD	Southeast Fairbanks	GW
AK2380785	AK POWER & TELEPHONE/WELL #1	Southeast Fairbanks	GW
AK2381456	AK POWER & TELEPHONE/WELL #2	Southeast Fairbanks	GW
AK2381846	AK POWER & TELEPHONE/WELL #3	Southeast Fairbanks	GW
AK2370594	ALASKAN STEAKHOUSE & MOTEL	Southeast Fairbanks	GW
AK2381985	ALASKAN STOVES CAMPGROUND	Southeast Fairbanks	GW
AK2381650	BEAVER FEVER CAFE	Southeast Fairbanks	GW
AK2370057	BIG D BAR	Southeast Fairbanks	GW
AK2381024	BLM - CHICKEN FIELD FACILITY	Southeast Fairbanks	
AK2360418	BLM - EAGLE CAMPGROUND	Southeast Fairbanks	
AK2381919	BLM - TOK FIELD STATION	Southeast Fairbanks	GW
AK2381317	BLM - WALKER FK CMPG - TRAILER	Southeast Fairbanks	
AK2381252	BLM - WEST FORK CMPG	Southeast Fairbanks	GWP
AK2371702	BUFFALO CENTER DRIVE-IN	Southeast Fairbanks	GW
AK2381244	BULLSHOOTER RV PARK	Southeast Fairbanks	GW
AK2381529	BURNHAM SHOP BLDG	Southeast Fairbanks	GW
AK2381642	CHISANA VIEW LOUNGE	Southeast Fairbanks	GW
AK2380044	CONRAD WATER SYSTEM	Southeast Fairbanks	GW
AK2381163	CROZIER BUS BARN	Southeast Fairbanks	GW
AK2371590	DELTA CITY HALL & LIBRARY	Southeast Fairbanks	GW
AK2371037	DELTA COMM. CENTER / SENIORS	Southeast Fairbanks	GW
AK2372693	DELTA COMMUNITY LIBRARY	Southeast Fairbanks	GW
AK2372669	DELTA INDUSTRIAL SERV WELL B	Southeast Fairbanks	GW
AK2372790	DELTA INDUSTRIAL SERVICES WELL A	Southeast Fairbanks	GW
AK2372758	DELTA INDUSTRIAL SERVICES WELL C	Southeast Fairbanks	GW
AK2372839	DELTA JUNCTION ICE RINK	Southeast Fairbanks	GW
AK2372716	DELTA JUNCTION IGA	Southeast Fairbanks	GW
AK2371299	DELTA VISITORS CENTER	Southeast Fairbanks	GW
AK2371689	DELTA/CLEARWATER MOOSE LDG 911	Southeast Fairbanks	GW
AK2372677	DGSD - DELTA ELEMENTARY SCHOOL	Southeast Fairbanks	GW
AK2370146	DGSD - DELTA SCHOOL	Southeast Fairbanks	GW
AK2372261	DGSD - DELTA SCHOOL/VOC ED	Southeast Fairbanks	GW
AK2372897	DIAMOND WILLOW INN	Southeast Fairbanks	GW
AK2380620	DOT & PF TOK COMBINED FACILITY	Southeast Fairbanks	GW

System No.	Water System Name	Location	Source
AK2380866	DOT LAKE COMMUNITY HALL	Southeast Fairbanks	GW
AK2380604	DOT LAKE WATER UTILITY	Southeast Fairbanks	GW
AK2380688	DOWNTOWN CHICKEN	Southeast Fairbanks	SW
AK2360599	EAGLE TRADING COMPANY	Southeast Fairbanks	GW
AK2372279	EAGLES RIDGE / CHURCH BLDG.	Southeast Fairbanks	GW
AK2381260	FAST EDDYS RESTAURANT	Southeast Fairbanks	GW
AK2372588	FLUOR OFFICE COMPLEX / FT. GREELY	Southeast Fairbanks	GW
AK2300000	FORT GREELY - INTERIM STAGING BASE (ISB)	Southeast Fairbanks	
AK2372855	FT WAINWRIGHT / DU - BAX	Southeast Fairbanks	GW
AK2370667	FT WAINWRIGHT / DU - BLACK RAPIDS	Southeast Fairbanks	GW
AK2372025	FT WAINWRIGHT / DU - BOLIO LK	Southeast Fairbanks	GW
AK2372863	FT WAINWRIGHT / DU - ISB	Southeast Fairbanks	GW
AK2370780	FT. GREELY - MAIN POST	Southeast Fairbanks	GW
AK2372805	FT. GREELY - VEHICLE INSPEC./GATE ENTRY	Southeast Fairbanks	GW
AK2370798	FT. GREELY / DU - ALLEN ARMY AIRFIELD	Southeast Fairbanks	GW
AK2380963	GOLDEN BEAR CAMPER PARK	Southeast Fairbanks	GW
AK2380028	GOLDEN BEAR MOTEL	Southeast Fairbanks	GW
AK2381278	GRIZZLY AUTO REPAIR	Southeast Fairbanks	GW
AK2372782	HARD WOK CAFE	Southeast Fairbanks	GW
AK2381032	HOFFMAN OFFICE COMPLEX	Southeast Fairbanks	GW
AK2381448	INTERIOR VIDEO	Southeast Fairbanks	GW
AK2370251	KELLYS COUNTRY INN	Southeast Fairbanks	GW
AK2370879	LARRYS APARTMENTS	Southeast Fairbanks	GW
AK2381406	LDS CHURCH / DELTA	Southeast Fairbanks	GW
AK2380329	LIVING WORD MINISTRY	Southeast Fairbanks	GW
AK2381202	MAINSTREAM MOTEL	Southeast Fairbanks	GW
AK2381040	MENTASTA VILLAGE CLINIC	Southeast Fairbanks	GW
AK2371435	MT HAYES COMMERCIAL COMPLEX	Southeast Fairbanks	GW
AK2381139	MUKLUK LAND	Southeast Fairbanks	GW
AK2381016	NAABIA NIIGN NORTHWAY	Southeast Fairbanks	GW
AK2380272	NORTH STAR CHILDRENS HOME INC	Southeast Fairbanks	GW
AK2381561	NORTHERN ENERGY CORP.	Southeast Fairbanks	GW
AK2380793	NORTHSTAR C.H.COUNSELOR TRLRS.	Southeast Fairbanks	GW
AK2380735	NORTHWAY COMMUNITY HALL	Southeast Fairbanks	GW
AK2380719	NORTHWAY NAABIA NIIGN APT.	Southeast Fairbanks	GW
AK2380264	NORTHWAY NATIVE CORP. BLDG.	Southeast Fairbanks	GW
AK2381422	NORTHWAY WASHETERIA/CLINIC	Southeast Fairbanks	GW
AK2360581	NPS - YUKON CHARLY RIVERS N.P.	Southeast Fairbanks	GW
AK2381391	PAMS CUTS AND CURLS	Southeast Fairbanks	GW
AK2371540	PIZZA BELLA	Southeast Fairbanks	GW
AK2372685	POGO PERMANENT CAMP	Southeast Fairbanks	GU
AK2372952	QUALITY CARE CENTER OF DELTA ALH	Southeast Fairbanks	GW
AK2381309	RAMPONI HANGER	Southeast Fairbanks	GW
AK2381870	ROASTED ROOSTER	Southeast Fairbanks	SW
AK2371087	SAWMILL CREEK LODGE	Southeast Fairbanks	GW
AK2381707	SCOTTY CREEK RV PARK	Southeast Fairbanks	GW
AK2381715	SEVENTH DAY ADV. CH./SCHOOL	Southeast Fairbanks	GW
AK2380858	SHEN BIBLE CAMP	Southeast Fairbanks	GW
AK2370829	SMITHS GREEN ACRES MH PARK	Southeast Fairbanks	GW

System No.	Water System Name	Location	Source
AK2380599	SNOWSHOE MOTEL/GIFT	Southeast Fairbanks	GW
AK2380387	SOURDOUGH CAMPGROUND / RV PARK	Southeast Fairbanks	GW
AK2380531	TANACROSS WATER SYSTEM	Southeast Fairbanks	GW
AK2372148	TANANA TRADING POST	Southeast Fairbanks	GW
AK2372887	TASTE OF EUROPE	Southeast Fairbanks	GW
AK2382004	TETLIN NWR - LAKEVIEW CAMPGROUND	Southeast Fairbanks	GW
AK2380638	TETLIN UTILITY SYSTEM	Southeast Fairbanks	GW
AK2371605	THE CHURCH AT DELTA	Southeast Fairbanks	GW
AK2381943	THE GOLDPANNER	Southeast Fairbanks	SW
AK2381082	THREE BEARS #10	Southeast Fairbanks	GW
AK2372936	TIMBERCREST DENTAL CLINIC	Southeast Fairbanks	GW
AK2381430	TOK BAPTIST CHURCH	Southeast Fairbanks	GW
AK2381668	TOK CIVIC CENTER	Southeast Fairbanks	GW
AK2381189	TOK COMMUNITY CLINIC	Southeast Fairbanks	GW
AK2380662	TOK COURT HOUSE	Southeast Fairbanks	GW
AK2380921	TOK DNR FIRE FACILITY	Southeast Fairbanks	GW
AK2380743	TOK DOG MUSHERS ASSOC.	Southeast Fairbanks	GW
AK2380890	TOK FIRE STATION	Southeast Fairbanks	GW
AK2380824	TOK GENERAL STORE	Southeast Fairbanks	GW
AK2381147	TOK LIQUOR & MINI MART	Southeast Fairbanks	GW
AK2380882	TOK LODGE MOTEL	Southeast Fairbanks	GW
AK2380939	TOK POST OFFICE (NEW)	Southeast Fairbanks	GW
AK2381105	TOK R.V. VILLAGE	Southeast Fairbanks	GW
AK2370471	TROPHY LODGE	Southeast Fairbanks	GW
AK2381008	TUNDRA LODGE - LAUNDROMAT/RV	Southeast Fairbanks	GW
AK2381066	U S CUSTOMS - POKER CREEK	Southeast Fairbanks	GW
AK2380646	UAF TOK CENTER	Southeast Fairbanks	GW
AK2381634	USCG - TOK LORAN / 4 PLEX	Southeast Fairbanks	GW
AK2381626	USCG - TOK LORAN / DUPLEX	Southeast Fairbanks	GW
AK2380565	USCG - TOK LORAN C STATION	Southeast Fairbanks	GW
AK2381862	USF&W TETLIN SUMMER HOUSING	Southeast Fairbanks	GW
AK2381341	USF&W TETLIN VISITOR CTR.	Southeast Fairbanks	GW
AK2380078	UTDC BUILDING	Southeast Fairbanks	GW
AK2380751	VFW POST 9889	Southeast Fairbanks	GW
AK2372075	WF / LIVING WORD TABERNACLE	Southeast Fairbanks	GW
AK2372198	WF / LIVING WORD TRAINING CTR	Southeast Fairbanks	GW
AK2380183	YOUNGS HOTEL/SHAMROCK HARDWARE	Southeast Fairbanks	GW
AK2313704	11 MILE GROCERY	Fairbanks North Star	GW
AK2314124	12 MILE ROADHOUSE	Fairbanks North Star	GWP
AK2311998	2490 MISSION / FAITH LANE LLC	Fairbanks North Star	GW
AK2311980	3152 WYATT / FAITH LANE, LLC	Fairbanks North Star	GW
AK2314344	A TASTE OF ALASKA LODGE	Fairbanks North Star	GW
AK2313136	AK DIV PARKS - ANGEL ROCK SRA	Fairbanks North Star	GW
AK2370112	AK DIV PARKS - CLEARWATER SRS	Fairbanks North Star	GW
AK2313128	AK DIV PARKS - COLO CRK TRAIL	Fairbanks North Star	GW
AK2370120	AK DIV PARKS - DELTA SRS	Fairbanks North Star	GW
AK2371508	AK DIV PARKS - DONELLY CK SRS	Fairbanks North Star	GW
AK2380167	AK DIV PARKS - EAGLE TRAIL SRS	Fairbanks North Star	GW
AK2310332	AK DIV PARKS - HARDING LK CG	Fairbanks North Star	GW

System No.	Water System Name	Location	Source
AK2313092	AK DIV PARKS - HARDING SRA ENT	Fairbanks North Star	GW
AK2311875	AK DIV PARKS - L. CHENA DOME	Fairbanks North Star	GW
AK2372131	AK DIV PARKS - LOST LAKE WELL	Fairbanks North Star	GW
AK2313893	AK DIV PARKS - MAINT. COMPOUND	Fairbanks North Star	GWP
AK2381058	AK DIV PARKS - MOON LAKE SRS	Fairbanks North Star	GW
AK2372033	AK DIV PARKS - QUARTZ LK NEW	Fairbanks North Star	GW
AK2311215	AK DIV PARKS - RED SQUIRREL CG	Fairbanks North Star	GW
AK2371516	AK DIV PARKS - RIKAS ROADHOUSE	Fairbanks North Star	GW
AK2310293	AK DIV PARKS - ROSEHIP CG.	Fairbanks North Star	GW
AK2370382	AK DIV PARKS - SALCHA R. SRS	Fairbanks North Star	GW
AK2380484	AK DIV PARKS - TOK RIVER SRS	Fairbanks North Star	GW
AK2311558	AK DIV PARKS - TORS CMGR.	Fairbanks North Star	GW
AK2311689	AK DIV PARKS - TWIN BEARS	Fairbanks North Star	GW
AK2310112	AK DIV PARKS - UP CHATANIKA R	Fairbanks North Star	GW
AK2311427	AK FISH & GAME - CREAMERS FLD	Fairbanks North Star	GW
AK2314679	AK RIVERWAYS / CHENA VILLAGE	Fairbanks North Star	GW
AK2371134	ALASCOM	Fairbanks North Star	GW
AK2310586	ALASKA DOG MUSHERS ASSOCIATION	Fairbanks North Star	GW
AK2313039	ALASKA FISH & FARM PRODUCTS	Fairbanks North Star	GW
AK2312368	ALASKA GOLD CO.- FAIRBANKS	Fairbanks North Star	GW
AK2312546	ALTROAL CONTROLS	Fairbanks North Star	GW
AK2333788	ALYESKA 5 MILE WELL/SPRING	Fairbanks North Star	GW
AK2320751	ALYESKA MCCF #2 CAMP	Fairbanks North Star	GW
AK2312863	ALYESKA NORDALE YARD	Fairbanks North Star	
AK2293008	ALYESKA PIPELINE PS #11	Fairbanks North Star	GWP
AK2320036	ALYESKA PS 4 PERM	Fairbanks North Star	GW
AK2350023	ALYESKA PS 5 PERM	Fairbanks North Star	GW
AK2360727	ALYESKA PS 6 FLY CAMP	Fairbanks North Star	GW
AK2360036	ALYESKA PS 6 PERM	Fairbanks North Star	GW
AK2300303	ALYESKA PS 7 PERM	Fairbanks North Star	GW
AK2370691	ALYESKA PS 9 PERMANENT	Fairbanks North Star	GW
AK2310015	ANGEL CREEK TRADING POST	Fairbanks North Star	GW
AK2310023	ARCTIC ACRES TRAILER COURT	Fairbanks North Star	GW
AK2300599	ARCTIC CIRCLE TRADING POST	Fairbanks North Star	GW
AK2314645	AURORA BOREALIS CHALETS	Fairbanks North Star	
AK2314970	AUSTIN SD BLK A LOTS 17 & 18	Fairbanks North Star	GW
AK2314851	AUSTIN SUBDIVISION, BLOCK 1, LOTS 6 - 9	Fairbanks North Star	GW
AK2314843	AUSTIN SUBDIVISION, BLOCK B LOTS 6&7	Fairbanks North Star	GW
AK2313241	AVIS CAR RENTAL	Fairbanks North Star	GW
AK2311184	BADGER DEN	Fairbanks North Star	GW
AK2314221	BADGER GAS / STORE	Fairbanks North Star	GW
AK2310641	BADGER MOBILE HOME PARK	Fairbanks North Star	GW
AK2313013	BADGER RD. DELI / GEORGEOS	Fairbanks North Star	GW
AK2315146	BADGER ROAD BAPTIST CHURCH	Fairbanks North Star	GW
AK2312994	BADGER ROAD DELI	Fairbanks North Star	GW
AK2310049	BANANA BELT WATER WORKS	Fairbanks North Star	GW
AK2310057	BARNETT APARTMENTS	Fairbanks North Star	GW
AK2314580	BEAR RUN APARTMENTS	Fairbanks North Star	GW
AK2312457	BEAVER LK RESORT / 2521 OUTSIDE BLVD.	Fairbanks North Star	GW

System No.	Water System Name	Location	Source
AK2312504	BEAVER LK. RESORT 2545/2555 MISSION	Fairbanks North Star	GW
AK2311574	BEN LOMAND CONST. (EAST WELL)	Fairbanks North Star	GW
AK2312554	BEN LOMAND CONST. (WEST WELL)	Fairbanks North Star	GW
AK2310099	BINGLE MEMORIAL CAMP	Fairbanks North Star	GW
AK2310837	BIRCHVIEW PROPERTIES	Fairbanks North Star	GW
AK2300662	BLM - CENTRAL FIELD STATION	Fairbanks North Star	GW
AK2313021	BLM - CRIPPLE CREEK CG	Fairbanks North Star	GW
AK2334263	BLM - MARION CREEK CAMPGROUND	Fairbanks North Star	GW
AK2314263	BLM - OPHIR CRK CG / E.WELL #2	Fairbanks North Star	GW
AK2314255	BLM - OPHIR CRK CG / W.WELL #1	Fairbanks North Star	GW
AK2312384	BLOOM ENTERPRISES	Fairbanks North Star	GW
AK2315308	BOATNER, SANDRA L	Fairbanks North Star	GW
AK2370586	BOON DOX BAR & LIQUOR STORE	Fairbanks North Star	GW
AK2380311	BOUNDARY LODGE	Fairbanks North Star	GW
AK2311922	BOWERS OFFICE SUPPLY - OLD	Fairbanks North Star	GW
AK2313754	BRADWAY APARTMENTS	Fairbanks North Star	GW
AK2314603	BUETOW DENTAL CLINIC	Fairbanks North Star	GW
AK2310950	CALLCRAFT APARTMENTS	Fairbanks North Star	GW
AK2310976	CAMP LI - WA	Fairbanks North Star	GW
AK2310081	CHATANIKA GOLD CAMP	Fairbanks North Star	GW
AK2310146	CHENA HOT SPRINGS RESORT	Fairbanks North Star	GW
AK2371817	CHENA LAKES / WELL #1	Fairbanks North Star	GW
AK2371922	CHENA LAKES / WELL #12	Fairbanks North Star	GW
AK2371930	CHENA LAKES / WELL #13	Fairbanks North Star	GW
AK2371948	CHENA LAKES / WELL #14	Fairbanks North Star	GW
AK2371956	CHENA LAKES / WELL #15	Fairbanks North Star	GW
AK2371841	CHENA LAKES / WELL #4	Fairbanks North Star	GW
AK2371867	CHENA LAKES / WELL #6	Fairbanks North Star	GW
AK2371883	CHENA LAKES / WELL #8	Fairbanks North Star	
AK2371891	CHENA LAKES / WELL #9	Fairbanks North Star	GW
AK2372847	CHENA LAKES RA SHOWERS	Fairbanks North Star	GW
AK2314433	CHENA MARINA II	Fairbanks North Star	GW
AK2313291	CHENA MARINA RV PARK	Fairbanks North Star	GW
AK2311435	CHENA RIVER FLOOD CONTROL	Fairbanks North Star	GW
AK2315227	COLD CLIMATE HOUSING CENTER	Fairbanks North Star	GWP
AK2310900	COLLEGE UTILITIES CORPORATION	Fairbanks North Star	GWP
AK2311639	COLONIAL PLAZA	Fairbanks North Star	GW
AK2314475	CROSS ROADS BAPTIST CHURCH	Fairbanks North Star	GW
AK2311833	CURRYS CORNER	Fairbanks North Star	GW
AK2312245	DALE BRIMMER DUPLEX	Fairbanks North Star	GW
AK2370900	DELTA JCT. COMB. FACILITY	Fairbanks North Star	GW
AK2312601	DOOR OF HOPE CHURCH	Fairbanks North Star	GWP
AK2311150	DOOR OF HOPE TRAINING CENTER	Fairbanks North Star	GWP
AK2371728	DOT & PF BIRCH LAKE CAMP	Fairbanks North Star	GW
AK2391045	DOT & PF CANTWELL	Fairbanks North Star	GW
AK2300743	DOT & PF CENTRAL	Fairbanks North Star	GW
AK2370837	DOT & PF DELTA JCT. HWY CMP	Fairbanks North Star	GW
AK2300329	DOT & PF ELLIOT SPRING MP31	Fairbanks North Star	GW
AK2310277	DOT & PF FOX WATERING POINT	Fairbanks North Star	GW

System No.	Water System Name	Location	Source
AK2300361	DOT & PF LIVENGOOD MAINT CMP	Fairbanks North Star	GW
AK2300086	DOT & PF MANLEY HOT SPRINGS	Fairbanks North Star	GW
AK2300751	DOT & PF MONTANA CREEK	Fairbanks North Star	GW
AK2370942	DOT & PF PAXSON EMP. HOUSING	Fairbanks North Star	GW
AK2380769	DOT & PF SLANA MAINT. CAMP	Fairbanks North Star	GW
AK2312350	DOT & PF SPRING BEFORE EAGLE	Fairbanks North Star	SW
AK2371566	DOT & PF SPRING MP195 RICH.	Fairbanks North Star	SW
AK2380612	DOT & PF TOK HWY MAINT CAMP	Fairbanks North Star	GW
AK2371176	DOT & PF TRIMMS CAMP	Fairbanks North Star	GW
AK2360303	DOTPF 7 MILE CAMP	Fairbanks North Star	GW
AK2350112	DOTPF CHANDALAR	Fairbanks North Star	GW
AK2350065	DOTPF COLDFOOT	Fairbanks North Star	GW
AK2300280	DOTPF JIM RIVER CAMP	Fairbanks North Star	GW
AK2350138	DOTPF SAG RIVER CAMP	Fairbanks North Star	SW
AK2372766	EAFB VISITORS CENTER/PASS ID FACILITY	Fairbanks North Star	GW
AK2372245	EIELSON - BIRCH LAKE RECREATION AREA	Fairbanks North Star	GW
AK2372596	EIELSON - ENG. HILL - LOWER	Fairbanks North Star	GWP
AK2371231	EIELSON - ENGINEER HILL	Fairbanks North Star	GWP
AK2371184	EIELSON - SKI LODGE	Fairbanks North Star	GW
AK2311613	EL DORADO GOLD MINE	Fairbanks North Star	GW
AK2370031	ELFS DEN	Fairbanks North Star	GW
AK2313932	ENVIRONMENTAL SYSTEMS, INC.	Fairbanks North Star	GW
AK2334047	ERA HELICOPTER, INC.	Fairbanks North Star	SWP
AK2310201	ESTER WELL	Fairbanks North Star	GW
AK2391427	FAA - LAKE MINCHUMINA	Fairbanks North Star	GW
AK2220333	FAA BIG LAKE FACILITY	Fairbanks North Star	GW
AK2291546	FAA CAPE YAKATAGA	Fairbanks North Star	SW
AK2291839	FAA CORDOVA BACKUP WELL	Fairbanks North Star	GW
AK2299074	FAA CORDOVA FSS WELL	Fairbanks North Star	
AK2298929	FAA HINCHINBROOK IS./STRAWBERR	Fairbanks North Star	GU
AK2291936	FAA HINCHINBROOK ISLAND JOHNS	Fairbanks North Star	GW
AK2291928	FAA MIDDLETON ISLAND	Fairbanks North Star	GW
AK2220325	FAA TALKEETNA FSS	Fairbanks North Star	GW
AK2311451	FAIRBANKS AIRPORT CAMPGROUND	Fairbanks North Star	GW
AK2314378	FAIRBANKS CHRISTIAN CENTER	Fairbanks North Star	GWP
AK2313788	FAIRBANKS GOLF COURSE	Fairbanks North Star	GWP
AK2312693	FAIRHILL COMMUNITY CHURCH	Fairbanks North Star	GW
AK2313005	FARMERS LOOP MARKET	Fairbanks North Star	GW
AK2314352	FBKS NATURAL GAS / DONALD AVE	Fairbanks North Star	GW
AK2312067	FNA - TRANSITIONAL LIVING	Fairbanks North Star	GW
AK2313851	FNA / THE HEALING PLACE	Fairbanks North Star	GW
AK2315049	FNSB BIRCH HILL SKI LODGE	Fairbanks North Star	GW
AK2312164	FNSB BIRCH HILL WARMUP BUILDING	Fairbanks North Star	GW
AK2371265	FNSB SD - BADGER RD ELEM	Fairbanks North Star	GWP
AK2311419	FNSB SD - PEARL CREEK SCHOOL	Fairbanks North Star	GWP
AK2370374	FNSB SD - SALCHA ELEM. SCHOOL	Fairbanks North Star	GWP
AK2310578	FNSB SD - TWO RIVERS ELEM.	Fairbanks North Star	GWP
AK2310251	FNSB SD - WELLER ELEMENTARY	Fairbanks North Star	GWP
AK2314093	FORT KNOX MINE	Fairbanks North Star	GWP

System No.	Water System Name	Location	Source
AK2312083	FOX GENERAL STORE	Fairbanks North Star	GW
AK2310269	FOX ROADHOUSE - HAULED WATER	Fairbanks North Star	GW
AK2314815	FOX ROADHOUSE - WELL	Fairbanks North Star	GW
AK2310918	FT WAINWRIGHT - MAIN POST	Fairbanks North Star	GW
AK2311095	FT WAINWRIGHT / DU - GOLF CLUB WELL	Fairbanks North Star	GW
AK2314750	FT WAINWRIGHT / GOLF MAINT. SHOP	Fairbanks North Star	GW
AK2311087	FT WAINWRIGHT / SKI LODGE	Fairbanks North Star	GWP
AK2334132	GGS-480	Fairbanks North Star	SW
AK2312782	GHEMM CO.	Fairbanks North Star	GW
AK2313908	GILMORE APARTMENTS	Fairbanks North Star	GW
AK2314877	GOLD COUNTRY ESTATES I	Fairbanks North Star	GW
AK2311786	GOLD DREDGE #8	Fairbanks North Star	GWP
AK2310471	GOLDEN EAGLE SALOON	Fairbanks North Star	GW
AK2310730	GOLDEN HEART UTILITIES	Fairbanks North Star	GW
AK2315099	GOLDHILL STORE	Fairbanks North Star	GW
AK2314946	GOLDSTREAM STORE / LAUNDRY	Fairbanks North Star	GW
AK2312986	GOLDSTREAM VALLEY MONTESSORI	Fairbanks North Star	GW
AK2315235	GOLDSTREAM WATER	Fairbanks North Star	GWP
AK2315400	GRAF RHEENEERHAAJII	Fairbanks North Star	GW
AK2314598	GREAT WESTERN CHEMICAL	Fairbanks North Star	GW
AK2311867	GREER TANK & WELDING	Fairbanks North Star	GW
AK2314360	GRIZZLY LODGE	Fairbanks North Star	GW
AK2371671	GVEA - DELTA JUNCTION	Fairbanks North Star	GW
AK2391134	GVEA - HEALY POWER PLANT	Fairbanks North Star	GW
AK2312318	GVEA - NORTH POLE	Fairbanks North Star	GW
AK2314653	H2O-2U / WATER WAGON	Fairbanks North Star	GWP
AK2390992	HEALY LAKE COMMUNITY SYSTEM	Fairbanks North Star	GW
AK2315382	HEZ RAY SPORTS COMPLEX	Fairbanks North Star	GW
AK2315366	HOT SPRINGS GAS AND CONVENIENCE STORE	Fairbanks North Star	GW
AK2310366	HOWLING DOG SALOON	Fairbanks North Star	GWP
AK2312952	INDOOR PARK PROPERTIES	Fairbanks North Star	GWP
AK2312106	INDUSTRIAL MACHINE INC.	Fairbanks North Star	GW
AK2311540	INTERIOR ENERGY/MAIN OFF. BLDG	Fairbanks North Star	GW
AK2314394	INTO THE WOODS BOOKSHOP	Fairbanks North Star	GW
AK2310374	IVORY JACKS	Fairbanks North Star	GW
AK2311134	KANTOLA PARK AND APARTMENTS	Fairbanks North Star	GW
AK2372229	KELLYS KITCHEN	Fairbanks North Star	GW
AK2312889	KIMI APARTMENTS	Fairbanks North Star	GW
AK2312774	KING CAB	Fairbanks North Star	GW
AK2371760	KNOTTY SHOP LLC	Fairbanks North Star	GW
AK2314166	KNOX RETREAT CENTER	Fairbanks North Star	GW
AK2310390	LAKEVIEW TERRACE TRAILER CRT.	Fairbanks North Star	GW
AK2372740	LAZY MOOSE RV PARK	Fairbanks North Star	GW
AK2391736	LDS / DENALI CHAPEL	Fairbanks North Star	GW
AK2372407	LDS / SALCHA CHAPEL	Fairbanks North Star	GW
AK2312253	LDS / STEESE CHAPEL	Fairbanks North Star	GW
AK2315316	LET US CARE	Fairbanks North Star	GW
AK2313924	LIONS YOUTH CAMP	Fairbanks North Star	GW
AK2315251	LITTLE RICHARDS FAMILY DINER	Fairbanks North Star	GWP

System No.	Water System Name	Location	Source
AK2360337	LONG CREEK RV/SNACK SHACK	Fairbanks North Star	GW
AK2370277	LOST LAKE BOY SCOUT CAMP	Fairbanks North Star	GW
AK2314742	MAHLER - WEST COMMUNITY WELL	Fairbanks North Star	GW
AK2371621	MAMA CS MOOSE CREEK KITCHEN	Fairbanks North Star	GWP
AK2312300	MAPCO -TRUCK RACK CONTROL BLDG	Fairbanks North Star	GW
AK2314217	MAPCO CRUDE III OFFICE	Fairbanks North Star	GW
AK2310748	MCGRATH RD BAPTIST CHURCH	Fairbanks North Star	GWP
AK2311281	MIRACLE MILE LODGE	Fairbanks North Star	GW
AK2312708	MOBAT TIRE	Fairbanks North Star	GW
AK2314108	MOCHA DANS	Fairbanks North Star	GWP
AK2370552	MOOSE CREEK APARTMENTS	Fairbanks North Star	GW
AK2371312	MOOSE CREEK FIRE STATION	Fairbanks North Star	GW
AK2370308	MOOSE CREEK LODGE	Fairbanks North Star	GW
AK2313869	MOOSE MOUNTAIN	Fairbanks North Star	GW
AK2314491	MT. AURORA FBKS. CRK. CAMP	Fairbanks North Star	GW
AK2372813	NEW HOPE CHURCH / NP	Fairbanks North Star	GW
AK2311493	NEWBY APARTMENTS	Fairbanks North Star	GW
AK2310421	NOAA / NESDIS CDA STATION	Fairbanks North Star	GW
AK2314726	NOAA DATA STATION	Fairbanks North Star	GW
AK2313186	NOAA/VLB WELL	Fairbanks North Star	GW
AK2315332	NORTH POLE CHRISTIAN SCHOOL	Fairbanks North Star	
AK2312334	NORTH POLE GRANGE	Fairbanks North Star	GW
AK2310447	NORTH POLE SPEEDWAY INN	Fairbanks North Star	GW
AK2310675	NORTH POLE UTILITIES	Fairbanks North Star	GW
AK2313063	NORTH STAR ALLIANCE CHURCH	Fairbanks North Star	GW
AK2313796	NORTH STAR GOLF CLUB	Fairbanks North Star	GW
AK2372908	NORTHERN RAIL EXTENSION DAY CAMP	Fairbanks North Star	GW
AK2311037	NORTHLAND WOOD PRODUCTS	Fairbanks North Star	GW
AK2310942	NORTHSTAR CENTER	Fairbanks North Star	GW
AK2311142	ODAY TRAILER COURT	Fairbanks North Star	GW
AK2300735	PATTY APARTMENTS	Fairbanks North Star	GW
AK2310633	PEACEFUL MEADOWS MHP	Fairbanks North Star	GW
AK2315269	PHH BIAS HOUSE	Fairbanks North Star	GW
AK2315277	PHH CHENA HOT SPRINGS RD FARM	Fairbanks North Star	GW
AK2315285	PHH NORDIN HOUSE	Fairbanks North Star	GW
AK2315293	PHH SILVERBERRY HOUSE	Fairbanks North Star	GW
AK2310714	PIONEER WELLS	Fairbanks North Star	GW
AK2312156	PIONEER WELLS AT FOX	Fairbanks North Star	GW
AK2314302	POKER FLATS-POKER INN/RED HS.	Fairbanks North Star	GW
AK2314310	POKER FLATS-TELEMETRY ANNEX	Fairbanks North Star	GW
AK2310405	POLAR ICE CENTER	Fairbanks North Star	GW
AK2310934	PTARMIGAN HEIGHTS UTILITIES	Fairbanks North Star	GW
AK2310984	PUMP HOUSE RESTAURANT	Fairbanks North Star	GW
AK2314409	QUICKIE PIZZA	Fairbanks North Star	GW
AK2314297	RAVENS RIDGE BREWING CO.	Fairbanks North Star	GW
AK2315421	RI-DON APARTMENTS	Fairbanks North Star	GW
AK2311972	RICHARDSON APARTMENTS	Fairbanks North Star	GW
AK2313306	RIVERVIEW RV PARK	Fairbanks North Star	GW
AK2312415	SALCHA COMMUNITY WATERING POINT	Fairbanks North Star	GW

System No.	Water System Name	Location	Source
AK2372473	SALCHA RIVER GUEST HOUSE	Fairbanks North Star	
AK2371150	SALCHA SENIOR CENTER	Fairbanks North Star	GW
AK2372342	SALCHA STORE	Fairbanks North Star	GW
AK2370235	SALCHAKET ROADHOUSE	Fairbanks North Star	GW
AK2312376	SCOTT FULTON	Fairbanks North Star	GW
AK2313843	SECLUDED ACRES UTILITIES, INC.	Fairbanks North Star	GW
AK2313102	SERVICE MASTER BLDG.	Fairbanks North Star	GW
AK2312960	SEVEN GABLES	Fairbanks North Star	GW
AK2312211	SHANNON PARK BAPTIST CHURCH	Fairbanks North Star	GWP
AK2313720	SKILAND	Fairbanks North Star	GWP
AK2314090	SLED DOG RV PARK	Fairbanks North Star	GWP
AK2370439	SNO SHU INN	Fairbanks North Star	GW
AK2370332	SOUTHRIM APARTMENTS	Fairbanks North Star	GW
AK2311744	SPENARD BUILDING SUPPLY	Fairbanks North Star	GW
AK2312732	STOP SHOP	Fairbanks North Star	GW
AK2312724	SUNSHINE RAE	Fairbanks North Star	GW
AK2313047	SYNDOULOS LUTHERAN CHURCH	Fairbanks North Star	GW
AK2320939	TAIGA VENTURES / CAMP #1	Fairbanks North Star	SW
AK2313152	TAIGA WAREHOUSE	Fairbanks North Star	GW
AK2314116	TAIGA WOODLANDS SUBDIVISION	Fairbanks North Star	GWP
AK2314328	TAMARACK WOODS 5-PLEX	Fairbanks North Star	GW
AK2371582	TEST THE WATERS ADVENTURE SPORTS	Fairbanks North Star	GW
AK2372481	THE CHURCH AT NORTH POLE	Fairbanks North Star	GW
AK2320037	THE HOT SPOT	Fairbanks North Star	
AK2310324	THE VALLATA	Fairbanks North Star	GW
AK2312261	TIVI KENNELS	Fairbanks North Star	GW
AK2310895	TOWN & COUNTRY TRAILER COURT	Fairbanks North Star	GW
AK2312009	TRI CON MINING	Fairbanks North Star	GW
AK2310780	TURTLE CLUB	Fairbanks North Star	GW
AK2312813	TWIN SPRINGS WATER	Fairbanks North Star	GW
AK2311605	TWO RIVERS GRANGE	Fairbanks North Star	GW
AK2310756	TWO RIVERS LODGE	Fairbanks North Star	GW
AK2312512	TYCO ACOUSTICS	Fairbanks North Star	GW
AK2312596	U.S. POST OFFICE, ESTER	Fairbanks North Star	GW
AK2350146	UAF/IAB TOOLIK FIELD STATION	Fairbanks North Star	SW
AK2320117	UMIAT ENTERPRISES INC.	Fairbanks North Star	SW
AK2310683	UNIVERSITY OF ALASKA - FAIRBANKS	Fairbanks North Star	GW
AK2314835	VALLEY CENTER STORE	Fairbanks North Star	GW
AK2312871	VALLEY VIEW CENTER	Fairbanks North Star	GW
AK2310926	VALLEY WATER COMPANY	Fairbanks North Star	GW
AK2370497	VFW #10029 N. POLE	Fairbanks North Star	GW
AK2310803	VILLAGE MOBILE HOME PARK	Fairbanks North Star	GW
AK2314661	WATER MAN	Fairbanks North Star	GWP
AK2370536	WESCOTT GARDENS II	Fairbanks North Star	GW
AK2310209	WGM ANGEL CAMP	Fairbanks North Star	GW
AK2313233	WHITE BIRCH APARTMENTS	Fairbanks North Star	GW
AK2313283	WILD INTERIOR KITCHEN & CRAFT	Fairbanks North Star	GW
AK2310853	WILDWOOD MOBILE HOME PARK	Fairbanks North Star	GW
AK2370510	WOODLAND ACRES MH PARL	Fairbanks North Star	GW

System No.	Water System Name	Location	Source
AK2313738	YKSD - DISTRICT OFFICE	Fairbanks North Star	GW
AK2312465	YOUNGS APARTMENT	Fairbanks North Star	GW
AK2391922	229 PARKS HIGHWAY RESTAURANT	Denali	GW
AK2392009	ALPINE CREEK LODGE	Denali	GW
AK2390455	ANDERSON ADMIN BLDG/DAY CARE	Denali	GW
AK2391053	ANDERSON CLINIC	Denali	GW
AK2391477	ANDERSON RIVERSIDE RV DUMP	Denali	GW
AK2391639	BACKWOODS LODGE	Denali	GW
AK2391728	BLACK DIAMOND GOLF COURSE	Denali	GW
AK2391671	BLUESBERRY INN	Denali	GW
AK2390162	CAMP DENALI	Denali	SW
AK2391532	CANTWELL CAFE	Denali	GW
AK2391516	CANTWELL HEALTH CLINIC	Denali	GW
AK2390196	CARLO CREEK LODGE	Denali	GW
AK2390748	CARLO CREEK SPRING	Denali	SW
AK2390609	DENALI - EIELSON VISITOR CTR.	Denali	SW
AK2391215	DENALI - HOTEL-WINTER/VAC	Denali	GW
AK2390594	DENALI - MAIN / FRONT COUNTRY	Denali	SW
AK2390586	DENALI - ROCK CREEK HQ.	Denali	GW
AK2390641	DENALI - SAVAGE RIVER CMPGRND.	Denali	GW
AK2390633	DENALI - TEKLANIKA CMPGRND.	Denali	GW
AK2390625	DENALI - TOKLAT ROAD CAMP	Denali	GW
AK2390617	DENALI - WONDER LAKE CMPGRND.	Denali	GW
AK2391142	DENALI - WONDER LAKE RNGR STA	Denali	SW
AK2391249	DENALI BACKCOUNTRY LODGE	Denali	SW
AK2390015	DENALI BOROUGH SD - ANDERSON SCHOOL	Denali	GW
AK2390146	DENALI BOROUGH SD - CANTWELL	Denali	GW
AK2390285	DENALI BOROUGH SD - TRI-VALLEY	Denali	GW
AK2390358	DENALI CABINS, SO./MILE 229	Denali	GW
AK2390918	DENALI CROWS NEST	Denali	GW
AK2391312	DENALI EDUCATION CENTER	Denali	GW
AK2390544	DENALI GRIZZLY BEAR / CAMPGROUND/CABINS	Denali	GW
AK2391980	DENALI GRIZZLY BEAR CEDAR HOTEL	Denali	GW
AK2391061	DENALI PRESCHOOL & LEARNING CENTER	Denali	GW
AK2391079	DENALI PRINCESS WILDERNESS LODGE	Denali	GW
AK2390390	DENALI RIVER CABINS/MILE 231	Denali	GW
AK2391443	DENALI RV PARK & MOTEL	Denali	GW
AK2391451	DENALI SUITES	Denali	GW
AK2390528	DEW DROP INN	Denali	GW
AK2391401	ERA HELICOPTER / DENALI PARK	Denali	GW
AK2391964	GRACIOUS HOUSE	Denali	GW
AK2391794	GRANDE DENALI / DENALI BLUFFS	Denali	SW
AK2391948	HOLLAND AMERICA DENALI RESORT	Denali	GW
AK2220943	IGLOO SERVICE STATION	Denali	GW
AK2391875	IN HIS SHADOW MINISTRIES	Denali	GW
AK2390803	KANTISHNA ROADHOUSE	Denali	SW
AK2390447	MCKINLEY CREEKSIDE CABINS	Denali	GW
AK2391930	MCKINLEY CREEKSIDE CABINS EMPLOYEE HOUSI	Denali	GW
AK2391786	MCKINLEY RV & CAMPGROUND	Denali	GW

System No.	Water System Name	Location	Source
AK2390293	MCKINLEY VILLAGE LODGE	Denali	GW
AK2390887	MCKINLEY/DENALI SALMON BAKE	Denali	GWP
AK2390536	MINERS MARKET	Denali	GW
AK2391508	MOTEL NORD HAVEN	Denali	GW
AK2390968	MT. VIEW LIQUOR AND GRO.	Denali	GW
AK2390324	NORTH FACE LODGE	Denali	GW
AK2391168	OTTO LAKE RV PARK	Denali	GW
AK2391524	PRINCESS HOMESTEAD	Denali	GW
AK2391362	REINDEER MT. LODGE	Denali	GW
AK2391540	RIDGETOP CABINS	Denali	GW
AK2390764	RIVERSIDE COMFORT STATION	Denali	GW
AK2390811	ROCHESTER LODGE	Denali	GW
AK2391891	ROSE & DAVES CAFE INC.	Denali	GW
AK2390502	STICKLES FOSTER HOME	Denali	GW
AK2391231	THE PERCH RESTAURANT	Denali	GW
AK2390439	TOTEM INN	Denali	GW
AK2391621	WHITE MOOSE LODGE	Denali	GW
AK2391702	WHITE RAVEN LLC	Denali	GW

vi. SENSITIVE AREAS: PART FIVE – LAND MANAGEMENT

A. LAND MANGEMENT 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*

The Alaska State Legislature has classified certain areas as being essential to wildlife and fisheries resources and intended to preserve the natural habitat. These State Wildlife Areas are designated as refuges, critical habitat areas, sanctuaries, or state range areas. In addition to the wildlife areas, other legislatively designated lands include parks and recreation areas, state forest areas and multiple use areas. Management of these essential areas is the joint responsibility of the ADF&G and the ADNR. Legislation pertaining to these lands may be found in Alaska Statutes Title 16, Chapter 20. Legal descriptions of area boundaries can be found in the ADF&G publication, State of Alaska Game Refuges, Critical Habitat Areas and Game Sanctuaries (1991). See also www.adfg.alaska.gov/index.cfm?adfg=lands.main and "Recreational Sites and Facilities" for State Parks and recreation areas information www.dnr.alaska.gov/parks/.

Minto Flats State Game Refuge was established in 1988 and is located about 35 miles west of Fairbanks, between Minto and Nenana. It encompasses the lower reaches of the Tolovana and Chatanika Rivers and borders the Tanana River. Minto Flats is a low-lying wetland area and is dotted with numerous lakes, oxbows and potholes. The refuge was specifically established to ensure the protection and enhancement of habitat; the conservation of fish and wildlife; and to guarantee the continuation of hunting, fishing, trapping and other compatible public uses. Minto Flats is one of the highest quality waterfowl habitats in Alaska, supporting high density duck and swan nesting as well as spring and fall staging. Fish, furbearer, and big game populations are also important. The flats provide good sport and subsistence hunting and fishing, and is one of the most popular waterfowl hunting areas in the state. See also: www.adfg.alaska.gov/index.cfm?adfg=mintoflats.main.

Creamer's Field Migratory Waterfowl Refuge was established in 1979 and expanded in 1991. It is located north of the city of Fairbanks and encompasses undeveloped shrub, bog, lake, field and forest environments. The refuge was established specifically to protect and enhance migratory bird habitat with a special emphasis on waterfowl. The refuge is best known for its spring concentrations of ducks, geese, and cranes that use the area as a migratory stopover. Over 150 species of birds have been documented on the refuge. Moose, bear and a variety of furbearers also use the area. The refuge is also managed to provide opportunities for viewing, photography, nature studies and other public uses.

Tanana Valley State Forest was first designated in 1983 and currently contains 1,822,100 acres. Its area extends from north of Fairbanks to north of Tetlin Junction and closely follows the Tanana River on the north. The Forest's area encompasses or is adjacent to many bodies of water including the Tanana, Healy and Robertson Rivers; Lakes George and Mansfield; Fish, Sand Healy and Wolf Lakes; and George, Sand, Mansfield, Fortymile and Billy Creeks.

Delta Junction Bison Range**:** In 1979, the Alaska Legislature established the 90,000-acre Range. The range is cultivated with bison forage crops that are intended to draw bison away from nearby private agricultural lands. Since farming began in the mid 1980s, use of private lands by the free-roaming bison herd has decreased, diminishing conflicts between bison and agriculture.

3. ***Federal***

Gates of the Arctic National Park and Preserve: About 250 miles northwest of Fairbanks, the Gates of the Arctic was established in 1980 and encompasses approximately 7,952,000 acres. The area is managed to protect its wild and undeveloped character, for mountaineering and wilderness recreation, and to protect habitat and wildlife. Subsistence uses are permitted for local residents. Caribou, moose, Dall sheep, grizzly bear, wolves and raptors are in abundance. The Tinayguk/North Fork, John, upper Alatna, upper Kobuk, and Noatak rivers are nationally designated Wild and Scenic Rivers. www.nps.gov/gaar/index.htm

Denali National Park and Preserve**:** Approximately 120 miles southwest of Fairbanks, the 6,000,000 acre Park and Preserve is a major tourist attraction during the summer months. Dall Sheep, caribou, grizzly bear, moose, wolves, and furbearers are abundant. Controlled road access for wildlife and wilderness viewing, backcountry use, and mountaineering are main activities. The original Park was established in 1917 and enlarged in 1980. The Park straddles the Alaska Range and includes Mount McKinley, the highest point in North America. www.nps.gov/dena/index.htm

Yukon-Charley Rivers National Preserve: Established in 1980 and about 100 miles east of Fairbanks, the Preserve contains approximately 1,713,000 acres. It is to be managed in its undeveloped natural condition for its habitat, wildlife and natural and man-made history. The area contains peregrine falcon, caribou, moose, Dall sheep, grizzly bear and wolves. The Charley River (including Bonanza Creek, Crescent Creek, Flat Creek) is a nationally designated Wild and Scenic River. This unit straddles the upper part of the Yukon River within the United States. www.nps.gov/yuch/index.htm

Nowitna National Wildlife Refuge: The 1,560,000 acre Nowitna Refuge is about 200 miles west of Fairbanks in the central Yukon River Valley. The refuge encompasses forested lowlands, hills, lakes, marshes, ponds, and streams. The Nowitna River is a nationally designated Wild and Scenic River which provides spawning grounds for northern pike and sheefish. The Refuge was established in 1980 and its primary purpose is to protect waterfowl and their habitat. Wetlands within the refuge complex support large waterfowl populations. The most common breeding duck species include American wigeon, northern pintail, mallard, green-winged teal, northern shoveler, surf scoter, white-winged scoter, common and Barrow's goldeneye, bufflehead, and lesser scaup. Canada geese, greater white-fronted geese, trumpeter swans, and tundra swans are found on the refuge in moderate numbers. The greatest concentrations of waterfowl occur during spring and fall migrations on large, shallow floodplain waterbodies. Moose are the largest herbivores in the refuge complex, and play a key role in the boreal forest ecosystem. They are also one of the most important subsistence resources for local residents, as well as popular for sport harvest. These factors make the species a primary focus of wildlife management at the complex. The Refuge also supports black bear, marten, mink, wolverine, beaver, muskrat, and other wildlife. www.fws.gov/refuges/profiles/index.cfm?id=75621

Koyukuk National Wildlife Refuge**:** About 250 miles northwest of Fairbanks, the Koyukuk Refuge was established in 1980 and covers 3,550,000 acres and contains 14 rivers, hundreds of creeks, and over 15,000 lakes. The topography includes extensive floodplain surrounded by rolling hills covered with

boreal forest. The 10,000-acre Nogahabara Dunes are within the Refuge. The Koyukuk National Wildlife Refuge is home to a wide variety of birds, mammals and fish of the boreal forest. Thousands of waterfowl, primarily wigeon, northern pintail, greater and lesser scaup, greater white-fronted geese and Canada geese are joined by both trumpeter and tundra swans on the Koyukuk's lush breeding grounds each spring. Refuge streams and lakes also sustain large fish populations that support subsistence, commercial and sport fisheries. Chinook, coho, and chum salmon migrate up the waters of the Yukon River and its tributaries including the Koyukuk River. Resident fish, such as the predatory northern pike, spend their entire lives in refuge waters. The refuge's mosaic of forests, woodlands, tundra, and grasslands are home to many northern mammals, from moose to shrews and voles. More than 140 bird species, 30 mammal species, and 14 fish species occur on refuge lands and waters. www.fws.gov/refuges/profiles/index.cfm?id=75615

Kanuti National Wildlife Refuge: Established in 1980, the Kanuti Refuge (1,430,000 acres) straddles the Arctic Circle about 150 miles northwest of Fairbanks. A basin of rolling plains of the Kanuti and Koyukuk rivers, the area is interspersed with lakes and ponds. The refuge provides nesting habitat for numerous species of waterfowl including Canada geese (primarily from the Pacific Flyway) and greater white-fronted geese (mainly Central Flyway birds). Ducks, representing all the major flyways in North America, can be found on the refuge, including greater and lesser scaup, American wigeon, northern pintail, surf scoter, northern shoveler, green-winged teal, mallard, bufflehead, canvasback, Barrow's and common goldeneye, ring-necked duck, gadwall, long-tailed duck, and harlequin duck. With the loss of wetlands due to drought and human activities along these flyways south of Alaska, the importance of the Kanuti Refuge as a nesting area for waterfowl increases. The refuge supports 16 species of fish including several species of whitefish, northern pike, grayling, and salmon. Other wildlife includes moose, caribou, black bear, brown bear, beaver, wolf, and wolverine. www.fws.gov/refuges/profiles/index.cfm?id=75610

Innoko National Wildlife Refuge: The northern unit of the Innoko Refuge is located in the Interior Subarea, while the larger, southern unit is located in the Western Alaska Subarea. The Refuge covers 3,850,000 acres and is about 300 miles northwest of Anchorage in the central Yukon River Valley. It was established to protect nesting and breeding habitat of waterfowl. One of the primary reasons the Innoko Refuge was created was its importance as a waterfowl area in Interior Alaska. The Innoko Refuge provides a vast area of wetlands crucial for waterfowl nesting, resting, staging, and molting. More than 130 bird species are found on the refuge. The extensive wetlands provide habitat for more than 300,000 nesting waterfowl and shorebirds. Innoko is an important nesting area for greater white-fronted and lesser Canada geese, northern pintail, wigeon, shovelers, red-necked grebes, lesser yellowlegs, and Hudsonian godwits. Frequent flooding of Innoko's many rivers and streams helps fertilize surrounding soils and maintain the rich willow sandbar habitat that provides winter food for the refuge's moose population, as well as for the beaver that are common along virtually all of Innoko's waterways. Barren ground caribou from the Beaver Mountain herd winter on Innoko when deep snows move them down from the uplands, while both black and grizzly bear and wolves are present year around. Other fur-bearers include marten, lynx, red fox, river otter, and wolverine.
www.fws.gov/refuges/profiles/index.cfm?id=75605

Yukon Flats National Wildlife Refuge: The approximately 8,630,000 acre Refuge is about 100 miles north of Fairbanks and was established in 1980. Millions of migrating birds converge on the vast Yukon River floodplain in the spring. The 20,000 nutrient-rich, shallow lakes and ponds support one of the highest densities of nesting waterfowl in North America and contribute to more than 2 million ducks and geese to the North American flyway. In the summer, the Yukon Flats has the highest number of breeding canvasback ducks in the State of Alaska. Ohtig Lake, approximately five miles south of Chalkyitsik, is an

important fall staging area for migratory waterfowl. Salmon spawn in the streams of the Refuge. One of the few known sheefish spawning areas in Alaska is on a stretch of the Yukon River between Fort Yukon and Circle. Common mammals on the Refuge include moose, caribou, wolves, black and grizzly bears, lynx, fox, and marten. Rare plants are known to occur on the Refuge and have been documented in the White Mountains and lowland wetland areas. The White-Crazy Mountains area, in the southern portion of the Refuge, provides habitat for a population of Dall's sheep, and the area was recognized by the USFWS in Alaska as a potential wilderness area. Beaver Creek Wild River flows through this area.
www.fws.gov/refuges/profiles/index.cfm?id=75635

Arctic National Wildlife Refuge: The 19,049,236 acre Refuge extends from the Brooks Range north to the Arctic coastal plain and east to the Canadian border, and includes the range of the Porcupine caribou herd (about 169,000 animals in 2010). The Refuge also supports musk ox, Dall sheep, wolves, wolverines, grizzly and polar bears, and over 200 migratory and resident bird species. Snow blankets the ground 9 months of the year and permafrost is near the surface of the ground. The upper Sheenjek and Wind Rivers are nationally designated Wild and Scenic Rivers. Float trips, sport fishing, backpacking, hunting, wildlife viewing, and subsistence are primary Refuge activities.
www.fws.gov/refuges/profiles/index.cfm?id=75600

White Mountain National Recreation Area: The 1 million-acre national recreation area is located about 50 miles north of Fairbanks. The language of the Alaska National Interest Conservation Lands Act directs BLM to manage the area to provide for public outdoor recreational use and for the conservation of scenic, historic, cultural and wildlife values; and for other uses if they are compatible or do not significantly impair the previously mentioned values. The recreation area includes a major portion of the Beaver Creek component of the national wild and scenic rivers system.
www.blm.gov/pgdata/content/ak/en/prog/nlcs/white_mtns.html

Steese National Conservation Area: The 1.2 million area national conservation are lies northeast of Fairbanks. It consists of two units: the northern unit lies north of the Steese Highway and east of the White Mountains National Recreational Area; the southern unit lies south-east of the Steese Highway and encompasses most of the upper Birch Creek drainage. The conservation areas are managed to provide for multiple uses and maintenance of environmental quality. Special values include the Birch Creek component of the national wild and scenic rivers system and caribou habitat.
www.blm.gov/ak/st/en/prog/nlcs/steese_conserv.html

Fortymile National Wild, Scenic and Recreational River: Nearly 400 miles of stream in the Fortymile River drainage in the eastern interior of Alaska are designated as the Fortymile component of the national wild and scenic rivers system. There are 179 stream miles which are designated as Wild, 200 as Scenic, and 13 as Recreational. These streams and the federal lands along their banks are managed to preserve and enhance the values associated with their free-flowing and unpolluted waters. Wild segments represent vestiges of primitive America. Scenic segments are largely primitive, but accessible in places by roads. Recreational segments are readily accessible by road and may have undergone some impoundment or diversion in the past.
www.blm.gov/pgdata/content/ak/en/prog/nlcs/fortymile_nwsr.html

Lower Sheenjek Wild and Scenic River Study Area: On January 19, 2001, the President of the United States recommended designation of the entire lower Sheenjek River as a national wild river. The intent of the designation would be to "preserve the free-flowing condition of the river and to protect the outstandingly remarkable cultural (subsistence), wildlife, scenic, and recreational values associated with

the river, its water quality, and the adjacent lands." If acted upon by the U.S. Congress, the entire Sheenjek River—from its headwaters in the Arctic Refuge to its mouth on the Yukon Flats Refuge—would be protected as a national wild river. This legislative action would facilitate consistent management and protect the free-flowing nature of the Sheenjek in perpetuity. www.rivers.gov/rivers/sheenjek.php

Trans-Alaskan Pipeline System Corridor (TAPS): That portion of the TAPS Utility Corridor north of Fairbanks managed by BLM is approximately 4.45 million acres in area and is covered by the Utility Corridor Management Plan. This plan identifies the resource values along the Utility Corridor from the Yukon River north, including wildlife, fisheries, threatened and endangered species, cultural resources, and Areas of Critical Environmental Concern. The Corridor Management Plan can be used as a reference for threatened or endangered species, caribou, moose, grizzly bear, bald eagle, peregrine falcon, salmonids and freshwater fish in the Interior Subarea. See the web page at: www.blm.gov/ak/st/en/prog/pipeline_monitoring.html

Snowden Mountain Area of Critical Environmental Concern: This 28,000-acre area provides lambing habitat and mineral licks for Dall Sheep. The mountain also contains excellent exposures of Devonian and Lower Paleozoic rocks, Devonian corals and Cambrian trilobites.

Sukakpak Mountain Area of Critical Environmental Concern: This 3,500 acre area is an excellent area for public viewing of the geology of the Brooks Range including geologic formations and erosional processes. A rare plant species (*Orthotrighum diminutivum*) is found on the slopes of the mountains. Sukakpak Mountain offers one of the more outstanding scenic views along the Dalton Highway.

Nugget Creek Area of Critical Environmental Concern: This is a 3,300-acre area with important mineral licks and a lambing area for Dall sheep.

Poss Mountain Area of Critical Environmental Concern: This is an 8,000 acre area with important licks and a lambing area for Dall Sheep.

Jim River Area of Critical Environmental Concern: This is a 200,000 acre area that contains the watershed of important spawning, over wintering and rearing habitat for chum and king salmon and resident species. This are also has several raptor habitats, and scenic, recreation, and cultural values.

Vulnerable Areas Downstream from TAPS Utility Corridor: See attachment one for rivers, creeks and significant bodies of water in geographical order along the Trans-Alaska Pipeline System utility corridor from north to south within the Interior Subarea.

B. LAND MANAGEMENT MAPS

ADNR, under agreement with ADEC, produced digital base and land management maps for each of the subareas using their ARC-INFO based GIS. 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: www.asgdc.alaska.gov/maps/cplans/subareas.html

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

Insert land management designation maps – Legend Page

http://www.asgdc.alaska.gov/maps/cplans/base/LegendPage.pdf

Insert land management designation maps – 1 of 11 pages

http://www.asgdc.alaska.gov/maps/cplans/interior/InteriorMap1of11.pdf

Insert land management designation maps – 2 of 11 pages

http://www.asgdc.alaska.gov/maps/cplans/interior/InteriorMap2of11.pdf

Insert land management designation maps – 3 of 11 pages

http://www.asgdc.alaska.gov/maps/cplans/interior/InteriorMap3of11.pdf

Insert land management designation maps – 4 of 11 pages

http://www.asgdc.alaska.gov/maps/cplans/interior/InteriorMap4of11.pdf

Insert land management designation maps – 5 of 11 pages

http://www.asgdc.alaska.gov/maps/cplans/interior/InteriorMap5of11.pdf

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http://www.asgdc.alaska.gov/maps/cplans/interior/InteriorMap6of11.pdf

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http://www.asgdc.alaska.gov/maps/cplans/interior/InteriorMap7of11.pdf

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http://www.asgdc.alaska.gov/maps/cplans/interior/InteriorMap8of11.pdf

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http://www.asgdc.alaska.gov/maps/cplans/interior/InteriorMap9of11.pdf

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http://www.asgdc.alaska.gov/maps/cplans/interior/InteriorMap10of11.pdf

Insert land management designation maps – 11 of 11 pages

http://www.asgdc.alaska.gov/maps/cplans/interior/InteriorMap11of11.pdf

vii. SENSITIVE AREAS: ATTACHMENT 1 - U.S. BUREAU OF LAND MANAGEMENT

Fish Streams Along the Trans-Alaska Pipeline System

The following are excerpts of information generated by the U.S. Bureau of Land Management and presented in "Fish Streams Along the Trans-Alaska Pipeline System: A Compilation of Selected References With Current TAPS Stationing," BLM Open File Report 105 (Fourth Edition) December 2005.

Fish Species Codes

(Adapted from Johnson and Rockwell, 1981)

?	Fish Present?	
AB	Alaska blackfish	Dallia pectoralis
AC	Arctic char	Salvelinus alpinus
AL	Arctic lamprey	Lampetra japonica
AS	American shad	Alosa sapidissima
RB	Burbot	Lota lota
BC	Bering cisco	Coregonus laurettae
BL	American brook lamprey	Lampetra sp.
BW	Broad whitefish	Coregonus nasus
CA	Arctic cisco	Coregonus autumnalis
CD	Sculpin	Family: Cottidae
CI	Cisco	Coregonus sp.
CN	Slimy sculpin	Cottus cognatus
CS	Least cisco	Coregonus sardinella
CT	Cutthroat trout	Oncorhynchus clarkii
DS	Chum (dog) salmon	Oncorhynchus keta
DV	Dolly Varden	Salvelinus malma
GR	Arctic grayling	Thymallus arcticus
HO	Pond smelt	Hypomesus olidus
HW	Humpback whitefish	Coregonus pidschian
IN	Inconnu (sheefish)	Stenodus leucichthys
KO	Kokanee	Oncorhynchus nerka
KS	Chinook (king) salmon	Oncorhynchus tshawytscha
LC	Lake chub	Couesius plumbeus
LS	Longnose sucker	Catostomus catostomus
LT	Lake trout	Salvelinus namaycush
LW	Lake whitefish	Coregonus clupeaformis
NP	Northern pike	Esox lucius
OM	Rainbow smelt	Osmerus mordax
PS	Pink (humpback) salmon	Oncorhynchus gorbuscha
PW	Pygmy whitefish	Prosopium coulteri

RB	Rainbow trout	Oncorhynchus mykiss
RS	Sockeye (red) salmon	Oncorhynchus nerka
RW	Round whitefish	Prosopium cylindraceum
SR	Stickleback	Family: Gasterosteidae
S9	Ninespine stickleback	Pungitius pungitius
SH	Steelhead trout	Oncorhynchus mykiss
SK	Sucker	Family: Catostomidae
SS	Coho (silver) salmon	Oncorhynchus kisutch
TP	Trout —Perch	Percopsis omiscomaycus
WF	Whitefish	Coregonus sp.

EXPLANATION OF HEADINGS

SECTION 00 BPM OPEN FILE REPORT – TAPS FISH STREAMS 04/01/87 PAGE 00 OF 00

MP	STREAM NAME(s)	FISH SPECIES	A D	JaFeMrApMaJuJlAuSeOcNoDe PERIOD OF SENSITIVITY	FIELD STATION G-5 SEC	MER T R	REFER -ENCE A/S
4.12 1.37	(Edge) Lakes TAPS A/G; Causeway	?			21736 21796 1550+00 1541+70	U 10N 14E 20	AB E F
277.14 91	PROSPECT CREEK TAPSA/G;BLOCKPOINT	CN;GR;KS LS;NP;RW	Y E S	CCCCCCCCCCCCCCCCCC	1463150 1463408 1590++00	F 22n 14w 31	AB E FG
*790.9 2	(Grey Stream) TAPS B/G; CMP	DV; SS		CCCCSSSSSSSSjlauCCCCC	4176212 506+06	C 09S 05W 28	AB E

SECTION 00 = Section 01 is Pump Station. 1 to Pump Station. 2; Section 10 is Pump Station. 10 to Pump Station 11.

MP = The distance in miles from Pump Station 1; *Prefix denotes extrapolated mileage not field checked.

AS = Alyeska Pipeline Service Company (G-100 as-builts) alignment sheet number.

STREAM NAME = Adapted from Johnson and Rockwell, 1981. For example: YUKON RIVER denotes a name recognized by the U.S. Geological Survey; (Small or Jackie's CK) denotes a non-USGS recognized popular name; [Snowpad CK] denotes a new name used in this list.

COMMENTS = TAPS A/G denotes above-ground pipe mode; TAPS B/G denotes below-ground mode; CMP is a corrugated-metal-pipe or culvert; LWC is a low water crossing; BLOCKPOINT is a physical barrier to vehicle passage; CAUSEWAY, BRIDGE, and PARALLEL are self-explanatory.

FISH SPECIES CODES = Adapted from Johnson and Rockwell, 1981. See explanation of codes.

ADAD = “YES” denotes anadromous fish stream designated by Alaska Dept. Fish and Game.

PERIOD OF SENSITIVITY = C denotes Critical period of fish usage; S denotes Sensitive period of fish usage. NOTE: UNDERLINING of a stream’s period of sensitivity denotes the recommended sensitivity period if fish return in the future.

FIELD STATION = Distance in feet from Pump Station No 1 as estimated in field; * Prefix denotes an extrapolated stationing not field checked.

G-5 = Obtained from “Selected References” and refers to construction drawings.

MER = Meridian – U is Umiat; F is Fairbanks; C is Copper River.

T = Tier or Township; R = Range; Sec. = Section.

REFERENCE = see “Selected References”

Selected References

(A) Alaska Pipeline Office. 1977. Interim report on zones of restricted activity for fish and wildlife along the Trans-Alaska Pipeline. U.S. Dept. of the Interior. Anchorage. AK. (February 16, 1977: 37pp).

(B) Johnson, Richard L. and Julius Rockwell, Jr. (Revised by J. Rockwell, Jr.). 1981. List of streams and other water bodies along the Trans-Alaska oil pipeline route (Fourth Revision: Draft). U.S. Dept. of the Interior, Alaska Pipeline Office, Anchorage, AK (May 1, 1981).

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Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MERTR SEC	Reference
168.64 169.07 110	(West Fork, North Fork, Chandalar River FLPLN) TAPS B/G; LWC Fish parallel to ROW	GR			890436 892700	U 15S 11E 26	J
170.60 170.79 109	(West Fork, North Fork, Chandalar River FLPLN) TAPS B/G; LWC	CN;CI? DV?GR; HW?NP? RW		jafemrapCCCCSSSSCCCCnode	900767 901746 1093+00 1083+21	U 16S 11E 03	AB DE FG
171.44 109	(West Fork, North Fork, Chandalar River) TAPS B/G; LWC	CN;CI? DV?GR; HW?NP? RW		jafemrapCCCCSSSSCCCCnode	905187	U 16S 11E 03	
109	(Chandalar Shelf CK) TAPS B/G; DOES NOT CROSS	GR			NO TAPS XING 1046+14	U 16S 11E 03	B
173.28 173.44 109	(West Fork, North Fork, Chandalar River) TAPS B/G; BLOCKPOINT	CN;CI? DV?GR; HW?NP? RW		jafemrapCCCCSSSSCCCCnode	914900 915740 957+00 945+23	U 16S 11E 16	AB DE FG
175.38 109	(Andy's CK) TAPS B/G; LWC	CN;DV; GR		jafemrapSSSSSSSSSSSnode	9260000 841+65 840+52	U 16S 11E 20	AB E FG
175.56 109	(Truck Stop CK) TAPS B/G; LWC	CD;DV; GR?RW?		jafemrapSSSSSSSSSSSnode	926950 832+56	U 16S 11E 20	B I
175.76 109	(Truck Stop CK) TAPS B/G; LWC	CD?DV? GR?RW?		jafemrapSSSSSSSSSSSnode	928000 824+20	U 16S 11E 30	B I
175.81 109	(Truck Stop CK) TAPS B/G: LWC	CD;DV; GR;RW?		jafemrapSSSSSSSSSSSnode	928300 822+41	U 16S 11E 30	B I
109	(Truck Stop CK) TAPS B/G: DOES NOT CROSS	CD?;DV; GR;RW		jafemrapSSSSSSSSSSSnode	NO TAPS XING 820+73	U 16S 11E 30	B
109	(Truck Stop CK) TAPS B/G; DOES NOT CROSS	CD?;DV? GR;RW		jafemrapSSSSSSSSSSSnode	NO TAPS XING 818+78	U 16S 11E 30	B

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
	(Truck Stop CK)	CD?DV? GR;RW		jafemrapSSSSSSSSSSSSnode	NO TAPS XING	U 16S	B
109	TAPS B/G; DOES NOT CROSS				807+28	11E 30	
176.11	[One-Seven-Six Mile CK]	GR		jafemrapSSSSSSSSSSSnode	929843 929903	U 16S	B F I J
109	TAPS A/G; LWC				802+90	11E 30	
176.68 177.26	(Beaver Brook)	CD?DV GR?		jafemrapSSSSSSSSSSSnode	932845 935924	U 16S	AB F I J
108	TAPS B/G; LWC				777+60 769+59	11E 30	
177.28 177.78	DIETRICH RIVER	BB?CN; DV;GR;		jafemrapSSSSSSSSSSSnode	936025 938700	U 16S	AB E F
108	TAPS B/G; BLOCKPOINT	LS?RW			742+44 714+42	10 25 & 36	
177.95	(Bear Track CK)	DV?GR		jafemrapSSSSSSSSSSSnode	939590	U 16S	B F I
108	TAPS B/G; LWC				705+50	10E 36	
178.78	(Oskar's Eddy)	DV;GR		jafemrapSSSSSSSSSSSnode	943968 944038	U 17S	AB FG
108	TAPS A/C; LWC				663+02	10E 02	
179.33 180.41	DIETRICH RIVER (Schroeder's Spring)	BB;CN; DV;GR;		CCCCCCCCCCSSSSSSCCCCCCCC OVER-WINTERING AREA	946870 952575	F 37N	AB E FG
108	TAPS B/C; BLOCKPOINT	LS;RW		FOR DV; GR; RW	626+00 578+00	09W 25 & 35	
180.74 181.39	DIETRICH RIVER	BB;CN; DV;GR;		CCCCCCCCCCSSSSSSCCCCCCC	954290 957750	F 36N	AB FG
108	TAPS B/G; BLOCKPOINT	LL;RW			556+00 525+75	10W 02 & 03	
181.63 181.93	DIETRICH RIVER	BB;CN; DV;GR;		CCCCCCCCCCSSSSSSCCCCCCC	959000 960600	F 36N	AB FG
108	TAPS B/G; BLOCKPOINT	LS;RW			513+95 500+36	10W 03	
182.57 184.21	DIETRICH RIVER	BB;CN; DV;GR;		CCCCCCCCCCSSSSSSCCCCCCC	964000 972650	F 36N	AB FG
107	TAPS B/G; BLOCKPOINT	LS;RW			457+37 379+39	10W 10,15 16&21	
184.28	NUTIRWIK CREEK	CN;DV; GR;RW?		jafemrapSSSSSSSSSSSnode	972650 973300	F 36N	AB E FG
107	TAPS B/G; BLOCKPOINT				375+54	10W 21	
185.18	(Beaver Dam Brook)	GR?		jafemrapSSSSSSSSSSSnode	977750	F 36N	F I
107	TAPS B/G; CMP				334+05	10W 28	

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
185.27 107	(Beaver Dam Brook) TAPS B/G; CMP	GR?		jafemrapSSSSSSSSSSSnode	978250 334+05	F 36N 10W 28	 F I
185.46 107	(Beaver Dam Brook) TAPS B/G; CMP	GR?		jafemrapSSSSSSSSSSSnode	979250 334+05	F 36N 10W 28	 F I
185.98 107	(Beaver Dam Brook) TAPS B/G; LWC	GR		jafemrapSSSSSSSSSSSnode	982000 296+00	F 36N 10W 28	AB F
185.98 186.70 107	DIETRICH RIVER TAPS B/G; BLOCKPOINT	BB;CN; DV;GR; LS		CCCCCCCCCCSSSSSSCCCCCCC	982000 985750 284+64 282+68 280+70 278+94 276+00 259+21 249+14 248+79	F 36N 10W 28 & 33	 B E B EF B EF A EF B EF B EF B EF A EF
187.46 107	(Tracey's Trickle or Unnamed Creek #1) TAPS B/G; LWC	CD?DV? GR;RW?		jafemrapSSSSSSSSSSSnode	989775 212+40	F 35N 10W 04	B F I
188.35 106	(One-0-Six CK) TAPS B/G; LWC	BB?CN? DV?GR? SK?WF			994475 108+50	F 35N 10W 09	B I
189.26 106	(One-0-Six CK) TAPS B/G; BLOCKPOINT	BB?CN? DV?;GR? SK?WF?			999300 86+84	F 35N 10W 16	B I
189.92 106	(Burger's Bayou) TAPS B/G; LWC	BB;CN; DV;GR		jafemrapSSSSSSSSSSSnode	1002800 72+43	F 35N 10W 16	AB E F
190.39 106	(Ruff CK) TAPS B/G; LWC	GR			1005200 1005300 53+10	F 35N 10W 21	AB E F
191.80 106	(Steep CK) TAPS B/G; LWC	CD?GR?			1012600 1012786 2235+00	F 35N 10W 28	B
192.33 192.99 106	DIETRICH RIVER (Big Jim Over-wintering Area) TAPS B/G; BLOCKPOINT	BB?CN; DV?GR; LS?RW		CCCCCCCCCCSSSSSSCCCCCCC BIG JIM OVER-WINTERING AREA	1015500 1019000 2195+05 2182+00	F 35N 10W 33	AB E FG

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
193.75 105	[One-O-Five CK] TAPS B/G; PARALLEL ONLY	GR?		jafemrapSSSSSSSSSSSnode	1023000 2123+20	F 34N 10W 04	B F I
194.04 195.91 105	DIETRICH RIVER TAPS B/G; BLOCKPOINT	BB?CN; DV;GR; LS?RW		jafemrapCCCCSSSSCCCCnode (includes Ugh Creek which passes through CMP in dike)	1024536 1034400 2108+00 2011+33	F 34N 10W 04, 09, 10&15	AB E F I
196.98 105	(Stanzla CK) TAPS A/G; LWC	GR;LS; RW		jafemrapCCCCSSSSCCCCnode	1040054 1040107 1952+70	F 34N 10W 22	AB E F
197.08 105	(Dunder's Dribble) TAPS A/G; LWC	CN;GR; RW?		SSSSSSSSSSSSSSSSSSSSSS	1040534 1040589 1947+76	F 34N 10W 22	AB E F
197.19 105	(Number Lakes CK) TAPS A/G; LWC	CN;GR		jafemrapCCCCSSCCCCCCnode	1041136 1041207 1940+81	F 34N 10W 22	AB E F
  105	[One-Nine-Seven Mile CK] TAPS A/G; DOES NOT CROSS	DV?GR?;		jafemrapSSSSSSSSSSSnode	NO TAPS XING 1934+00	F 34N 10W 22	B F
197.86 105	(Snowden Pond Outlet) TAPS A/G; LWC	CN;GR?		jafemrapSSSSSSSSSSSnode	1044680 1044740 1906+65	F 34N 10W 27	AB E F
198.03 105	[One-Nine-Eight Mile CK] TAPS A/G; LWC	GR?		jafemrapSSSSSSSSSSSnode	1045589 1045649 1897+34	F 34N 10W 26	AB F I
198.56 105	SNOWDEN CREEK TAPS A/G; LWC	CN;;DV; GR;RW?		jafemrapSSSSSSSSSSSnode	1048364 1048432 1869+54	F 34N 10W 26	AB E FG
200.02 104	(Sahr's Slough) TAPS A/G; CMP	GR; CN		jafemrapSSSSSSauseocnode	1056107 1056171 1794+00	F 33N 10W 02	AB E F
200.17 104	(Sahr's Slough) MP 200 BYPASS TAPS A/G; LWC	GR		jafemrapSSSSSSauseocnode	1056908 1056970	F 33N 10W 02	
200.17 200.72 104	DIETRICH RIVER SECTION BYPASSED AT MP 200 REPAIR TAPS B/G; BLOCKPOINT	BB;CN; DV;GR; LS;RW		CCCCCCCCCCSSSSSSCCCCCCCC	1056833 1059782 1785+60 1756+00	F 33N 10W 02	AB E F
200.89 104	(Trap Slough) TAPS A/G; LWC	DV		jafemrapCCCCSSSSCCCCnode	1060686 1060749 1747+34	F 33N 10W 11	AB E FG

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
201.43 104	(Disaster CK) TAPS A/G; LWC	CN;GR		jafemrapSSSSSSSSSSSSnode	1063529 1063603 1718+00	F 33N 10W 11	AB E FG
202.14 104	(Airport CK) TAPS A/G; CMP	DV;GR		jafemrapSSSSSSSSSSSSnode	1067293 1067359 1680+00	F 33N 10W 14	AB F
202.85 104	(Middle Fork, Airport CK) TAPS A/G; LWC	CN?GR?		jafemrapCCCCSSSSCCCCnode	1071019 1071084 1644+13	F 33N 10W 13	B F I
202.99 104	(South Fork, Airport CK) TAPS A/G; CMP	GR?		jafemrapSSSSSSSSSSSSnode	1071743 1071808 1637+70	F 33N 10W 24	B F I
203.57 104	(Steitz Lake Outlet) TAPS A/G; LWC	GR		jafemrapSSSSSSSSSSSSnode	1074799 1074869 1610+00	F 33N 10W 24	B F
203.63 104	(Steitz Lake Outlet) TAPS A/G; LWC	BB;CN; DS?DV? GR;LS		jafemrapCCCCSSSSCCCCnode	1075159 1075229 1608+00	F 33N 10W 24	AB E FG
203.80 104	(Steitz Lake Overflow) TAPS A/G; LWC	CN;GR			1076010 1076069 1600+00	F 33N 10W 24	B
204.05 104	(Brockman CK) TAPS A/G; SUMMER BLOCKPOINT	CN;DV; GR;RW		jafemrapSSSSSSSSSSSSnode	1077385 1077679 1581+65 1579+18	F 33N 10W 25	AB E FG
204.69 104	(1415 Lake Inlet) TAPS A/G; LWC	GR		jafemrapSSSSSSSSSSSSnode	1080751 1080811 1556+18	F 33N 10W 25	F
204.80 104	(1415 Lake Outlet) TAPS A/G; LWC	?			1081362 1081287	F 33N 10W 25	
205.30 104	DIETRICH RIVER TAPS A/G; BLOCKPOINT	BB;CN; DV?GR; LS;RW		CCCCCCCCCCSSSSSSCCCCCCCC	1084002 1084402 1533+95 1526+55	F 33N 10W 35	AB E F
205.74 103	(Eva's Alv) TAPS A/G; LWC	CD;GR DV		jafemrSSSSSSSSSSSSSnode	1086260 1086330 1507+55	F 33N 10W 35	AB E F J

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
206.46 103	[Two-O-Six Mile CK] TAPS A/G; LWC	GR?		jafemrSSSSSSSSSSSSSSnode	1090099 1090164 1450+60	F 33N 10W 34	A I
206.53 103	[Two-O-Six Mile CK] TAPS A/G; LWC	GR?			1090454 1090529	F 33N 10W 34	
206.90 103	(Millie's Meander) TAPS A/G; LWC	GR?		jafemrSSSSSSSSSSSSSnode	1092375 1092440 1444+19	F 32N 10W 04	B F
207.37 103	(Millie's Meander) TAPS A/G; PARALLEL ONLY	CN;GR		jafemrSSSSSSSSSSSSSnode	1094902 1094962 1420+00	F 32N 10W 04	AB E F
207.62 103	(Millie's Meander) TAPS A/G; PARALLEL ONLY	CN;GR		jafemrSSSSSSSSSSSSSnode	1096222 1096282 1412+00	F 32N 10W 04	AB E F
207.76 103	(Way Back CK) TAPS B/G; LWC	GR?		jafemrSSSSSSSSSSSSSnode	1096975 1406+00	F 32N 10W 09	AB E F I
208.01 208.45 103	Middle Fork KOYUKUK R. TAPS A/G; BLOCKPOINT	BB?CN; DS?DV; GR;LS; NP?RW	Y E S	CCCCCCCCCCCCCCCCCCCCCCC	1098300 1100600 1384+47 1361+45	F 32 10W 09	AB E F
209.02 103	(North Fork, Sukakpak CK) TAPS A/G; LWC	CD;GR		jafemrSSSSSSSSSSSSSnode	1103583 1103643 1332+30	F 32N 10W 16	BC F
209.54 103	(West Fork, Sukapak CK or Pamplin's Potholes) TAPS A/G; LWC	CN;DV; GR		jafemrCCCCCCSSSSCCCCnode	1106337 1106407 1305+50	F 32N 10W 16	A B C D F
210.03 103	(East Fork, Sukakpak CK) TAPS A/G; PARALLEL ONLY TAPS DOES NOT CROSS	GR		jafemrSSSSSSSSSSSSSnode	1108862 1109102 1276+77	F 32N 10W 21	A B C F
210.22 103	(Marsh CK) TAPS A/G; CMP	CN;GR		jafemrCCCCCCSSSSCCCCnode	1109943 1110003 1268+96	F 32N 10W 21	A B C F
210.44 103	(Marsh CK) TAPS A/G; LWC Fish parallel to ROW	GR;LS		jafemrCCCCCCSSSSCCCCnode		F 32N 10W 21	J
210.57 103	(Marsh CK) TAPS A/G; LWC	CN;GR LS		jafemrCCCCCCSSSSCCCCnode	1111792 1111862 1258+35	F 32N 10W 21	A B C F J

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
210.93 103	(Marsh CK) TAPS B/G; LWC	CN;GR		jafemrCCCCCCSSSSCCCCnode	1113750 1250+00	F 32N 10W 20	A B C F
210.94 211.41 103	Middle Fork, KOYUKUK R. TAPS B/G; BLOCKPOINT	BB? CN DS;DV; GR;LS; NP?RW	Y E S	SSSSSSCCCCCCSSSSCCCCSSSS	1113750 1116250 1237+55 1207+63	F 32N 10W 20 & 29	A B E F
211.49 102	[One-0-Two-North CK] TAPS A/G; LWC	GR			1116641 1116696 1202+40	F 32N 10W 29	B
212.79 102	(Spoiled CK) TAPS A/G; LWC	GR?		jafemrSSSSSSSSSSSSSnode	1123521 1123580	F 32N 10W 32	I
212.89 102	[Koyukuk Slough] TAPS A/G; LWC	GR?		jafemrCCCCCCSSauseocnode	1124001 1124071 ?	F 32N 10W 31	E I
213.03 102	(Valve Site CK) TAPS A/G; CMP	GR?			1124772 1124831 1121+05	F 32N 10W 31	B F
215.33 102	LINDA CREEK TAPS A/G; BLOCKPOINT	CN;GR		jafemrSSSSSSSSSSSSSnode	1136782 1136900 1001+18	F 31N 10W 07	A B E F G
215.81 102	GOLD CREEK TAPS B/G; SUMMER BLOCKPOINT	CN;DV? GR;RW?		jafemrCCCCCCSSSSCCCCnode	1139410 1139550 976+00	F 31N 10W 18	A B E F G
216.30 102	(Cushing CK) TAPS A/G; LWC	GR?		jafemrSSSSSSSSSSSSSnode	1142019 1142074 948+66	F 31N 10W 18	A B E
216.59 102	SHEEP CREEK TAPS A/G; LWC	CN;GR		jafemrCCCCCCSSSSCCCCnode	1143574 1143369 933+01	F 31N 10W 19	A B E F
217.45 101	NUGGET CREEK TAPS A/G; LWC	CN;DV; GR;RW?		jafemrSSSSSSSSSSSSSnode	1148336 1148391 886+52	F 31N 10W 19	A B E F G
218.00 101	(Alignment Slough) TAPS A/G; CMP	CD?GR		jafemrCCCCCCSSSSCCCCnode	1150992 1151052 859+99	F 31N 11W 25	A B E F
218.07 101	(Alignment Slough) TAPS A/G; CMP	CD?GR		jafemrCCCCCCSSSSCCCCnode	1151409 1151469 855+94	F 31N 11W 25	A B E F

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
218.15 101	(Alignment Slough) TAPS A/G; LWC	CD?GR?		jafemrCCCCCCSSSSCCCCnode	1151760 1151835 848+93	F 31N 11W 25	AB E F I
218.21 101	(Alignment Slough) TAPS A/G; CMP	CD?GR		jafemrCCCCCCSSSSCCCCnode	1152070 1152139 845+28	F 31N 11W 25	A B E F
218.28 101	(Alignment Slough) TAPS A/G; LWC	CD?GR?		jafemrCCCCCCSSSSCCCCnode	1152492 1152556 843+20	F 31N 11W 25	AB E I
218.35 101	(Alignment Slough) TAPS A/G; CMP	CD?GR		jafemrCCCCCCSSSSCCCCnode	1152847 1152902 840+20	F 31N 11W 25	A B E F
218.45 101	(Alignment Slough) TAPS A/G; CMP	CD?GR		jafemrCCCCCCSSSSCCCCnode	1153361 1153434 835+63	F 31N 11W 25	A B E F
219.03 101	OVER CREEK (Complex) TAPS A/G; CMP	BB;GR		jafemrSSSSSSSSSSSSSnode	1156490 1156552 805+39	F 31N 11W 26	AB E F
219.08 101	Tributary OVER CREEK TAPS A/G; LWC	BB;GR		jafemrSSSSSSSSSSSSSnode	1156732 1156793 803+12	F 31N 11W 26	A B E F
219.13 101	OVER CREEK (Complex) TAPS A/G; CMP	BB;GR		jafemrSSSSSSSSSSSSSnode	1156963 1157033 802+12	F 31N 11W 35	A B E F
219.20 101	OVER CREEK (Complex or Rainbow CK) TAPS A/G; CMP	BB;GR CN		jafemrSSSSSSSSSSSSSnode	1157333 1157403 796+36	F 31N 11W 35	A B E F J
219.52 101	(Richardson Slough or Coon Gulch?) TAPS A/G; LWC	GR;LS? RW?		jafemrSSSSSSSSSSSSSnode	1159070 1159135 781+90	F 31N 11W 35	B E F
219.59 101	(Richardson Slough) TAPS A/G; LWC	CN?GR; LS;RW		jafemrSSSSSSSSSSSSSnode	1159430 1159495 778+00	F 31N 11W 35	A B E F
221.80 101	(One-0-One CK) TAPS A/G; LWC	CN;GR; LS?		jafemrCCCCCCSSSSCCCCnode	1171039 1171101 664+00	F 31N 11W 33	A B E F
221.96 222.07 101	Middle Fork, KOYUKUK R. TAPS A/G; BLOCKPOINT	BB?CN CS?DS; DV;GR; KS?LS; NP?RW	Y E S	CCCCCCCCCCCCSSCCCCCCCCCC	1171932 1172525 651+50	F 31N 11W 33	A B E F

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
222.28 222.37 101	HAMMOND RIVER TAPS A/G; BLOCKPOINT	CN;DV; GR;KS WF;LS DS	Y E S	jafemrSSSSSSSSSSSSSnode	1173644 1173864 635+50	F 31N 11W 32 & 33	A B E F J
223.19 100	(Confederate Gulch or Fry CK) TAPS A/G; LWC	GR?		jafemrCCCCCCSSSSCCCCnode	1178399 1178470 590+75	F 30N 11W 05	B F I
223.67 100	(Union Gulch) TAPS A/G; LWC	CN;GR LS?RW?		jafemrSSSSSSSSSSSSSnode	1180957 1181027 565+10	F 30N 11W 05	F I J
224.23 100	(Union Gulch CK) TAPS A/G; LWC	CN;GR; LS?RW		jafemrCCCCCCSSSSCCCCnode	1183878 1183948 535+90	F 30N 11W 07	A B F
224.55 100	(Union Gulch CK) TAPS A/G; BLOCKPOINT	CN;GR; LS;RW		jafemrCCCCCCSSSSCCCCnode	1185606 1185666 517.98	F 30N 11W 07	A B E
224.62 222.94 101	Middle Fork, KOYUKUK R. TAPS A/G; BLOCKPOINT	CN;DS; DV;GR; KS;LS; NP?RW	Y E S	CCCCCCCCCCCCSSCCCCCCCCCC	1186000 1187700 517+24 495+50	F 30N 11W 07	A B E F
225.76 100	MINNIE CREEK TAPS A/G; BLOCKPOINT	BB;CN; DV;GR; LS;RW		jafemrSSSSSSSSSSSSSnode	1191996 1192060 453+95	F 30N 11W 18	A B E F G
227.40 100	(Confusion CK) TAPS B/G; CMP	CN;GR		jafemrSSSSSSSSSSSSSnode	1200600 1200659 369+00	F 30N 11W 30	A B E F
232.79 99	(Pence's Pond) TAPS B/G; CMP	CD?GR		jafemrSSSSSSSSSSSSSnode	1229086 85+80	F 29N 12W 23	A B E F
233.21 99	MARION CREEK TAPS B/G; BLOCKPOINT	CN;DV; GR;KS; RW	Y E S	jafemrSSSSSSSSSSSSSnode	1231600 61+85 59+85	F 29N 12W 23	A B E F G
233.38 99	(Sharon CK) TAPS B/G; CMP	BB?CN? GR?LS? RW?		jafemrSSSSSSSSSSSSSnode	1232225 55+00	F 29N 12W 26	A B F
233.54 99	(Sharon CK) TAPS B/G; CMP	BB?CN? GR?LS? RW?		jafemrSSSSSSSSSSSSSnode	1233075 45+43	F 29N 12W 26	AB E F

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
234.29 99	(Mary Angel CK) TAPS B/G; CMP	BB;CN; GR;LS; WF		jafemrCCCCCCSSSSCCCCnode	1236800 8+47	F 29N 12W 26	A B E F
234.34 98	(South Fork, Mary Angel CK) TAPS B/G; CMP	CN;GR		jafemrSSSSSSSSSSSSSnode	1237150 4+30	F 29N 12W 26	A B E F
235.51 98	(Texas Slough) TAPS B/G;; PARALLEL ONLY; TAPS NOT CROSS	CN;GR; KS		jafemrSSSSSSSSSSSSSnode	1243275 1243475 1089+00 1087+00	F 28N 12W 03	A B D E F
235.64 98	(1079 Slough) TAPS B/G; CMP	CN;GR		jafemrCCCCCCSSSSCCCCnode	1244062 1079+50	F 28N 12W 03	A B E F
236.07 98	(Oregano CK) TAPS B/G; LWC	CN?DV; GR		jafemrSSSSSSSSSSSSSnode	1246450 1057+00	F 28N 12W 03	A B E F
236.15 98	(Equisetum CK) TAPS B/G; CMP	GR		jafemrSSSSSSSSSSSSSnode	1247000 1051+80	F 28N 12W 03	A B E F
236.45 98	CLARA CREEK TAPS A/G; CMP	GR?		jafemrSSSSSSSSSSSSSnode	1248425 1248490 1036+20	F 28N 12W 10	F I
236.50 98	CLARA CREEK TAPS A/G; CMP	CN?GR; RW?		jafemrSSSSSSSSSSSSSnode	1248648 1248715 1033+06	F 28N 12W 10	AB E F
236.77 98	CLARA CREEK Overflow TAPS A/G; CMP	CN?GR; RW		jafemrSSSSSSSSSSSSSnode	1250077 1250137 1019+50	F 28N 12W 10	AB E F
236.83 98	South Fork, CLARA CK TAPS A/G; CMP	CN;DV? GR;RW		jafemrSSSSSSSSSSSSSnode	1250437 1250497 1015+50	F 28N 12W 10	AB E F
237.04 98	(Calf CK) TAPS A/G; BRIDGE	CD?DV? GR;RW?		jafemrSSSSSSSSSSSSSnode	1251552 1251612 1004+30	F 28N 12W 10	AB E F
237.51 98	SLATE CREEK TAPS B/G; BLOCKPOINT	CN;DS; DV;GR; KS;RW	Y E S	jafemrCCCCCSSCCCCCCCnode	1254250 1254450 976+83	F 28N 12W 15	AB E FG
239.26 98	(Horseshoe Slough) TAPS A/G; CMP	GR?		jafemrSSSSSSSSSSSSSnode	1263276 1263344 888+00	F 28N 12W 20	A B

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
239.75 98	(Spring Slough) TAPS A/G; LWC	CD;GR		jafemrCCCCCCSSSSCCCCnode	1265884 1265947 862+10	F 28N 12W 20	A B E F
240.13 97	(East Fork, Spring Slough) TAPS A/G; CMP	GR		jafemrSSSSSSSSSSSSSnode	1267880 1267940 842+00	F 28N 12W 29	A B F
240.26 97	(East Fork, Spring Slough) TAPS A/G; LWC	GR		jafemrSSSSSSSSSSSSSnode	1268559 1268619 835+90	F 28N 12W 29	A B F
240.37 97	(Spring Slough) TAPS A/G; CMP	CD?GR		jafemrCCCCCCSSSSCCCCnode	1269132 1269191 829+50	F 28N 12W 29	A B F
240.66 97	(South Fork, Spring Slough) TAPS A/G; CMP	CN?GR; NP		jafemrSSSSSSSSSSSSSnode	1270653 1270713 810+00	F 28N 12W 29	A B F
240.78 97	(Spring Slough) TAPS A/G; CMP	CN;GR		jafemrCCCCCCSSSSCCCCnode	1271357 1271411 804+00	F 28N 12W 29	A B F
242.80 97	ROSIE CREEK TAPS B/G; CMP (Spur Dike 13)	CN;DV? GR;RW? KS	Y E S	jafemrSSSSSSSSSSSSSnode	1282475 694+50	F 27N 12W 06	A B E F J
242.91 97	ROSIE CREEK TAPS B/G; LWC	CN;DV? GR;RW? KS	Y E S	jafemrSSSSSSSSSSSSSnode	1282565	F 27N 12W 06	A B E F J
243.00 243.09 97	ROSIE CREEK TAPS B/G; (2) CMPs in Dike 11 Open channel in Spur Dike 10A Stream parallel to TAPS	CN;DV; GR;RW		SSSSSSCCCCCCSSSSCCCCSSSS	1283040 1283515	F 27N 13W 01	
243.41 97	ROSIE CREEK TAPS B/G; LWC	CN;DV; GR;RW		SSSSSSCCCCCCSSSSCCCCSSSS	1285200 666+00	F 27N 13W 01	A B F G
243.94 97	(Mud CK) TAPS B/G; CMP	BB;GR		jafemrSSSSSSSSSSSSSnode	1287989 1288049 639+30	F 27N 13W 12	A B E F
244.84 97	(Jackson Slough) TAPS A/G; CMP	CN;GR; KS;RW		jafemrCCCCCCSSSSCCCCnode	1292730 1292799 593+00	F 27N 13W 11	A B D E F
245.27 97	(Jackson Slough) TAPS A/G; CMP	CN;GR; KS;RW		jafemrCCCCCCSSSSCCCCnode	1294964 1295024 570+78	F 27N 13W 14	A B D E F
97 APL/AMS-1A (Jackson Slough)							B D

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
245.52 96	(Jackson Slough) TAPS A/G; BLOCKPOINT	CN;GR; KS?RW		jafemrCCCCCCSSSSCCCCnode	1296343 1296403 555+85	F 27N 13W 14	A B D E F
245.6 96	Jackson Slough (Lower Reach) TAPS A/G; BLOCKPOINT	CN;GR; KS		jafemrCCCCCCSSSSCCCCnode	1296363	F 27N 13W 14	J
246.26 96	(Trent's Trickle) TAPS A/G; CMP	CN;GR; NP?		SSSSSSCCCCCCSSSSCCCCSSSS	1300218 1300273 518+39	F 27N 13W 23	A B E F
247.40 96	[Ninety-Six CK] TAPS A/G; CMP	CD?GR? NP?		jafemrCCCCCCSSauseocnode	1306245 1306304 458+70	F 27N 13W 26	A B E F
248.18 96	(North Fork, Windy Arm CK) TAPS A/G; BLOCKPOINT	CN;GR; NP?		jafemrSSSSSSSSSSSSSnode	1310328 1310508 417+25	F 27N 13W 26	A B E F
249.59 96	(South Fork, Windy Arm CK) TAPS A/G; CMP	GR		jafemrSSSSSSSSSSSSSnode	1317809 1317864 343+75	F 26N 13W 02	B F I
250.50 96	(Chapman CK) TAPS A/C; LWC	CD?GR; NP?		jafemrSSSSSSSSSSSSSnode	1322631 1322691 295+17	F 26N 13W 11	A B E F
251.69	(Crossroads CK) TAPS A/G; CMP	NP?			1328901 1328972 233+60	F 26N 13W 14	B F
251.72	(Crossroads CK) TAPS A/G; LWC	NP?			1329032 1329087 232+25	F 26N 13W 14	B F
251.79	(Crossroads CK) TAPS A/G; CMP	NP?			1329397 1329453 228+75	F 26N 13W 14	B F
251.90	(Crossroads CK) TAPS A/G; CMP	NP			1330003 1330063 222+50	F 26N 13W 14	B F
256.26 256.36 94	South Fork, KOYUKUK R. TAPS A/G; BLOCKPOINT	BB?BW? CN;DS; GR;HW? KS;LS; NP?RW; SK?	Y E S	CCCCCCCCCCCCCCCCCCCCCCC	1353037 1353602 1075+15 1069+68	F 25N 12W 06	A B E F
258.39 94	(Aba-Dabba CK) TAPS A/G; CMP	CN;GR		SSSSSSSSSSSSSSSSSSSSSS	1364290 1364356 963+13	F 25N 13W 13	A B E F

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MERT R SEC	Reference
259.91 94	(Elwood CK) TAPS A/G; LWC	GR?		jafemrSSSSSSSSSSSSSnode	1372304 1372364 884+80	F 25N 13W 23	B F
268.10 92	JIM RIVER #3 TAPS B/G; BLOCKPOINT	BB;CN;DS GR;HW; KS;LS;NP; RW	YES	CCCCCCCCCCCCCCCCCCCCCCC	1415550 1415800 453+50	F 24N 14W 23&26	A B E F G
268.43 92	(Beaver Spring) TAPS A/G; CMP	CN?GR? KS?RW?		CCCCCCCCCCCCSSSSCCCCCCC	1417312 1417426 435+84	F 24N 14W 26	B F
268.99 92	(Dee CK) TAPS A/G; CMP	CN;DV? GR;RW		SSSSSSSSSSSSSSSSSSSSS	1420293 1420353 406+86	F 24N 14W 26	A B E F
270.41 92	DOUGLAS CREEK TAPS A/G; LWC	CN;GR; RW?		jafemrSSSSSSSSSSSSSnode	1427745 1428168 333+75	F 24N 14W 34	A B E F
271.31 92	(Gas Bubble Slough) TAPS A/G; Parallel Only TAPS DOES NOT CROSS	GR			289+00	F 23N 14W 03	A B E I
271,62 92	Side Channel JIM RIVER #2 TAPS B/G; BLOCKPOINT	BB;CN;DS GR;HW; KS:LS;NP; RW	YES	CCCCCCCCCCCCCCCCCCCCCCC	1434078 1434178 272+51	F 23N 14W 03	A B E F
271.92 92	Side Channel JIM RIVER #1 TAPS B/G; BLOCKPOINT	BB;CN;DS; GR;HW; KS;LS;NP; RW	YES	CCCCCCCCCCCCCCCCCCCCCCC	1435700 1435800 257+00	F 24N 14W 09	A B E F
272.21 91	(Little Piddler) TAPS A/G; CMP	GR		jafemrSSSSSSSSSSSSSnode	1437254 1437307 240+85	F 23N 14W 09	A B E F
277.16 91	PROSPECT CREEK TAPS A/G; BLOCKPOINT	CN;GR; KS;LS; NP;RW	YES	CCCCCCCCCCCCCCCCCCCCCCC	1463 1463 1590	F 23N 14W 31	A B E F G
281.90 90	(Little Nasty CK) TAPS A/G; BLOCKPOINT	CN;GR; RW		jafemrSSSSSSSSSSSSSnode	1488 1488 1339	F 22N 15W 19	A B E F
282.14 90	(South Fork, Little Nasty CK) TAPS A/G; CMP	CD?GR		jafemrSSSSSSSSSSSSSnode	1489 1489 1327	F 22N 15W 19	A B E F
284.40 89	North Fork BONANZA CREEK TAPS B/G; BLOCKPOINT	BB;CN; GR;HW? LS;;LW; NP;RW		jafemrCCCCCSSSSCCCCnode	1501 1501 1208	F 22N 14W 32	A B E F G

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
285.47 89	(Oxbow Lake System) TAPS B/G; CMP	GR?		jafemrCCCCCCSSauseocnode	1507 1148	F 21N 14W 07	A B F
286.02 89	South Fork BONANZA CREEK TAPS B/G; BLOCKPOINT	BB;CN; GR;HW? LS;NP;RW		SSSSSSCCCCCCSSSCCCCCCCSS	1510 1510 1123	F 21N 14W 07	A B E F G
289.63 88	(Pung's Crossing CK) TAPS A/G; BRIDGE	CD?GR; RW?		jafemrCCCCCCSSSSCCCCnode	1529 1529 932 932	F 21N 14W 31	A B E F
293.25 88	(Alder Mountain CK) TAPS B/G; LWC	CN;GR? RW?		jafemrSSSSSSSSSSSSSnode	1548 742	F 20N 15W 10	A B E F
294.90 88	FISH CREEK TAPS A/G;BRIDGE	BW?CN; DS?GR; LS;NP? RW;SK		jafemrCCCCCCSSSSCCCCnode	1557 1557 653	F 20N 15W 22	A B E F
296.34 87	Middle Fork, FISH CREEK TAPS A/G; CMP	CN;GR; RW		jafemrSSSSSSSSSSSSSnode	1564 578	F 20N 15W 26	A B E F
297.42 87	South Fork FISH CREEK TAPS A/G; BRIDGE	CN;GR; RW?		SSSSSSCCCCCCSSSSCCCCCCSS	1570 1570 520	F 20N 15W 35	A B E F
302.92 86	KANUTI RIVER TAPS B/G; BLOCKPOINT	BB;BC? BW?CN; CS?DS? GR;HW? IN?LS? NP;RW		jafemrCCCCCCSSSSCCCCnode	1599 1599 231	F 19N 14W 30	A B E F
306.22 86	(Caribou Mountain CK) TAPS B.G; BLOCKPOINT	GR		jafemrSSSSSSSSSSSSSnode	1616 1616 56	F 18N 14W 09	A B E F
308.56 85	(Olson's Lake CK) TAPS A/G; BLOCKPOINT	GR		jafemrSSSSSSSSSSSSSnode	1629 1629 1149	F 18N 14W 14	A B E F
312.13 85	(Finger Mountain CK) TAPS A.G; LWC	GR		jafemrSSSSSSSSSSSSSnode	1648 1648 961	F 18N 14W 36	AB E F
312.99 85	[Eight-Five CK] TAPS A/G; LWC	CD?GR?			1652 1652 915	F 17N 13W 06	B F
314.81 84	(Smokey CK) TAPS A/G; LWC	CD?GR			1662 1662 818	F 17N 13W 17	B F

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
315.24 84	Middle Branch, West Fork DALL RIVER TAPS A/G; LWC	CD?GR; IN?WF?		jajafemrSSSSSSSSSSSSSnode	1664 1664 798	F 17N 13W 17	A B E F
317.60 84	South Branch, West Fork DALL RIVER TAPS A/G; BLOCKPOINT	CD?GR; IN?WF?		jafemrSSSSSSSSSSSSSnode	1676 1676 673	F 17N 13W 28	A B E F
325.26 82	(Fed CK) TAPS A/G; LWC	CD?GR		jafemrSSSSSSSSSSSSSnode	1717 1717 270	F 16N 13W 25	A B E F
329.29 82	North Fork, RAY RIVER (No Name CK) TAPS A/G; BLOCKPOINT	BB;CN; GR;IN?LC? LS;NP;RW		jafemrCCCCCCSSSSCCCCCCde	1738 1738 58	F 15N 12W 17	A B E F J
336.18 81	(Fort Hamlin Hills CK) TAPS A/G; BLOCKPOINT	CD?GR; RW?		jafemrSSSSSSSSSSSSSnode	1775 1775 971	F 14N 12W 17	A B E F
337.55 80	[Eight-0 CK] TAPS A/G; LWC	CD?GR?		jafemrCCCCCCSSauseocnode	1782 1782 899	F 14N 12W 21	B F
344.96 79	(Phelps CK) TAPS A/G; LWC	GR		jafemrSSSSSSSSSSSSSnode	1821 1821 508	F 13N 11W 17	A B E F
350.49 78	(Wood Chopper CK) TAPS A/G; BLOCKPOINT	CD?GR; NP?WF?		jafemrSSSSSSSSSSSSSnode	1850 1850 215	F 13N 11W 36	A B E F
351.58 78	(Burbot CK) TAPS A/G; CMP	BB		jafemrapSSSSSSSSSSSSSnode	1856 1856 158	F 12N 11W 01	A B E F
353.07 353.50 78	YUKON RIVER TAPS A/G; BRIDGE	AL;BB; BC;BL? BW;CA; CN;CS; DS;GR; HO?HW; IN;KS; LC;LS; NP;OM; PS;RS; RW;SS	Y E S	CCCCCCCCCCCCCCCCCCCCCCC	1864 1866 78 60	F12N 10W 07	AB E F
362.14 76	(Tributary ISOM CREEK) TAPS A/G; CMP	GR?			1912 1912 1682	F 11N 10W 12	B F

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
362.72 76	ISOM CREEK TAPS A/G; SUMMER BLOCKPOINT	GR		jafemrapSSSSSSSSSSSnode	1915 16 51 +6 5	F 11N 09W 07	A B E F
362.76 76	ISOM CREEK TAPS A/G; SUMMER BLOCKPOINT	GR		jafemrapSSSSSSSSSSSnode	1915 1642	F 11N 09W 07	A B E F
370.53 75	(Hot Cat CK) TAPS A/G; CMP	GR		jafemrapSSSSSSSSSSSnode	1956 1956 1242	F 11N 08W 31	A B E F
378.38 73	FISH CREEK TAPS A/G; BRIDGE	CN?GR; NP;WF		jafemrapSSSSSSSSSSSnode	1997 1997 829	F 10N 07W 20	A B E F
378.54 73	HESS CREEK TAPS A/G; BLOCKPOINT	AL?BC; BW;CN; CS;DS? GR;HW; IN;LS; NP;RW		jafemrCCCCCCCCCCCCCnode	1998 1998 820 819	F 10N 07W 20	A B E F
382.51 73	ERICKSON CREEK # 2 TAPS A/G; BRIDGE	CN?GR; LS		jafemrapSSSSSSSSSSSnode	2019 2019 611	F 09N 07W 03	A B E F
384.36 72	ERICKSON CREEK # 1 TAPS A/G; BRIDGE	CN?GR; LS		jafemrapSSSSSSSSSSSnode	2029 2029 513	F 09N 07W 14	A B E F
387.70 72	(Tributary ERICKSON CREEK) TAPS A/G; LWC	?			2047 2047 336	F 09N 06W 30	A B E F
392.05 71	LOST CREEK TAPS A/G; BRIDGE	CN;GR; WF		jafemrapSSSSSSSSSSSnode	2069 2070 104	F 08N 06W 16	A B E F
398.55 70	TOLOVANA RIVER TAPS A/G; BRIDGE	AB?BB; CI?CN? CS?DS; GR;HW; IN;KS; LW?NP; SS?		jafemrapSSSSSSSSSSSSSSS	2104 2104 2958 2957	F 07N 05W 05	A B E F
400.50 69	SHORTY CREEK TAPS A/G; CMP	GR?			2114 2114 2855	F 07N 05W 09	B F

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
405.41 68	WILBER CREEK TAPS B/G; CMP	GR		jafemrapSSSSSSSSSSSSnode	2141 2609	F 07N 04W 30	A B E F
408.35 68	SLATE CREEK TAPS A/G; CMP	GR		jafemrapSSSSSSSSSSSSnode	2156 2156 2459	F 06N 04W 05	A B E F
412.47 67	TATALINA RIVER TAPS A/G; BLOCKPOINT	BB?CI; CN?GR; IN?NP; SK?WF		jafemrapCCCCCCCCSSSSSSde	2177 2178 2242 2241	F 06N 04W 26	A B E F
413.60 67	(Tributary TATALINA RIVER) TAPS A/G; LWC	GR?		jafemrapSSSSSSauseocnode	2183 2183 2166	F 06N 04W 21	A B E F
417.00 67	(Tributary GLOBE CREEK) TAPS A/G; LWC	GR?			2201 2201 1988	F 05N 03W 05	B F
417.40 66	GLOBE CREEK TAPS A/G; BRIDGE	GR		jafemrapSSSSSSSSSSSSnode	2203 2203 1966	F 05N 03W 08	A B E F
420.63 66	(Little Globe CK) TAPS A/G; LWC	?			2220 2220 1759	F 05N 03W 22	A B E F
423.70 65	North Fork AGGIE CREEK TAPS A/G; LWC	GR?		jafemrapSSSSSSauseocnode	2236 2237 1635	F 04N 03W 03	A B E F
424.43 65	South Fork AGGIE CREEK TAPS A/G; LWC	GR?		jafemrapSSSSSSauseocnode	2241 2241 1595	F 04N 03W 10	A B E F
64 APL-2	SNOWSHOE CREEK				:	B	
431.75 64	WASHINGTON CREEK TAPS A/G; BRIDGE	BB? CN? GR;IN? NP?RW?		CCCCCCCCSSSSSSSSSSCCCCCC	2279 2279 1209	F 03N 02W 04	A B E F
437.36 63	(Shocker CK) TAPS A/G; CMP	CN;GR; RW		jafemrapCCCCCCSSCCCCnode	2309 2309 914	F 03N 01W 19	A B E F
438.12 63	CHATANIKA RIVER TAPS B/G; BLOCKPOINT	AB;AL; BB;BW; CA?CN CS?DS;GR; HW;IN;KS; LS;NP; RW;SS	Y E S	CCCCCCCCCCCCCCCCCCCCCCCC	2313 2313 874 873	F 03N 01W 29	A B E F
62 APL-1	VAULT CREEK				:	B	

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
62 APL-1	DOME CREEK Bridge	KS;DS;CN LS Yes					J
442.19 62	TREASURE CREEK TAPS A/G; BRIDGE	CN;GR		jafemrapSSSSSSSSSSSnode	2334 2334 659	F 02N 01W 10	A B E F
448.29 61	GOLDSTREAM CREEK TAPS A/G; LWC	AB;BB? CN?CS? GR:HW? IN?NP?		jafemrapSSSSSSSSSSnode	2366 2366 336	F 01N 01W 01	A B E F
449.83 61	ENGINEER CREEK TAPS B/G; CMP	AB?			2374 210	F 01N 01E 07	B F
459.68 59	CHENA RIVER TAPS B/G; BLOCKPOINT	AL;BB; BL?BW; CN;CS? DS;GR; HW;IN; KS;LS;NP; RW;SS	Y E S	CCCCCCCCCCCCCCCCCCCCCCC	2427 2427 1853 1849	F 01S 02E 07	A B E F
462.04 59	(Seventeen Thirty Slough) TAPS B/G; CMP & PARALLEL	GR; LS; NP		jafemrapSSSSSSauseocnode	2439 2439 1732 1730	F 01S 02E 16	A B E F
462.23 59	(Seventeen Thirty Slough) TAPS B/G; CMP	GR; LS; NP		jafemrapSSSSSSauseocnode	2440 1720	F 01S 02E 16	AB E F
471.01 57	MOOSE CREEK # 3 TAPS B/G; BLOCKPOINT	BB;CN?GR; HW;LS;NP; RW;DS	Y E S	CCCCCCCCSSSSSSSSSSCCCCCC	2487 2487 1321 1320	F 02S 03E 19	AB E F
471.68 57	(Pike Run) TAPS B/G; CMP	LS? NP		jafemrapSSSSSSSSSocnode	2490 1307	F 02S 03E 20	AB E F
472.37 57	MOOSE CREEK # 2 TAPS B/G; BRIDGE	BB;CN?GR; HW;LS;NP; RW;DS	Y E S	CCCCCCCCSSSSSSSSSSCCCCC	2494 2494 1250	F 02S 03E 20	AB E F
473.57 57	MOOSE CREEK # 1 TAPS B/G; BRIDGE	BB;CN?GR; HW;LS;NP; RW;DS	Y E S	CCCCCCCCSSSSSSSSSSCCCCC	2500 2500 1188	F 02S 03E 28	AB E F
57 APL-2	GARRISON SLOUGH					: B	
474.56 57	(Bear Lake Outlet) TAPS B/G; CMP BLOCKED	CN;CS;GR; HW;LC;LS; NP;RW		jafemrapCCCCSSSSSCCCCCnode Blockage authorized Aug 5, 1992 by ADF&G (Ott to Col. Murray)	2505 1133	F 02S 03E 27	AB E F
474.74 57	FRENCH CREEK TAPS A/G; BRIDGE	BB?CN?CS? GR;HW;LC? LS?NP;RW; SK?DS	Y E S	jafemrSSSSSSSSSSSSSSSSsnode	2506 2506 1125	F 02S 03E 27	AB E F

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
476.48 56	FRENCH CREEK TAPS B/G; BRIDGE	BB?CN?CS?GR;HW;LC?LS?NP;RW;SK?DS	Y E S	jafemrSSSSSSSSSSSSSSSde	2515 2515 1035	F 02S 03E 36	AB E F
476.79 56	FRENCH CREEK TAPS B/G; BRIDGE	BB?CN?CS?GR;HW;LC?LS?NP;RW;SK?DS	Y E S	JafemrSSSSSSSSSSSSSSde	2517 2517 1018	F 03S 03E 01	AB E F
477.25 56	FRENCH CREEK TAPS B/G; BRIDGE	BB?CN?CS?GR;HW;LC?LS?NP;RW;SK?DS	Y E S	jafemrSSSSSSSSSSSSSSSSde	2519 2519 993+	F 03S 03E 01	AB E F
478.20 56	FRENCH CREEK TAPS A/; BRIDGE	BB?CN?CS?GR;HW;LC?LS?NP;RW;SK?DS	Y E S	jafemrSSSSSSSSSSSSSSSde	25 24 86 8 25 24 96 2 94 2+ 85	F 03S 04E 07	AB E F
56 APL-3	FRENCH CREEK				:	B	
480.74 55	(Knokanpeover CK) TAPS A/G; CMP	GR		jafemrapCCCCCCSSCCocnode	25 38 31 7 25 38 37 7 80 9+ 56	F 03S 04E 20	AB E F
483.92 55	FRENCH CREEK TAPS A/G; BRIDGE	BB?CN?CS?GR;HW;LC?LS?NP;RW;SK?		jafemrSSSSSSSSSSSSSSSde	25 55 08 4 25 55 15 4 64 3+ 55	F 03S 04E 34	AB E F

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
484.93 55	(Million Dollar CK) TAPS A/G; CMP	CN;GR: NP;WF		jafemrapCCCCCCSSCCocnode	25 60 37 6 25 60 43 5 59 1+ 55	F 04S 04E 02	ABC E F
485.34 55	(Million Dollar CK) TAPS A/G; CMP	CN;GR; NP;WF		jafemrapCCCCCCSSCCocnode	25 62 58 7 25 62 65 8 56 8+ 75	F 04S 04E 11	ABC E F
485.51 55	(Million Dollar CK) TAPS A/G; CMP	CN;GR; NP;WF		jafemrapCCCCCCSSCCocnode	25 63 51 7 25 63 58 7 55 8+ 65	F 04S 04E 11	ABC E F
485.78 55	(Million Dollar CK) TAPS A/G; CMP	CN;GR; NP;WF		jafemrapCCCCCCSSCCocnode	25 64 87 3 25 64 94 2 54 5+ 10	F 04S 04E 11	ABC E F

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
488.23 54	(Million Dollar CK) TAPS A/G; LWC	CN?GR? NP;WF		jafemrapCCCCCCSSCCocnode	25 77 85 1 25 77 91 1 41 7+ 00	F 04S 04E 24	BC F
489.69 54	(Tributary LITTLE SALCHA RIVER) TAPS A/G; CMP	GR?		jafemrSSCCCCSSSSSSocnode	25 85 48 8 25 85 54 8 34 5+ 50	F 04S 05E 30	B F
490.84 54	LITTLE SALCHA RIVER TAPS A/G; BRIDGE	BB?CN; DS;GR; KS;LS? NP?WF	Y E S	CCCCCCCCSSSSSSCCCCCCCCCC	25 91 58 9 25 91 65 9 28 1+ 71	F 04S 05E 32	AB E F
491.94 53A	(Kanpeover or Two-Nineteen CK) TAPS A/G; CMP	GR		jafemrapCCCCSSauseocnode	25 97 38 7 25 97 45 2 21 9+ 00	F 05S 05E 04	AB E

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
495.77 53A	SALCHA RIVER TAPS B/G; BLOCKPOINT	AL;BB; CN;DS; GR;KS; LS;NP; RW;SB? SS	Y E S	CCCCCCCCCCCCCCCCCCCCCCCC	26 17 90 0 26 18 10 0 20 +6 5 19 +0 0	F 05S 05E 13	AB E F
496.06 53A	(Fifty-Three-A CK) TAPS B/G; LWC HAS BEEN FILLED	CN;DS		CCCCCCCCSSSSSSCCCCCCCCC	26 19 20 0 7+ 50	F 05S 05E 13	B F
496.16 53A	(Taps Slough) TAPS B/G; CMP	BB?CD? DS?WF? KS	Y E S	jafemrapSSSSSSSSSSSnode	26 19 70 0 2+ 00	F 05S 05E 13	AB E F J
500.02 53	REDMOND CREEK TAPS A/G; BRIDGE	BB;CN; CS?DS? GR;KS; RW;SK?	Y E S	jafemrapCCCCSSSSCCCCnode	26 40 08 4 26 40 15 4 10 85 53 3	F 05S 06E 22	AB E F

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
507.03 51	GOLD RUN TAPS A/G; CMP	GR		jafemrapSSSSSSSSSSScnode	26 77 08 2 26 77 14 8 10 48 72 5	F 06S 07E 03	AB E F
508.79 51	North Fork MINTON CREEK TAPS A/G; LWC	GR		jafemrapSSSSSSSSSSSnode	26 86 40 6 26 86 46 6 10 39 58 8	F 06S 07E 14	B F
508.84 51	North Fork MINTON CREEK TAPS A/G; LWC	GR		jafemrapSSSSSSSSSSSnode	26 86 70 0 26 86 76 0 10 39 30 1	F 06S 07E 14	B
509.19 51	North Fork MINTON CREEK TAPS A/G; LWC	GR		jafemrapSSSSSSSSSSSnode	26 88 54 0 26 88 60 8 10 37 41 3	F 06S 07E 14	B F

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
509.72 51	North Fork MINTON CREEK TAPS A/G; LWC	GR		jafemrapSSSSSSSSSSSnode	26 91 31 4 26 91 37 2 10 34 60 0	F 06S 07E 13	AB E F
509.84 51	South Fork MINTON CREEK TAPS A/G; LWC	GR		jafemrapSSSSSSSSSSSnode	26 91 90 3 26 91 95 6 10 34 30 0	F 06S 07E 13	AB E F
*509.8 51	South Fork MINTON CREEK TAPS A/G; DOES NOT CROSS	GR		jafemrapSSSSSSSSSSSnode	NO TA PS XI NG 10 34 01 2	F 06S 07E 13	F
510.32 51	South Fork MINTON CREEK TAPS A/G; LWC	GR		jafemrapSSSSSSSSSSSnode	26 94 46 8 26 94 52 7 10 31 80 0	F 06S 07E 13	AB E F

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
510.54 51	South Fork MINTON CREEK TAPS A/G; LWC	GR		jafemrapSSSSSSSSSSSnode	26 95 61 3 26 95 67 3 10 30 56 0	F 06S 07E 24	AB F
511.45 51	South Fork MINTON CREEK TAPS A/G; LWC	GR		jsfemrapSSSSSSSSSSSnode	27 00 42 3 27 00 48 3 10 25 81 2	F 06S 08E 19	B F
511.68 51	South Fork MINTON CREEK TAPS A/G; LWC	GR		jafemrapSSSSSSSSSSSnode	27 01 62 4 27 01 68 4 10 24 40 6	F 06S 08E 19	B F
512.31 51	South Fork MINTON CREEK TAPS A/G; LWC	GR		jafemrapSSSSSSSSSSSnode	27 04 92 4 27 04 98 1 10 21 48 0	F 06S 08E 29	B F

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MERTR SEC	Reference
518.89 49	West Branch KEYSTONE CREEK TAPS A/G; CMP	GR;BB		jafemrapSSSSSSSSSSSnode	27 39 72 9 27 39 78 9 98 67 +5 0 98 62 +0 0	F 07S 08E 23	A E F J
520.08 49	ROSA CREEK TAPS A/G; CMP	GR		jafemrapSSSSSSSSSSSnode	27 46 04 0 27 46 10 0 98 00 +3 5	F 07S 08E 25	AB E F
520.29 49	SHAW CREEK TAPS A/G; BRIDGE	BB;CN; DS;GR; HW;LC; LS;NP; RW;SB? SS	Y E S	CCCCCCCCCCCCCCCCCCCCCCC	27 47 20 0 27 47 35 0 97 88 +8 9	F 07S 08E 36	AB E F
OMS 49-2N (Four-Nine CK)						: B	

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
531.14 531.32 47	TANANA RIVER TAPS A/G; BLOCKPOINT	BB;BW; CN;DS; DV?GR; HW;IN: KS;LC; LS;NP; RW;SS	Y ES	CCCCCCCCCCCCCCCCCCCCCCCC	28 04 50 0 28 05 40 0 92 18 +7 2 92 09 +9 8	F 09S 10E 06& 07	AB E F
565.92 41	(Beaver CK) TAPS A/G; LWC	BB;WF			29 88 05 2 29 88 11 7 73 87 +5 0	F 14S 10E 20	B
566.73 41	(Donnelly CK) TAPS A/G; CMP	CD;GR; WF		ADOT&PF culvert perched at Richardson Hwy crossing.	29 92 30 1 29 92 36 5 73 46 +0 0	F 14S 10E 29	B
569.39 40	ONE MILE CREEK TAPS A/G; LWC	GR			29 88 05 2 29 88 11 7 73 87 +5 0	F 15S 10E 06	J

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
570.18 40	RUBY CREEK TAPS A/G; LWC	GR;WF CN			30 10 52 3 30 10 58 2 71 64 +1 3	F 15S 10E 07	B
571.36 40	BEAR CREEK TAPS B/G; LWC	GR;WF			30 16 80 0 70 92 +5 5	F 15S 10E 18	B
572.33 40	(Catastrophe CK) TAPS B/G; LWC	GR? RW?			30 21 80 0 70 61 +1 6	F 15S 10E 19	B
573.63 40	DARLING CREEK TAPS B/G; LWC	GR;WF			30 28 80 0 69 83 +7 7	F 15S 10E 30	B
577.76 39	GUNNYSACK CREEK TAPS B/G; LWC	GR;WF			30 50 60 0 67 61 +0 8	F 16S 10E 17	B

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
578.17 39	CAMP TERRY CREEK TAPS B/G; LWC	GR;WF		 Waterfall (barrier?) downstream of TAPS crossing.	30 52 75 0 67 41 +5 0	F 16S 10E 20	B
578.37 39	FALLS CREEK TAPS B/G;	GR;WF			30 53 80 0 67 29 +5 8	F 16S 10E 20	B
578.61 39	RAPIDS LAKE TAPS B/G; PARALLEL	RB		SSSSSSSSSSSSSSSSSSSSSS	30 55 10 0 66 82 +0 0	F 16S 10E 29	AB E
579.90 39	SUZY-Q CREEK TAPS B/G; LWC	GR;WF			30 61 90 0 66 47 +6 2	F 16S 10E 29	B
581.04 39	BOULDER CREEK TAPS B/G; LWC	GR;WF;			30 67 90 0 65 89 +0 8	F 16S 10E 32	B
581.81 38	WHISTLER CREEK TAPS B/G; LWC	GR;WF			30 72 00 0 65 47 +4 9	F 17S 10E 04	B

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MERTR SEC	Reference
582.00 583.71 38	DELTA RIVER (includes Spur Dike Creek) TAPS B/G; DIKES	BB;DV; GR;LT;NP SK;RW	Y ES	jafemrapCCCCCCCCCCCCnode	30 73 00 0 30 82 00 0 65 34 +7 4 64 85 +0 0	F 17S 10E 04, 09, 10 & 15	AB E
583.92 38	FLOOD (Floyd) CREEK TAPS B/G; LWC	GR;WF			30 83 20 0 64 35 +0 6	F 17S 10E 15	B
584.10 584.71 38	DELTA RIVER TAPS B/G; DIKES Fish downstream of ROW	BB;GR; LT;NP; SK;CN RW	Y ES	jafemrapCCCCCCCCCCCCnode	30 84 10 0 30 87 30 0 64 29 +2 5 63 93 +9 2	F 17S 10E 14&15	B E J
584.94 38	MICHAEL CREEK TAPS B/G; LWC	GR;WF			30 88 50 0 63 79 +8 5	F 17S 10E 23	B

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
585.07 585.41 38	DELTA RIVER TAPS B/G; DIKES	BB;GR; LT;NP; SK;RW	Y ES	jafemrapCCCCCCCCCCCCnode	30 89 20 0 30 91 00 0 ?	F 17S 10E 23	
586.02 38	TRIMS CREEK TAPS B/G; BLOCKPOINT	GR;WF			30 94 20 0 63 29 +3 2	F 17S 10E 23	B
587.51 37	CASTNER CREEK TAPS A/G; BLOCKPOINT	GR;WF			31 01 96 2 31 02 14 6 62 53 +6 5	F 17S 10E 36	B
587.93 37	(Lower Miller CK) TAPS A/G; BLOCKPOINT	GR;WF			31 04 24 4 31 04 36 4 62 31 +4 2	F 17S 10E 36	B

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
589.57 37	MILLER CREEK TAPS A/G; BLOCKPOINT	GR;WF			31 12 90 2 31 13 02 1 61 43 +1 7	F 18S 10E 12	B
591.26 591.81 37	DELTA RIVER TAPS B/G; BLOCKPOINT	BB;GR;LTN P;SK; RW	Y ES	jafemrapCCCCCCCCCCCCnode	31 21 90 0 31 24 80 0 60 56 +2 9 60 30 +7 7	F 18S 10E 13&24	B E
592.00 592.76 37 36A	DELTA RIVER TAPS B/G; BLOCKPOINT	BB;GR;LT NP;RW; SK;WF	Y ES	SSSSSSSSCCCCSSSSCCCCSSSS	31 25 80 0 31 29 80 0 60 03 +0 0 59 67 +0 0	F 18S 10E 24&25	AB E
36A APL-1 PHELAN CREEK							
36 APL-1A PHELAN CREEK					:	B	

Section MP A/S	Stream Name(s) Comments	Fish Species	A D A D	JaFeMrApMaJuJlAuSeOcNoDe Period of Sensitivity	Field Station G-5	MER T R SEC	Reference
598.95 600.66 36 35	PHELAN CREEK (Seeps) TAPS B/G; BLOCKPOINT	BB;CD; DV;GR; RW		SSSSSSSSSSSSSSCCCCCCCCSS	31 62 50 0 31 71 50 0 56 51 +0 0 55 51 +0 0	F 19S 11E 20&29	AB E
OMS 35-2 PHELAN CREEK					:	B	
35 APL/AMS-6 PHELAN CREEK					:	B	
601.51 35	McCALLUM CREEK TAPS B/G; BLOCKPOINT	GR;WF			31 75 50 0 31 76 50 0 55 10 +3 0	F 19S 11E 33	B
602.42 35	PHELAN CREEK TAPS B/G; BLOCKPOINT	BB;CD; DV;GR; RW		SSSSSSSSCCCCCSSCCCCCCCCSS	31 80 80 0 55 76 +0 0	F 20S 11E 04	AB

KODIAK SUBAREA CONTINGENCY PLAN
SENSITIVE AREAS
SECTION

i. 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 the Kodiak 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 Contingency 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:

- ARRT 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, Appendix 1)
- 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:

Doug Mutter
U.S. Department of the Interior
Office of Environmental Policy
and Compliance
1689 C Street, Room 119
Anchorage, Alaska 99501
(907) 271-5011
FAX (907) 271-4102
email: douglas_mutter@ios.doi.gov

Brad Dunker
Alaska Department of Fish and Game
Habitat Division
333 Raspberry Road
Anchorage, Alaska 99518
(907) 267-2541
FAX (907) 267-2464
email: bradley.dunker@alaska.gov

ii. 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 Anchorage 907-267-2541
U.S. Department of the Interior	migratory birds, sea otters, 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 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		
U.S. Department of Commerce, National Oceanic & Atmospheric Administration	shoreline types, environmental sensitivity index maps	Scientific Support Coordinator Anchorage 907-271-3593

Agency	Resources	Point of Contact
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 Anchorage 907-267-2541
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: – Kodiak Island Borough	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 Anchorage 907- 267-2105
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
U.S. Department of Commerce National Marine Fisheries Service	fishing permits, seasons	Protected Resources Division Anchorage 907-271-5006

Agency	Resources	Point of Contact
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 Anchorage 907-267-2218
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 Anchorage 907-269-8400
Alaska Department of Fish and Game	sport hunting and fishing	Division of Habitat Anchorage 907-267-2541
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 Anchorage 907-267-2541
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

iii. 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.

The following criteria were developed as a tool 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 countermeasures

B. AREAS OF MAJOR CONCERN

- Threatened and Endangered Species
  - Stellar Sea Lion Rookeries and Haulouts
  - Sea Otter Concentration Areas (> 20) and General Distribution
  - Steller's eiders over-wintering sites
  - North Pacific Right Whale Critical Habitat
- Geomorphology - Coastal Habitat Types
  - Marshes
  - Eelgrass Beds
  - Sheltered Tidal Flats
  - Sheltered Rocky Shores
- Geomorphology - Upland Habitat Types
  - Streams and Lakes
  - Riparian Habitats
- Harbor Seal Haulouts (> 10)
- Seabird Colonies (> 5,000)
- Waterfowl and Shorebird Spring, Fall, or Winter Concentration Areas
- Eagle Nest Sites
- Anadromous Fish Streams
  - > 25,000 pink salmon spawners
  - > 15,000 chum salmon spawners
  - > 5,000 sockeye salmon spawners
  - > 2,500 coho salmon spawners
  - > 500 chinook salmon spawners
- Bear Spring Coastal Concentration Areas
- Hatcheries
- Large Freshwater Fish Systems
- Herring Spawning Areas
- Land Management Designations
- Federal Lands
  - Designated Wilderness Areas
    - Katmai Wilderness
    - Becharof Wilderness
    - Semidi Wilderness
- State Lands
  - Tugidak Island Critical Habitat
- Cultural Resources/Archaeological Sites
  - National Historical Landmarks
    - Amailik Bay Archeological District
  - National Natural Landmarks
  - Burial Sites
  - National Register Eligible Village Sites
  - Intertidal Sites
- Subsistence Harvest Areas
- High Use Commercial Harvest Areas

C. AREAS OF MODERATE CONCERN

- Geomorphology - Coastal Habitat Types
  - Gravel Beaches
- Mixed Sand & Gravel Beaches
  - Exposed Tidal Flats
  - Coarse Grained Sand Beaches
- Harbor Seal Haulouts (< 10)
- Stellar Sea Lion General Distribution
- Seabird Colonies (1,000 - 5,000)
- Waterfowl and Shorebird Nesting and/or Molting Concentration Areas
- Anadromous Fish Streams
  - 5,000 - 25,000 pink salmon spawners
  - 5,000 - 15,000 chum salmon spawners
  - 500 - 5,000 sockeye salmon spawners
  - 500 - 2,500 coho salmon spawners
  - 100 - 500 chinook salmon spawners
- Moderately Sized Freshwater Fish Systems
- Clam Beds
- Sitka Deer and Elk Coastal Feeding Concentration Areas
- Commercial Harvest Areas
- Land Management Designations
  - Federal Lands
    - Katmai National Park and Preserve
    - Kodiak National Wildlife Refuge
    - Alaska Maritime National Wildlife Refuge
    - Alaska Peninsula National Wildlife Refuge
    - Becharof National Wildlife Refuge
  - State Lands
    - Afognak State Park
    - Shuyak Island State Park
    - Buskin River State Recreation Area
    - Ft. Abercrombie State Historic Park
    - Woody Island State Recreation Site
    - Pasagshak River State Recreation Site
- Cultural Resources/Archaeological Sites
  - National Register Eligible Sites (excluding village sites)
  - Sites Adjacent to Shorelines

D. AREAS OF LESSER CONCERN

- Geomorphology - Coastal Habitat Types
  - Fine-grained Sand Beaches
  - Exposed Wave-cut Platforms
  - Exposed Rocky Shores
- Seabird Colonies (< 1,000)
- Raptor Feeding Areas
- Waterfowl and Shorebird General Distribution
- Bear Fall Concentration Areas

- Anadromous Fish Streams
  - < 5,000 pink salmon spawners
  - < 5,000 chum salmon spawners
  - < 500 sockeye salmon spawners
  - < 500 coho salmon spawners
  - < 100 chinook salmon spawners
- General Freshwater Fish Habitat
- Land Management Designations
  - Federal and State Public Lands
- Cultural Resources/Archaeological Sites
  - Cultural Resources that do not meet National Register Criteria

E. AREAS OF LOCAL CONCERN

The Kodiak Island Borough received a grant to ensure up-to-date, local knowledge is integrated into this edition of the Kodiak Subarea Contingency Plan, Sensitive Areas Section. Traditional or local knowledge is a term used to describe information primarily possessed by local residents gained from experience in living on the land and water of the Kodiak Subarea. Local knowledge includes, but is not limited to, expertise on topics related to storms and ocean currents; distribution and behavior of fish and wildlife; and historic and current use of the land and waters for subsistence activities and other traditional uses, especially historic commercial and recreational fisheries.

State and federal and agencies have historically relied on western scientific research and engineering when making decisions related to oil spill prevention and response. In doing so, they often overlook the knowledge of local residents that is based on years, even generations, of experience and observation. The agencies cooperating in preparation of the Sensitive Areas Section of the plan have committed to incorporation of local knowledge of the residents of the subarea. Not only can this information help ensure that areas and activities important to local residents are addressed in spill prevention and response planning, but that local knowledge of physical and biological characteristics will improve spill response efficiency and application of appropriate spill response techniques.

Dames & Moore worked in conjunction with the Kodiak Island Borough, Alaska Department of Fish and Game, and the Department of the Interior to develop survey and meeting methodologies for obtaining, documenting, and incorporating local knowledge into the SCP. The methodology included a project newsletter, pre-meeting contact, development of a survey instrument, and the community and focus group meetings.

Community meetings were held in six rural communities on Kodiak Island: Akhiok, Karluk, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions. Focus group meetings on specific topics were held in the City of Kodiak along with a general community meeting; a meeting was held with each of the following organizations and coastal users.

- Lodge Operators
- Charter Boat Owners/Operators
- Kodiak Salmon Group
- Recreational Users/Environmental Groups
- Local Government Agencies/Native Corporations
- Oil Industry Watchers

- Alaska Draggers Association
- Kodiak Regional Aquaculture Association

The series of six community and eight focus group meetings in Kodiak and the rural communities highlighted the fact that the marine environments of Kodiak Island and the adjacent Alaska Peninsula support a tremendous variety of natural resources and that the people living in these areas place very high values on these resources. The full report *Kodiak Island Borough Sensitive Areas Identification Project* (June 30, 1997), containing resource summaries from the meetings, associated maps, and references can be obtained through the Community Development Department of the Kodiak Island Borough, 710 Mill Bay Road, Kodiak, AK, 99615, 907-486-9360.

Summaries of the sensitive areas identified in the meetings are provided below and in Table D-2, and is graphically summarized on Maps #17 and #18 in Attachment One.

Akhiok: In the case of an oil spill and with limited oil spill equipment, the sensitive areas selected by the participants included Kempff Bay northwest of Akhiok (for sea urchins), Tanner Head for razor clams, butter clam beaches on small islands off of Akhiok, Moser Bay (salmon), Snug Cove between Akhiok and Moser Bay (subsistence), and Sukhoi Lagoon (waterfowl and subsistence). Residents indicated these should have a very high priority.

Alaska Draggers Association: Sensitive areas selected by the draggers focused on habitat for groundfish and halibut and consisted of both bays and open water areas. The areas selected included Kukak Bay on the west side of Shelikof Strait and spawning areas in: Shelikof Strait (pollock); on the east side of Kodiak Island, Raspberry Strait, Kupreanof Strait, and Marmot Bay (pollock and cod); and Uyak Bay, Uganik Bay, Perenosa Bay, Womens Bay in Chiniak Bay, Ugak Bay, Olga Bay, and Deadman Bay (juvenile fish).

Charter Boat Owners/Operators: Areas selected as important to sportfishing and marine recreation which deserve some type of protection in the event of a spill included coastal areas on the road system, such as Holiday Beach, the rocks off of Long Island (sea lion haulouts), the Cape Chiniak bird colonies, Litnik, the back side of Hog Island in Marmot Bay, and the east entrance to Whale Pass. Other areas of importance included Womens Bay, the mouth of the Buskin River, Danger Bay, Marka Bay, and the head of Kazakof Bay.

Karluk: In the event of oil spill, with limited resources for response the sensitive areas selected were based primarily on subsistence. These included the Sturgeon River, Karluk Lagoon, Halibut Bay, and Grant Lagoon. Karluk Lagoon was by far the highest priority.

Kodiak: According to the participant, sensitive areas around the community of Kodiak center on coastal areas accessible by road, such as Monashka Bay, the Baskin River, and other local beaches. Kalsin and Middle Bays were considered sensitive areas for juvenile fish as well as other resources.

Kodiak Regional Aquaculture Association: Based on the importance to one or more fishery resources, areas were designated as priorities for protection in the event of an oil spill. They included the following: Marmot Bay (nursery area for several species of commercial importance), the west end of Sitkalidak Strait (herring, groundfish, halibut), Sitkalidak Island areas (herring), Uyak Bay (herring spawning), Uganik Bay (herring spawning), Alitak Bay (nursery area for herring, shrimp, salmon, and forage fish), Kukak Bay on the Alaska Peninsula (herring and shrimp), Little River Lagoon and beach, and Ayakulik Lagoon and beach.

Kodiak Salmon Group: Sensitive areas selected by the Kodiak salmon focus group included all major anadromous fish streams. Areas selected for reasons other than salmon included Mission Beach and the west side of Shuyak Island.

Larsen Bay: The extreme tides in Larsen Bay make many areas difficult to protect in the event of an oil spill. In general, participants agreed that the most practical beaches to protect, in the event of a spill, would be Brown's Lagoon, Humpy Creek, and Telrod Creek. Participants identified the following Sensitive Areas for Larsen Bay: from the outer part of Larsen Bay to the end of Larsen Bay, from the northern tip of Amok Island to the southern tip of Amok Island, from Carlson Point to Zacker Bay, the Chiefkof area, from Hook Point to the head of Spiridon Bay, and from the islands south of Amok Islands to the head of Uyak Bay. Residents voiced serious concerns about the habit of barges and other vessels using Uyak Bay as a safe harbor when the weather becomes rough in the Shelikof Straits. This activity greatly increases the threat of a spill in Larsen Bay.

Lodge Owners: The focus group participants selected a large number of areas which deserve some initial protection in the event of an oil or hazardous material spill, mostly entire bays, which they felt would be adversely affected and subsequently would affect their local industry. For the Alaska Peninsula on the west side of Shelikof strait, these included Katmai Bay, Hallo Bay, Kukak Bay, Kaflia Bay and Geographic Harbor. On the west side of Kodiak Island, sensitive areas included: Karluk River and Lagoon, the head of Uyak Bay, Spiridon Bay and River, South Arm of Uganik Bay, Uganik River, Mink Point, Village Islands, and Zachar Bay and River. On the east side of Kodiak Island in the Ugak Bay area, sites delineated as sensitive included: Hidden Bay (Basin), Saltery Cove, Pasagshak Bay, Portage Bay, and Eagle Harbor. In the Afognak Island area, sensitive areas included Whale Pass (high priority), Paramanof Bay, Selief Bay (four lodges), Malina Bay, Pauls Bay, Big Waterfall Bay, Litnik, and Muskomee Bay.

Local Government Agencies/Native Corporations: A large number of areas were selected by this focus group as sensitive for one or more resources. On the Alaska Peninsula (west side of Shelikof Strait), sensitive areas included: Geographic Harbor, Amalik Bay, Hallo Bay, and Kukak Bay. Areas on the road system included Buskin River, Point Abercrombie, Monashka Bay, Pasagshak Bay, and Chiniak Bay areas including Womens, Kalsin, and Middle Bays, Termination Point, and the north end of Long Island. For salmon resources, sensitive areas selected included Olga Bay, Uganik Bay, Uyak Bay, Kitoi Bay (hatchery), and the Karluk River and Lagoon. Other areas selected for resources (recreation and subsistence) included Litnik, Paramanof Bay, and Sitkalidak Strait. Sensitive areas selected for marine mammals included Marmot Island and all of Marmot Bay (whale and sea lions), Uyak and Uganik Bays (whales), the Barren Islands (seabirds, whales, and sea lions), Semedi Islands (seabirds), Tugidak Island (harbor seal), and all the Trinity Islands and surrounding waters (waterfowl, marine mammals).

Oil Industry Watchers Group: When asked which areas which would be considered sensitive and should be prioritized in the case of an oil spill (assuming limited resources), the areas selected included: the areas between Kodiak City and the mouth of Womens Bay, Cape Chiniak to the east side of Kalsin Bay (waterfowl), and Ugak Strait (marine mammals). Recreational areas which should have a high priority include Cook Lagoon on Long Island, Monashka Beach, Mayflower Beach, Pasagshak Beach, the entrance to Big Bay, and Fossil Beach.

Old Harbor: Sensitive areas or areas of special concern in the case of an oil spill with limited oil spill equipment were delineated by people at the meeting. The highest priorities were associated with important subsistence areas. Most of the areas were either located on Sitkalidak Strait or Sitkalidak

Island. These areas included: Barling Bay south through Fox Lagoon, all of Sitkalidak Strait, Ocean Beach (Bay), and Partition Cove (east side Sitkalidak Island), Port Hobron, Tanginak Anchorage (north side Sitkalidak Island), Shearwater Bay (in Kiliuda Bay), Newman Bay (west side Sitkalidak Island), Kiavak Bay, Big Creek on Kaiugnak Bay, Mouse Island, and Seal Bay (west of Cape Barnabas).

Ouzinkie: The participants were asked at the end of the meeting that if they had a limited amount of oil boom to protect areas of greatest importance to the communities in the event of an oil or hazardous material spill, what areas would be highest on the priority list. The areas of most concern involved those used for subsistence gathering activities. These included the Camel Rock area, Sourdough Flats, a salmon stream just south of town, and the west side of Spruce Island from the Narrows to the Zapadni Point. Other sensitive areas include Icon Bay at the eastern end of the island for its historical significance.

Port Lions: The participants in the meeting were asked what areas they would like protected if there was a spill, and if there were limited resources to protect sensitive areas. The areas selected were primarily associated with subsistence and included Settler Cove at Port Lions, clam beds at the end of the runway at Port Lions, the head of Kizhuyak Bay, and Litnik at the head of Afognak Bay.

Recreational Users/Environmental Groups: All areas on the road system with access to the coast are heavily used for recreation and should receive some level of protection in the event of an oil or hazardous substance spill. Other areas included: the mouth of Big Bay on Shuyak Island, Foul Bay on the west side of Afognak Island, all of Chiniak Bay (a heavily used area), the heads of Kalsin and Middle Bays (juvenile halibut and forage fish), and Anton Larson Bay (due to road access).

As illustrated in the following table, there is a considerable amount of overlap in the sensitive areas selected by the different focus groups. Marmot Bay, Chiniak Bay, Kalsin Bay, Middle Bay, and Womens Bay were selected by most of the focus groups. Other areas of overlap included Uyak Bay, Whale Pass, Litnik at the head of Afognak Bay, the mouth of the Buskin River, and Pasagshak Bay and Beach in Ugak Bay. When totaled, the selected sensitive areas covered a significant portion of the Kodiak Archipelago.

TABLE D-2
Summary of Sensitive Areas Selected by
Community Representatives and Focus Groups
Kodiak Island Borough, 1997

Community/Group	Sensitive Areas
Akhiok	Kempff Bay, Tanner Head, small islands off Akhiok, Moser Bay, Snug Cove, and Sukoi Lagoon
Alaska Draggers	Kukak Bay and spawning areas in Shelikof Strait, the east side of Kodiak Island, Uyak Bay, Uganik Bay, Raspberry Strait, Kupreanof Strait, Marmot Bay, Perenosa Bay, Womens Bay, Olga Bay, Deadman Bay, and Ugak Bay.
Charter Boat Owners/Operators	Cape Chiniak, Litnik, Hog Island in Marmot Bay, Whale Pass, Womens Bay, mouth of Buskin River, Danger Bay, Marka Bay, the head of Kuskoff Bay and coastal areas accessible by road.
Karkuk	Karluk Lagoon, Sturgeon River, Halibut Bay, and Grant Lagoon
Kodiak	Kalsin Bay, Middle Bay, Buskin River, Monashka Bay, and all beach areas accessible by road system.
Kodiak Regional Aquaculture Association	Marmot Bay, west end of Sitkalidak Strait, Sitkalidak Island areas, Uyak Bay, Uganik Bay, Alitak Bay, Kukak Bay, Little River Lagoon/beach, and Ayakulik Lagoon/beach.
Kodiak Salmon Group	All salmon streams, Mission Beach, and west side of Shuyak Island.
Larsen Bay	Brown□s Lagoon, Humpy Creek, Telrod Creek, Larsen Bayfrom outer Larsen Bay to end, from northern tip of Amok Island to southern tip of Amok Island, from Carlson Point to Zacker Bay, the Chiefkof area from Hook Point to head of Spiridon Bay, from islands south of Amok Island to head of Uyak Bay.
Local Government Agencies/Native Corporations.	Alaska Peninsula - Geographic Harbor, Hallo Bay, Kukak Bay, and Amalik Bay. West side Kodiak Island- Karluk River and Lagoon, Uyak Bay, Uganik Bay, and Olga Bay. East side Kodiak Island - All of Chiniak Bay (Kalsin, Middle, and Womens Bays), Termination Point, north Long Island, Buskin River, Point Abercrombie, Monashka Bay, Pasagshak Bay, and Sitkalidak Strait. Afognak Island Area – Litnik, Paramanof Bay, Marmot Island, Marmot Bay, and Kitoi Bay. Barren Islands, Semedi Islands, and Trinity Islands (especially Tugidak Island)
Lodge Owners	Alaska Peninsula – Katmai Bay, Hallo Bay, Kukak Bay, Kaflia Bay, and Geographic Harbor. West side Kodiak Island- Karluk River and Lagoon, head of Uyak Bay, Spiridon Bay and River, South Arm of Uganik Bay, Ugainik River, Mink Point, Village Island, and Zachar Bay and River. East side Kodiak Island - Hidden Bay, Saltery Cove, Pasagshak Bay, Portage Bay, and Eagle Harbor. Afognak Island Area – Whale Pass, Paramanof Bay, Selief Bay, Malina Bay, Pauls Bay, Big Waterfall Bay, Litnik and Muskomee Bay.

Community/Group	Sensitive Areas
Oil Industry Watchers	Womens Bay, Cape Chiniak to east side of Kalsin Bay, Ugak Strait, Cook Lagoon on Long Island, Monashka Beach, Mayflower Beach, Pasagshak Beach, and Fossil Beach.
Old Harbor	Barling Bay, Sitkalidak Strait, Ocean Beach, Partition Cove, Port Hobron, Tanginak, Anchorage, Shearwater Bay, Newman Bay, Kiavak Bay, Big Creek, Mouse Island, and Seal Bay (Cape Barnabas).
Ouzinkie	Camel Rock , Sourdough Flats, west side of Spruce Island, Icon Bay, and the fish stream south of Ouzinkie
Port Lions	Settler Cove, head of Kizuyak Bay, Litnik, and the clam beds at end of runway
Recreational Users/ Environmental Groups	Coastal areas with road access, mouth of Big Bay on Shuyak Island, Foul Bay, all of Chiniak Bay, heads of Kalsin and Middle Bays, and Anton Larson Bay

iv. SENSITIVE AREAS: PART THREE - RESOURCE SENSITIVITY

See also the Kodiak Island Borough's *Sensitive Area Identification Project Report* (1997).

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	Fine-grained Sand Exposed Wave-cut Platforms Exposed Rocky Shores	Gravel Beaches Mixed Sand & Gravel Beaches Exposed Tidal Flats Coarse Grained Sand Beaches	Marshes Eelgrass Beds Sheltered Tidal Flats Sheltered Rocky Shore
UPLAND HABITAT TYPES	To Be Developed	To Be Developed	Streams & Lakes Riparian Habitats

THREATENED OR ENDANGERED SPECIES

CATEGORY	LOW	MEDIUM	HIGH
ENDANGERED SPECIES			**Marine mammals:** Steller sea lion; and Fin, Blue, Humpback, Sei, Sperm, and Northern right whales **Birds:** Short-tailed Albatross
THREATENED SPECIES			**Marine mammals**: northern sea otter **Birds:** Steller's eider
SPECIES OF CONCERN			**Birds:** Kittlitz's murrelet
PROTECTED SPECIES			Bald eagles, Golden eagles, All marine mammals and migratory birds

SEA OTTERS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE		< 20	> 20
SUSCEPTIBILITY			year around
HUMAN HARVEST	year around		

Sea Otter Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Present nearshore	■	■	■	■	■	■	■	■	■	■	■	■
Pupping (primary period)				■	■	■						

HARBOR SEALS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE (ON HAULOUTS)	< 5	5 – 10	> 10
SUSCEPTIBILITY		year around	
HUMAN HARVEST	June 1 - Aug 31	Sept 1 - Sept 30	Oct 1 - May 31

Harbor Seal Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Pupping						■						
Molting							■	■	■	■		
On Haulouts						■	■	■	■			

WHALES and PORPOISES1

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 10	10 - 50	> 50
SUSCEPTIBILITY	Oct 1 – May 1	Aug 1 - Sept 30	May 1 - July 31

[1] Toothed and baleen whales are present nearshore year round.

STELLER SEA LIONS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE (ON HAULOUTS)	< 15	15 - 30	> 30
SUSCEPTIBILITY		year around	
HUMAN HARVEST	May 1 - Aug 31	Sept 1 - Sept 30	Oct 1 - Apr 30

Stellar Sea Lion Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Pupping					■	■	■					
Molting							■	■	■	■	■	
On Rookeries					■	■	■	■	■			
On Haulouts					■	■	■	■	■	■		
In area waters	■	■	■	■	■	■	■	■	■	■	■	■

BROWN BEARS

CATEGORY	LOW	MEDIUM	HIGH
SUSCEPTIBILITY	Nov 1 – Mar 30	May 1 - June 30 Sept 1 - Oct 31	Apr 1 - Aug 30
COMMERCIAL VALUE	Nov 1 - May 31 July 1 - Aug 31	June 1 - June 30	April 1 - May 15, July, Oct 25 - Nov 30
HUMAN HARVEST	Nov 1 - Apr 15	April 15 - April 13, Nov 15 - Nov 30	May 1 - May 15, Oct 25 - Nov 15

Bear Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Denning	■	■	■	■	■					■	■	■
Feeding in coastal areas			■	■	■	■						
Feeding along salmon streams				■	■	■	■	■	■			

BLACK-TAILED DEER

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE[2]			
SUSCEPTIBILITY	Apr - Nov		Jan - April
HUMAN HARVEST	Aug – Jan	Sep - Dec	Oct - Nov

[2] Deer populations fluctuate widely from year to year. In addition, densities vary as a result of snow conditions. Consequently, specific abundance figures will not be established for use in prioritizing the importance of an area.

Sitka Black-Tailed Deer Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Fawning Period					■	■	■					
Present near shoreline	■	■	■	■								■

ELK

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE[3]			
SUSCEPTIBILITY	Apr 1 - Nov 30		Dec 1 - Mar 31
HUMAN HARVEST			Sept 25 – Nov 30

[3] There are seven elk herds that utilize various portions of Afognak and Raspberry islands. Depending on the herd 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.

Elk Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Calving					■	■						
In wintering areas	■	■	■									■

CARIBOU/REINDEER

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE			
SUSCEPTIBILITY			
HUMAN HARVEST	Closed on AK Peninsula	Closed on AK Peninsula	Aug 1 – Dec 31 Closed on AK Peninsula

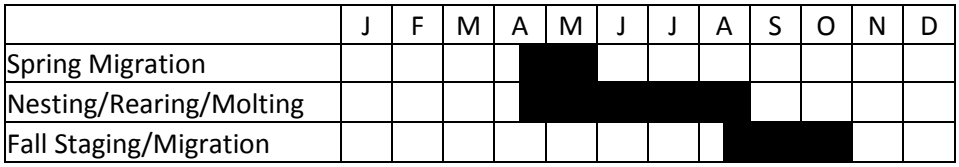
Caribou Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Calving						■						
Insect relief areas							■	■	■			

WATERFOWL

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 100	100 - 1,000	> 1,000
SUSCEPTIBILITY	Nov 1 - Jan 31	Feb 1 - Apr 14 Jun 1 - Aug 31	Apr 1 - May 31 Sept 1 - Mar 31
SPECIES DIVERSITY	1 – 3	4 - 6	> 6
HUMAN HARVEST	June 1 - Aug 31	Dec 1 - Dec 31	Jan 1 - Apr 1 Sept 1 - Nov 30

Waterfowl Critical Life Periods

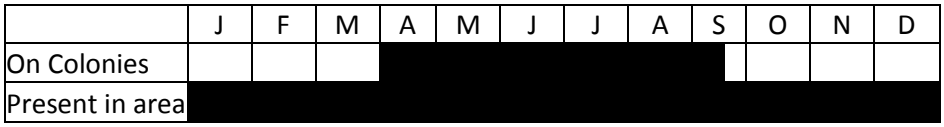


SEABIRDS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 1000	1000 - 5000	> 5000
SUSCEPTIBILITY	Nov 1 - Jan 31	Feb 1 - Mar 31	Apr 1 - Oct 31
SPECIES DIVERSITY	1 – 3	4 - 6	> 6
HUMAN HARVEST[4]	June 1 - Apr 19		Apr 20 - May 31

[4] Seabird eggs are harvested by local Native communities.

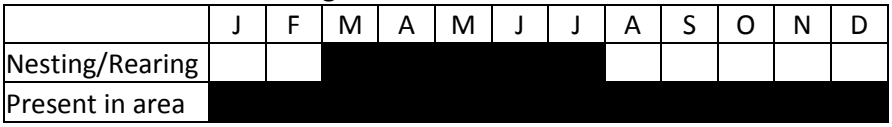
Seabirds Critical Life Periods



BALD EAGLES

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 1 nest/3 coastal miles		> 1 nest/coastal mile
SUSCEPTIBILITY			year around

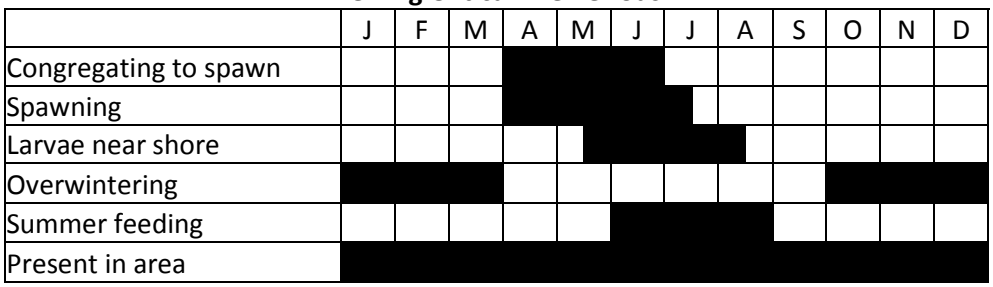
Eagle Critical Life Periods



HERRING (including capelin/hooligan)

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE (Biomass in Tons)	< 500	500 - 5,000	5,000 Nearshore biomass – year-round
SUSCEPTIBILITY			Year-round
HUMAN HARVEST	Jan 1 - Feb 28	June 1 - Dec 31	April 13 - May 31

Herring Critical Life Periods

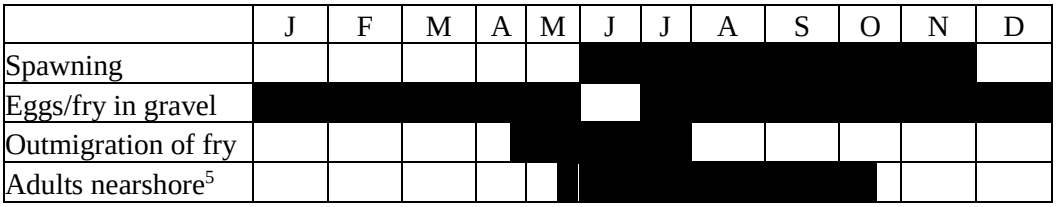


SALMONIDS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 5,000 pink < 5,000 chum < 500 sockeye < 500 coho < 100 chinook	5,000 - 25,000 pink 5,000 - 15,000 chum 500 - 5,000 sockeye 500 - 2,500 coho 100 - 500 chinook	> 25,000 pink > 15,000 chum > 5,000 sockeye > 2,500 coho > 500 chinook
SUSCEPTIBILITY	Dec 1 - Jan 31	Feb 1 - Apr 30 Nov 1 - Nov 30	May 1 - Oct 31
SPECIES DIVERSITY	2 or less	2 - 4	4 and greater
HUMAN HARVEST		Oct 10 - May 15	May 15 - Oct 10

[5] Chinook salmon are present nearshore during the entire year; however, abundance varies depending on the time of year.

Salmon Critical Life Periods

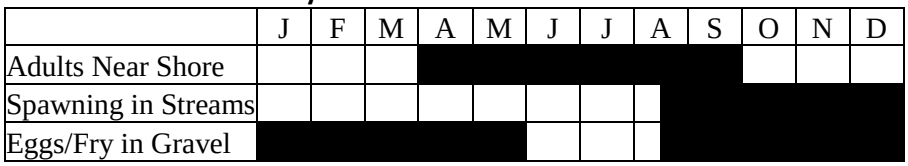


FRESHWATER FISH SPECIES

DOLLY VARDEN

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	no abundance numbers are available		
SUSCEPTIBILITY	Nov 1 – March 31	June 1 - Oct 31	April 1 - May 31
HUMAN HARVEST	Nov 1 – March 31	Oct 1 - Oct 31	April 1 - Sept 30

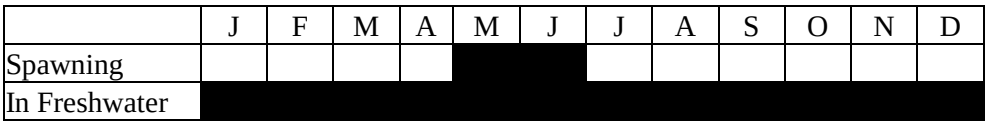
Dolly Varden Critical Life Periods



RAINBOW TROUT

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE			
SUSCEPTIBILITY	Nov 1 - March 31	June 1 - Oct 31	April 1 - May 31
HUMAN HARVEST	Nov 1 - March 31	Oct 1 - Oct 31	April 1 - Sept 30

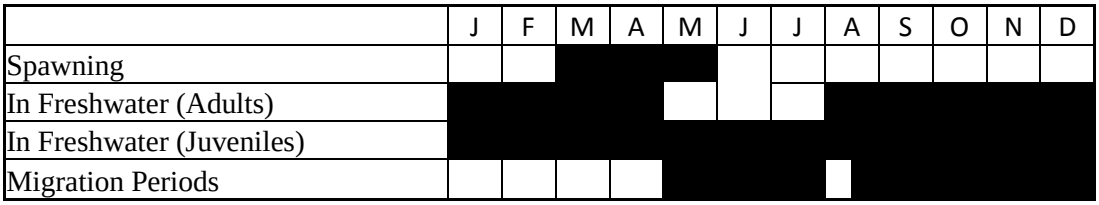
Rainbow Trout Critical Life Periods



STEELHEAD TROUT

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	<350	350-1,900	>1,900
SUSCEPTIBILITY	Nov 1 - March 31	June 1 - Oct 31	April 1 - May 31
HUMAN HARVEST	Nov 1 - March 31	Oct 1 - Oct 31	April 1 - Sept 30

Steelhead Trout Critical Life Periods



CLAMS AND OTHER MARINE INVERTEBRATES (CHITONS)

CATEGORY	LOW	MEDIUM	HIGH
SUSCEPTIBILITY			year around
HUMAN HARVEST		May 1 - Aug 31	Sept 1 - Apr 30

Clams and Other Marine Invertebrates (Chitons) Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Spawning							■	■	■			
Planktonic Larvae							■	■	■	■	■	■

SCALLOPS

CATEGORY	LOW	MEDIUM	HIGH
SUSCEPTIBILITY	Year-round		
HUMAN HARVEST	Feb 16 – June 30		July 1 – Feb 15

Scallops Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Spawning					■	■	■					
Planktonic Larvae					■	■	■	■				

LEGISLATIVELY DESIGNATED LAND STATUS

CATEGORY	LOW	MEDIUM	HIGH
FEDERAL LANDS	Public Lands	National Parks and Preserves Wildlife Refuges	Wild & Scenic Rivers Critical Habitats Designated Wilderness Areas
STATE LANDS	Public Lands[6]	State Parks	Critical Habitat Areas

[6] Includes submerged lands out to 3 miles, and historic bays and inlets.

HISTORIC PROPERTIES

CATEGORY	OW	EDIUM	IGH
HISTORIC PROPERTIES, 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 Historic Landmarks; National Natural Landmarks; Burial sites; National Register-eligible village sites; Intertidal sites

v. SENSITIVE AREAS: PART FOUR – BIOLOGICAL 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. Industry or local government-generated references that have had agency input and review are incorporated by reference. Additional information on places of concern to local residents is available in Part Five - Areas of Local Concern.

The Kodiak Island Borough sponsored a study resulting in publication of the *Sensitive Areas Identification Project Report* (1997). The report includes information and maps collected from federal, State, and local agencies; local residents; and resource user groups. The 18 color maps from this report are in this plan as Attachment One of the Sensitive Areas Section. The map numbers and titles are listed below, and these maps are referenced at various points in the Sensitive Areas Section. (The report is also available from the Kodiak Island Borough.)

Maps in the *Sensitive Areas Identification Project Report* (1997):

(1) Herring Spawning, Pollock Spawning, Pollock Juvenile Rearing, and Pink Salmon Anadromous Streams
(2) Commercial Salmon Seining and Set Net Areas
(3) Commercial Herring, Pollock, Halibut, Cod and Scallops
(4) King and Tanner Crab
(5) Shellfish and Clam
(6) Harbor Seal Areas
(7) Sea Otters
(8) Terrestrial Mammals, Birds, Sea Lions, Brown Bears and Seabirds
(9) Humpback and Fin Whales
(10) Gray, Minke and Orca Whales, and Dall's Porpoise
(11) Ducks, Geese, Swans
(12) Fall and Winter Recreation Areas
(13) Spring and Summer and Year-round Recreation Areas
(14) Marine Subsistence
(15) Salmon and Freshwater Fish Subsistence
(16) Currents and Circulation
(17) Sensitive Areas Identified by Rural Communities
(18) Sensitive Areas Identified by Focus Groups, Kodiak Community, Resource Agencies

For coastal information, see the *Prince William Sound Tanker Oil Discharge Prevention and Contingency Plan* (*Tanker Plan*)(November 2002) by the Prince William Sound Response Planning Group, and Part 3, Supplemental Information Document (SID) #3, Section 2, which contain background information and data descriptions, including:

(1) Salmon and other Anadromous Fish
(2) Pacific Herring
(3) Halibut and Groundfish

(4) Crabs and Shrimp
(5) Other Intertidal/Subtidal Invertebrates (Mussels, Clams, Oysters)
(6) Birds (Water-Related, Shorebirds, Seabirds, Raptors)
(7) Marine Mammals (Cetaceans, Pinnipeds, Sea Otters)
(8) Terrestrial Mammals
(9) Threatened and Endangered Species
(10) Commercial Fisheries
(11) Sport Fisheries
(12) Human Use of Wildlife Resources
(13) Subsistence Utilization of Fish and Wildlife Resources

The Tanker Plan's automated Graphical Resource Database (November 2004), which covers the Kenai Peninsula and Kodiak Island/Shelikof straits, currently consists of the following data layers:

- Aerial Photo Locations
- Aquaculture Sites
- Commercial Fishing Areas-Salmon
- Community Sensitive Sites
- Equipment Storage Sites
- Historic Harbor Seal Sites
- Herring Spawning Areas
- Marine Features
- Recreation/Tourism Areas
- Salmon Streams--all
- Sea Lion Sites
- Seabird Colonies
- Small Boat Harbors
- Waterfowl Concentration Areas
- Shoreline Cleanup Assessment Team
- Eelgrass Bed Locations
- Port Valdez Sensitive Area Tactical Guide
- 200 Foot Topographic Contours
- Narrow Rivers
- Tidal Flats
- Shoreline
- Geographic Response Strategies
- Salmon Collection & Release Sites
- Communities
- Bald Eagle Nest Sites
- Harbor Seal Sites
- Harbor Seal Areas
- Hatchery Sites
- Marsh Shoreline
- Research Areas
- Salmon Index Streams
- Sea Otter Concentration Areas
- Sheltered Tidal Flats
- Subsistence Areas
- Whales
- Land Features
- Valdez Marine Terminal
- NOAA Charts
- Wide Rivers and Lakes
- Land
- Chugach National Forest Shoreline

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/subareas.html. Updated ESI information can also be found on the internet at: http://response.restoration.noaa.gov/order/esiindex.html

1. *Benthic Habitats*

Oil vulnerability is lower in benthic (near bottom) 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 and large beds of kelp.

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 between 5 and 15 degrees, rate of sediment mobility i 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/habitat/shorezone/szintro.htm

The Nature Conservancy, an Alaska ShoreZone partner, also hosts an informative online website which has links to ShoreZone information. It can be accessed at: http://www.shorezone.org

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/

Wetlands maps may also be obtained for the Kodiak urban area, including areas north and south of the city and the Womens Bay area, from the Kodiak Island Borough, Community Development Department.

TABLE D - 1: 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

Insert Environmental Sensitivity Index Map 1 of 4: fall

http://www.asgdc.state.ak.us/maps/cplans/kod/PDFS/FALL.PDF

Insert Environmental Sensitivity Index Map 2 of 4: spring

http://www.asgdc.state.ak.us/maps/cplans/kod/PDFS/SPRING.PDF

Insert Environmental Sensitivity Index Map 3 of 4: summer

http://www.asgdc.state.ak.us/maps/cplans/kod/PDFS/SUMMER.PDF

Insert Environmental Sensitivity Index Map 4 of 4: winter

http://www.asgdc.state.ak.us/maps/cplans/kod/PDFS/WINTER.PDF

Insert wetlands status map here

http://www.asgdc.state.ak.us/maps/cplans/base/wetlands99.pdf

C. BIOLOGICAL RESOURCES

1. *Threatened and Endangered Species*

Federally listed threatened and endangered species are protected under the Endangered Species Act. Spill response activities that could impact a listed species should be coordinated with the U.S. Fish and Wildlife Service. The short-tailed albatross, blue whale, sei whale, fin whale, sperm whale, humpback whale, and Steller sea lion are also on the State of Alaska's endangered species list. The following species[3] and critical habitat occur in Alaska and have been provided protection under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.):

Table 1: Endangered Species Act of 1973 Protected species and critical habitat			
Listed species	**Stock**	**Latin Name**	**Status**
Short-tailed albatross		*Diomedea albatrus*	Endangered
Steller's eider	Alaska breeding	*Polysticta stelleri*	Threatened
Blue whale		*Balaenoptera musculus*	Endangered
Humpback whale		*Megaptera novaeangliae*	Endangered
Fin whale		*Balaenoptera physalus*	Endangered
Sei whale		*Balaena borealis*	Endangered
Sperm whale		*Physeter macrocephalus*	Endangered
North Pacific right whale		*Eubalaena glacialis*	Endangered
Northern sea otter	Southwest	*Enhydra lutris kenyoni*	Threatened
Steller sea lion	West of 140 degrees N	*Eumetopius jubatus*	Endangered
Designated Critical Habitat			
Species Group	**General Reference Area**		
Whales	Southeast of Kodiak Island for North Pacific right whale		
Birds	No critical habitat has been designated in the subarea		
Sea otters	No critical habitat has been designated in the subarea		
Sea lions	20 miles seaward around each major haulout (see map below)		

All marine mammals, regardless of whether or not they are on the endangered species list, are protected by the Marine Mammal Protection Act of 1972. Any spill response activities which could affect marine mammals should be coordinated with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.

Although Alaskan bald eagles are not on the endangered species list in Alaska, they are fully protected (including their nests and nest trees) under the Eagle Protection Act of 1940. Spill response activities that could affect bald eagles should be coordinated with the U.S. Fish and Wildlife Service.

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[3] 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 USC 1532). NMFS 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."

For updated information on the internet:

U.S. Fish and Wildlife Service National Threatened and Endangered Species web site:
http://endangered.fws.gov/

U.S. Fish and Wildlife Service Regional Threatened and Endangered Species web site:
http://alaska.fws.gov/es/te.cfm

Alaska Department of Fish and Game Threatened and Endangered Species web site:
http://www.state.ak.us/adfg/wildlife/geninfo/game/es_home.htm

Critical Habitat maps for sea otters (7 maps):
http://alaska.fws.gov/fisheries/mmm/seaotters/pdf/SeaOtterCriticalHabitatMaps.pdf

Insert critical habitat map for the North Pacific right whale, map 1 of 1
http://www.fakr.noaa.gov/frules/73fr19000.pdf

2. *Fish and Wildlife*

(a) Fish

Essential Fish Habitat. Interactive mapping of essential fish habitat is provided by the National Marine Fisheries Service. To do interactive mapping, go to the following website: http://mapping.fakr.noaa.gov/website/efh/viewer.htm.

For further information, contact the National Marine Fisheries Service at http://www.fakr.noaa.gov/.

Salmon. Pink, chum, sockeye, coho, and Chinook salmon spawn in streams found on islands in the Kodiak archipelago and on the Alaska Peninsula (from Cape Douglas to Kilokak Rocks). Adult salmon are present in bays and estuaries from mid March through early October, depending on the species of salmon and the stream system. Adults are present in freshwater from mid May through mid December. Salmon fry generally emerge from the stream gravels from mid March through early June. Juvenile coho, chinook, and sockeye salmon remain in freshwater for one year before venturing to the sea.

Pacific Herring move inshore to spawn in the Kodiak area from early April to late July. Spawning occurs in intertidal and subtidal areas. Areas with kelp or eelgrass usually are the preferred spawning substrates. Herring use virtually all bays and protected waters in the Kodiak Island Archipelago as rearing, feeding, and wintering areas. Along the Alaska Peninsula herring spawn at Wide Bay, Paule Bay, Cape Kubugaku, Katmai Bay, Kukuk Bay, and Amalik Bay.

Groundfish (cod, walleye pollock, and Pacific halibut) occur in waters surrounding the Kodiak Island Archipelago. Known summer concentrations of cod and walleye pollock occur in waters off Marmot Bay and Chiniak Bay, and from Sitkalidak Island to Sitkinak Island. Concentrations of cod also occur in Shelikof Strait along the western side of Kodiak Island from the area near Karluk to Chirikof Island. Spawning concentrations of walleye pollock are found in southern Shelikof Strait in March and April.

Cod are also found in the Gulf of Alaska east of Afognak and Kodiak Islands, to the east of Ugak Island, east of Sitkalidak Island, between Sitkalidak Island and Twoheaded Island and east of Sitkinak Island. Spawning concentrations of Pacific halibut occur southeast of Sitkalidak Island and southeast of Cape Chiniak.

Halibut juvenile rearing grounds also include an area surrounding Aiktalik Island and Sitkinak Strait, and from northwest of Tugidak Island to north of Chirikof Island.

Other Fish. Rainbow trout and steelhead are native to specific stream systems in the Kodiak-Afognak area. Important native rainbow trout waters include the Portage, Afognak, Upper and Lower Malina, Uganik, Karluk, Fraser, and Ayakulik (Red) lake-river systems. Steelhead are distributed in a number of lake-river systems but are relatively abundant only in the Karluk and Ayakulik (Red) rivers. Rainbow trout generally spawn during May and June. Steelhead generally spawn between March and May. Steelhead juveniles remain year-round in freshwater from one to four years.

Dolly Varden, both resident and anadromous races, occur in streams throughout the Kodiak Island Archipelago. Dolly Varden spawn from September through December. Fry emerge from the gravels in April and May. Juvenile and some adult Dolly Varden remain in freshwater year-round.

(b) Shellfish

Tanner Crab inhabit the entire Kodiak area shelf to 365 meters. Concentrations of tanner crab occur in the Gulf of Alaska to the east of Afognak and Kodiak Islands and in Shelikof straits east of Puale Bay and Alinchak Bay. There are also tanner crabs in Olga Bay at the southern end of Kodiak Island.

Red King Crab occur throughout the entire Kodiak area to a depth of 365 meters. Inshore and nearshore areas are most critical for king crab spawning. Offshore regions such as Portlock Bank, Marmot Flats, Alitak Flats, and the Albatross Banks are important. The shallow region surrounding Chirikof Island north to the Trinity Islands is significant for both the spawning and rearing of red king crab. Red king crab are also present from Cape Douglas to Portage Bay in Shelikof Strait.

Blue king crab regularly occur only in Olga Bay.

Dungeness crab inhabit all bottom areas shallower than 100 meters, with a distinct preference for sand or mixed substrate bottoms. Dungeness crabs occur in Shelikof Strait from Cape Douglas to approximately Cape Igvak along the Alaska Peninsula. They also occur on Raspberry Strait, Kizhuyak Bay, Sharatin Bay, Monashka Bay, near Kodiak City in Womens Bay, Middle Bay, and Kalsin Bay. Dungeness occur on the eastern side of Kodiak Island in Barry Lagoon, and from Narrow Cape are to Olga Bay on the south side of Kodiak Island. Dungeness area also concentrated in the waters surrounding Tugidak and Sitkinak Islands. Along the west coast of Kodiak these crabs are found from Viekoda Bay to Cape Ikolik.

Shrimp. Pandalid shrimp (northern pink shrimp or deep sea prawn; humpy shrimp or flexed shrimp; spot shrimp or spot prawn; coonstripe shrimp; sidestripe shrimp or giant red) are distributed throughout most major bays and certain nearshore and offshore areas along Kodiak and Afognak Islands. Known shrimp egg hatching and rearing areas include Olga Bay and off Alitak Bays at the southern end of Kodiak Island, Uyak and Uganik Bays on the east side Kodiak. Bays on the east side of Kodiak Island important to shrimp include Kaiugnak Bay, Three Saints Bay, Kiliuda Bay, Sitkalidik Strait area, Ugak Bay, Kalsin and Middle Bays in Chiniak Bay, and Kazakof, Izhut, Tonki Bays in Marmot Bay. Perenosa Bay on Shuyak Island is also important for shrimp.

Razor Clams are found intertidally to a depth of several meters on exposed beaches consisting of fine or coarse sand with some glacial silt or gravel. Areas with known concentrations of razor clams include some isolated beaches on Raspberry Island; beaches along the outer regions of Uyak Bay, beaches of Ocean Bay, Bumble, and Gurney Bays, north of Cape Alitak on Tanner Head, beaches on Tugidak Island, Sitkinak Island, and Ocean Beach on Sitkalidak Islands, and beaches in small areas within Ugak and Chiniak Bays. On the Alaska Peninsula, extensive razor clam beaches occur in the Swikshak River area, Hallo Bay and Katmai Bay.

Scallops are found throughout much of the deep water areas around the Kodiak Archipelago and along the Alaska Peninsula with areas of concentration near Hallo Bay and Katmai Bay on the Alaska Peninsula.

(c) Birds

All migratory birds are protected under the Migratory Bird Treaty Act. Any spill response activities which could affect migratory birds should be coordinated with the U.S. Fish and Wildlife Service.

Ducks, both divers and dabblers, are found throughout the year in the Kodiak Island Archipelago. Major concentrations of ducks are found in protected coastal estuarine waters, salt marshes, tidal flats, and riverine habitats. Dabblers are typically found at the heads of bay and lagoons, whereas the divers are

found along the rocky shorelines or the outer portions of the bays. The Kodiak Island Archipelago contains important wintering concentration areas used by many species of waterfowl. The largest concentrations of ducks found in the area occur in winter. Portions of Tugidak and Sitkinak Islands are used by ducks as spring and fall concentration areas as well as the heads of Womens Bay, Middle Bay, and Kalsin Bay in the southern portions of Chiniak Bay. *(See Map #11 in Attachment One.)*

Steller's eider, a diving duck known to winter in the Kodiak subarea, is listed at threatened under the Endangered Species Act. Steller's eider may be found wintering in outer bays throughout the Kodiak Archipelago and in small numbers along the Alaska Peninsula coast.

Geese. Estuaries, lagoons, river deltas, marshes, and tidelands support only small numbers of migrating geese on Kodiak Island. Canada geese have been introduced on Shuyak Island and the population appear to be increasing. Pacific brant use the lagoon habitats such as Sukhoi Lagoon at the southern end of Kodiak and on Tugidak and Sitkanak Islands during spring migration Some emperor geese winter along the coast of Kodiak Island from late September to May with the larger concentrations at the southern end of the island. Emperor geese are also found wintering and during spring and fall migration in Wide Bay on the Alaska Peninsula. *(See Map #11 in Attachment One.)*

Tundra swans generally are distributed throughout the lowland areas of Shuyak, Afognak, Kodiak, and Tugidak Islands in suitable habitat. Spring concentration areas occur at the heads of Pasagshak and Kalsin bays. Year-round residency and nesting by tundra swans occur in the Karluk River lowlands. Known nesting areas include the lowlands north of Fraser Lake, the Little River lowlands, the Dog Salmon Creek lowlands, the Red River lowlands, the Ayakulik River lowlands, the lowlands from the mouth of the Ayakulik River south to Alitak Lagoon, the Aliulik Peninsula, Aiaktalik Island, and Tugidak Island. Trumpeter swans have also been observed. *(See Map #11 in Attachment One.)*

Seabirds. Numerous seabird nesting colonies are found throughout the Kodiak Island Archipelago and along the Alaska Peninsula. Large nesting colonies occur in the Barren Islands and the Semidi Islands to the southwest of Kodiak Island. Breeding seabirds begin staging in large concentrations on the water below seabird colonies as early as late April and may be most vulnerable to oil spills during this period. Most species lay eggs in June or early July and most of the young have fledged by the end of September. Most nesting seabirds leave the breeding colonies by October to spend the winter in offshore areas.

Bald Eagles are distributed throughout the Kodiak Island Archipelago, with numerous active nests along the coastlines of most islands. Bald eagles occur year-round in the area. Bald eagles begin nesting from late March through May. Eggs hatch from early May through late June. Young eagles fledge from early July through late August. Feeding areas include sea beaches and rocky coastlines, freshwater anandromous fish streams and lakes, and terrestrial habitats. They feed on both live prey and carrion and will feed on refuse at garbage dumps.

Other Raptors. Peale's peregrine falcon, a non-migratory sub-species of peregrines, occurs year-round in the area but only rarely nests on Kodiak Island. This raptor nests on the Barren Islands and in association with seabird colonies on the Alaska Peninsula. Other raptors that occur in the area include rough-legged hawks, northern goshawks, golden eagles, northern harriers, and short-eared owls, and boreal owls.

(d) Marine Mammals

Harbor seals are found in the nearshore waters throughout the Kodiak Island Archipelago and along the western shore of Shelikof Strait. Concentrations are also found in the Semidi Islands and at Chirikof Island. Harbor seals tend to concentrate in estuaries and protected waters. Some may seasonally inhabit freshwater streams and lakes. Habitats used for haulouts include cobble and sand beaches, tidal mud flats, offshore rocks and reefs, and ice (frozen heads of bays, in fjords, etc.) when available. Known haulout concentrations occur throughout the Kodiak Island Archipelago. Tugidak Island is one of the larger haulout concentration areas. Haulouts are used for pupping, molting, and resting, and may be used year-round. Pupping occurs from late May through June. Populations of harbor seals, like sea lions, have steadily declined since the mid-1970's. At Tugidak Island, numbers have declined from approximately 17,000 to less than 1500. Less information is available on the reasons for the harbor seal population decline, but suggested theories include nutritional stress or an ecosystem-wide environmental perturbation. *(See Map #6 in Attachment One.)*

Sea Otters The southwest Alaska population of northern sea otters is is listed as Threatened under the Endangered Species Act. This includes the entire Kodiak Subarea. Sea otters are found along the Barren Islands, the northern Kodiak Island Archipelago (i.e., Shuyak Island, Afognak Island, Marmot Bay, and Raspberry Island), along the northern portion of Kodiak Island southward to Chiniak Bay and Uyak Bay on the eastern side of the island and to Karluk on the western side of the island. At the southern end of Kodiak Island otters are found on the eastern side of Tugidak Island and the straits between Tugidak and Sitkanak Island, and at Alitak Bay. They are also found along the Alaska Peninsula from Cape Douglas south to Cape Nukshak, at Cape Kuliak, Kinak Bay, Cape Kubugaku and at the entrance to Puale Bay near the Kekernoi Islets. Sea Otters are also present on the western side of Chirikof Island. The areas of highest density on Kodiak are in the Whale Pass area. Other concentrations of otters are centered within Alitak Bay and Tugidak Island and the waters between Tugidak and Sitkinak Island at the southern end of Kodiak Island. Sea otters generally range from 5 to 16 km offshore and feed in nearshore waters less than 35 m deep. Breeding occurs year-round, with a peak in September and October. Pupping occurs year-round, with a peak in May. *(See Map #7 in Attachment One.)*

Steller Sea Lions occur year-round in the nearshore waters of the Kodiak Island Archipelago. Major sea lion rookeries occur at Marmot Island, Sugarloaf Island in the Barren Islands, Chirikof Island and Chowiet Island in the Simidi Islands. Rookeries also are used as haulouts following the breeding season. Year-round haulout areas occur on Sitkinak and Sitkalidak Islands. Other known haulout concentration areas occur in the Barren Islands, Sea Otter Island (east of Shuyak Island), on Long Island in Chiniak Bay, at Cape Chiniak, in Ugak Bay, on Twoheaded Island, at Cape Ikolik, Semidi Islands, Chirikof Island, and at Cape Ugat. Other haulouts occur at scattered locations in the Kodiak Island Archipelago. Haulouts generally are used from May through October, although some may be used year-round. Sea lions begin concentrating at rookeries in mid-May and peak in mid-to-late June. Pupping occurs from late May to early July. Male territoriality on the rookeries diminishes in July as breeding and pupping activities are concluded.

The Steller sea lion (*Eumetopias jubatus*) was reclassified in 1997 by the National Marine Fisheries Service as two distinct populations under the Endangered Species Act (62 FR 24345) and was listed as threatened pursuant throughout its range that extends from California and associated waters to Alaska, including the Gulf of Alaska and Aleutian Islands and into the Bering Sea and North Pacific and into Russian waters and territory (62 FR 24345). The Steller sea lion population segment that occurs west of 140°W longitude near Cape Suckling, Alaska has been reclassified as endangered (62 FR 24345). The

threatened classification applies to for the remainder of the U.S. Steller sea lion population (62 FR 24345).

The National Marine Fisheries Service has designated critical habitat areas that include rookeries, major haulout areas and associated terrestrial, air, and aquatic habitat (see the following maps). Critical habitat includes a terrestrial zone that extends 3,000 feet (0.9 km) landward from the baseline or base point of each major rookery or haulout in Alaska. It also includes an air zone that extends 3,000 feet (0.9 km) above the rookery and haulout measured vertically from sea level. The aquatic critical habitat includes a zone that extends 3,000 feet (9.0 km) seaward in state and federally managed waters from the baseline or base point of each major rookery or haulout in Alaska that is east of 144°W longitude. Critical habitat includes an aquatic zone that extends 20 nautical miles (nm) (37 km) seaward in State and Federally managed waters from the baseline or base point of each major haulout in Alaska that is west of 144° longitude. There are three special aquatic foraging areas in Alaska including the Shelikof Strait area, the Bogoslof area, and the Seguam Pass area. The Shelikof Strait area includes the area between the Alaska Peninsula and Tugidak Island, Sitkinak, Aiaktilik, Kodiak, Raspberry, Afognak, and Shuyak Islands; bounded on the west by Cape Kumlik and the southwestern tip of Tugidak Island and bounded on the east by Cape Douglas and the northernmost tip of Shuyak Island. The critical habitat of the Bogoslof area includes the Bering Sea shelf north of the Aleutian Islands. Critical habitat of the Seguam Pass area in the Aleutians includes the area between 52°00 N and 53°00 N and between 173°30 W and 172°30 W (50 CFR 226). *(See Map #8 in Attachment One.)*

Baleen whales in the area include gray, humpback, fin, minke, sei, and blue whales.

Humpback whales are commonly found nearshore along Kodiak Island. Aggregations of humpback whales commonly occur in Marmot Bay, Whale Passage and Shelikof Strait from May through October. Feeding concentrations of humpbacks also occur from the Barren Islands along the coast of the Kodiak Archipelago to Sitkalidak Island. Concentrations of humpbacks have also been observed in the waters south of Alitak Bay, near Kupreanof and Viekoda Bays, and near Cape Ikolik. Spring migration of humpbacks occurs in Shelikof Strait along the coast of the Alaska Peninsula. *(See Map #9 in Attachment One.)*

Fin whales are found on summer feeding grounds over the continental shelf and in the Gulf of Alaska and in portions of Lower Cook Inlet and Shelikof Strait and along the outer banks of the Kodiak Archipelago. Major year round concentrations of fin whales (including females with calves) occur in western bays of the Kodiak Island, including the waters near Spiridon Bay, Uyak Bay, Uganik Bay, and Kupreanof Strait and Shelikof Strait as far south as Chirikof Island. *(See Map #9 in Attachment One.)*

Gray whales migratory path takes most of the eastern Pacific population nearshore along the eastern edge of Kodiak Island Archipelago during their annual spring and fall migrations. Numbers of gray whales are highest during April, May, November, and December. Migrating gray whales may be found very near to shore, often within 6 kilometers. During the fall concentrations have been observed near Foul Bay on the western side of Afognak Island to Raspberry Island. *(See Map #10 in Attachment One.)*

Minke whales are concentrated during the summer months in the Gulf of Alaska and over the continental slope, especially in the shallow nearshore coastal waters of Kodiak Island. Minke whales have been observed at the entrances to Spiridon and Uyak Bays, in Katmai Bay, and Womens Bay. *(See Map #10 in Attachment One.)*

Uncommon whales: Sei whales are common during the summer months in the Gulf of Alaska in early May, and off the coast of the Kodiak archipelago. The presence of blue whales in this area is rare. Whaling records of the northern right whale indicate that this whale occurred in the waters to the east and south of Kodiak Island from May through September. Sightings of this whale are extremely rare due to its decimated population. Any sightings of northern right whales should be reported to the National Marine Fisheries Service or the U.S. Fish and Wildlife Service.

Toothed whales in the area include Dall and harbor porpoises, Pacific white-sided dolphins, and Orca (killer) whales. Several species of beaked whales, Risso's dolphin, pilot whales, and sperm whales have been recorded in these waters, but are generally pelagic and rarely sighted.

Orca whales concentrate in offshore waters to the east of Kodiak Island and Afognak Island in the Gulf of Alaska. These whales are also present near Kukak Bay on the Alaska Peninsula. *(See Map #10 in Attachment One.)*

Harbor porpoise are seasonally abundant in bays on the south and west sides of Kodiak Island, specifically in Autak Bay, Womens Bay and Chiniak Bay. There are also very common in certain bays on the west side of Shelikof Strait such as in Kinak Bay. Their calving season is poorly documented but probably includes late June as well as July and early August.

Dall's porpoise inhabit deeper waters than harbor porpoise and are found year-round in waters surrounding the Kodiak Island Archipelago. Dall□s porpoise are more abundant in Shelikof Strait and the western waters of Afognak and Shuyak Islands than in the eastern portion of this region. *(See Map #10 in Attachment One.)*

Pacific white-sided dolphins are seasonally abundant in Alaska waters and are most common during the summer months at Portlock Bank to the northeast of Afognak Island in the Gulf of Alaska. They are also present off the Alaska Peninsula between Cape Nukshuk and Cape Kuliak. On the eastern side of Kodiak Island they are present in Ugak Bay, Kiliuda Bay, and the waters between Sitkalidak Island and Two-Headed Island.

(e) Terrestrial Mammals

Brown bears are found throughout Kodiak, Afognak, Raspberry, Sitkalidak, and Shuyak Islands. Brown bears do not occur on the Trinity Islands, or the Barren Islands. Spring concentration areas include the Driver Bay area on Raspberry Island. On Kodiak Island, spring concentrations of bears occur along portions of Uganik Bay, Uganik Passage, and Terror Bay, at the head of Uyak Bay, near the mouth of the Ayakulik River, at the heads of Alitak Bay, at the head of Kaiugnak Bay, at the heads of Ugak Bay, and at Eagle Harbor. On the Alaska Peninsula brown bears concentrate on beaches from Cape Douglas to Cape Kilokak. Concentrations of bears occurs along most all anadromous fish streams when salmon are present.

Brown bears may emerge from dens as early as mid-March. From mid-April to late July, bears concentrate along beaches foraging on marine mammal carcasses and shellfish, and in grassland areas, especially grass flats, sedge meadows, and saltwater bogs foraging heavily on grasses and other vegetation. Feeding on salmon begins around mid-May, with the most intensive use of salmon occurring during July and August. Use of salmon by a few bears may continue into December. Denning begins in late October and early November, with most bears denned by mid-December. Some bears may remain active year-round.

A unique situation occurs on the Aliulik Peninsula of southeastern Kodiak Island, where bear densities approach 1 bear/square mile. A recent study has shown these bears to have an unusually high dependence on beaches for food. The vegetation on the Aliulik Peninsula does not appear to be as rich in either herbaceous vegetation or major berry species as are other areas of Kodiak. Consequently, these bears appear to feed heavily on amphipods found in the beach gravel and drift kelp. Some bear scats have been found to contain nearly 100% amphipods. In addition, bears in this area appear to spend less time in dens than in other parts of Kodiak and some bears are actively feeding on the beaches even in the winter months. There are extensive kelp patches on the east side of the peninsula and several collector beaches are particularly favored by bears on that side. The beaches on the west side are not quite as heavily used, but several beaches are regularly used. Until salmon appear in late July in the Humpy Creek and Seven Rivers, these bears spend the majority of their foraging effort on beaches. *(See Map #8 in Attachment One.)*

Roosevelt elk occur on Raspberry and Afognak Islands. During winter, elk use spruce timbered areas on south and southeast-facing slopes adjacent to beach fringes. Winter foraging also occurs in grass and on heath-dominated vegetation, vegetation types that are distributed sporadically along the entire coast.

Sitka Black-tailed deer occur throughout the Kodiak Island Archipelago with the exception of the Trinity and Barren Islands, Ugak Island, and Aiaktalik Island. Most deer generally move into alpine areas in late June and remain in alpine and subalpine ranges into September. Deer generally winter in habitat just below snowline. During severe winters, deer may congregate on the beaches. Windblown capes and bluffs at the mouth of bays and along ocean entrances are favored for wintering areas throughout the Kodiak Island Archipelago. Fawns are born in late May to early June.

Mountain goat are found throughout Kodiak Island, with the highest concentrations in higher elevations.

Feral reindeer/caribou occur in small scattered herds from the Karluk Lake drainage south and west. The Ayakulik/Red River flats from Red Lake north to Halibut Bay and Grant's Lagoon are the favored habitat of these animals.

Furbearers. Red squirrel are most common in the spruce forests of Kodiak. Arctic ground squirrels occur on Woody Island and in the Buskin River vicinity. Beaver occur throughout the riparian areas of the Kodiak Island Archipelago with the exception of the Trinity Island group, the Barren Islands, and Marmot Island. Snowshoe hare and muskrat were also introduced to the Kodiak area.

Short-tailed weasel are also known as ermine. This mammal is an active predator. The short-tailed weasels fur turns completely white during the winter and reaches about 14 to 16 inches in length.

Red Fox are common on Kodiak and Afognak Island and all along the Alaska Peninsula. Red fox are a common scavenger on the shoreline areas and feed on carrion as well as birds and small mammals. They are also regularly seen near seabird colonies where they feed on the eggs and young of seabirds.

River Otter, smaller than the sea otter, occur throughout the Kodiak Region. This otter is primarily observed near freshwater streams, rivers and lakes but also appears in the nearshore marine waters. The river otter feed mostly on fish such as salmon and trout but will also prey on eggs and young at offshore seabird colonies.

Insert seabird summary map here (page 1 of 1)

http://www.asgdc.state.ak.us/maps/cplans/kod/kod2seabird.pdf

Insert sea lion haulout and rookery map here: page 1 of 1

http://www.fakr.noaa.gov/protectedresources/stellers/criticalhabitat_map.pdf

3. *Vegetation*

There are no species of threatened or endangered plants within the Kodiak Island Borough. Below is a listing of plants that are considered rare and sensitive. The status of these plants is tracked by the University of Alaska Natural Heritage Program. For further information contact the University of Alaska Natural Heritage Program in Anchorage.

Scientific Name	Common Name	Specific Area
Ligusticum calderi	Calder's lovage	Karluk
Cochlearia sessilifolia	Sessile - leaf scurvy grass	Kodiak
Gentianella propinqua ssp aleutica	Aleutian four - parted gentian	Karluk
Romanzoffia unalaschensis	Unalaska mist maid*	Afognak/Karluk
Androsace alaskana	Alaska rock - jasmine	Afognak
Dodecatheon pulchellum ssp alaskanum	Alaskan pretty shooting star*	Kodiak
Carex lenticularis var dolia	Goose - grass sedge*	Kodiak
Eleocharis nitida	Slender spike - rush	Kodiak
Scirpus subterminalis	Water bulrush	Afognak
Platanthera chorisiana	Choriso bog - orchid*	Afognak
Phyllospadix serrulatus	Serrulate surf grass	Kaguyak/Trinity Is.

* These plants are also listed on the U.S. Forest Service Sensitive Species Listing

Insert rare plants map here, page 1 of 1

http://www.asgdc.state.ak.us/maps/cplans/kod/kodrplants.pdf

D. HUMAN RESOURCES USES

1. *Fish Hatcheries and Associated Ocean Net Pens*

There are currently two hatcheries in the Kodiak Archipelago, and both facilities are operated with funds provided by the Kodiak Regional Aquaculture Association. Hatchery locations are shown in the Hatchery Location Map on the next page.

Kitoi Bay Hatchery, located on Afognak Island at the head of Kitoi Bay, produces pink, chum, sockeye, and coho salmon for the enhancement of the Kodiak commercial purse-seine salmon fishery. In addition, the hatchery provides coho salmon fingerlings for programs designed to create additional salmon fisheries along the Kodiak road system. In 1991, Kitoi Bay Hatchery released over 125 million salmon, including 124.1 million pink salmon fry.

Pillar Creek Hatchery, located approximately 7 miles from the city of Kodiak, was built in 1990. The hatchery was designed as a 20 million sockeye salmon egg incubation facility. The hatchery will create new fisheries for the Kodiak Island seiners and gillnet fishermen by stocking several barren lake systems with sockeye salmon fry from donor stocks. The first returns from Pillar Creek Hatchery are expected in 1994.

Hatchery-related activities most vulnerable to spill damage include fry rearing and release, terminal harvests, and egg takes. The timing of these activities varies by species so it is difficult to generalize about the periods of highest vulnerability, however, spring and summer tend to be the most critical periods. The hatchery managers can be contacted for specific information on the timing of activities at the following:

Kitoi Bay Hatchery	Pillar Creek Hatchery
486-6559	486-4730 or 486-1872 (ADFG/Kodiak)

2. *Aquaculture Sites*

Several commercial aquatic farms have been permitted in the Kodiak Island Archipelago for raising blue mussels and possibly Pacific oysters, but none are in current operation. Mariculture farms are vulnerable to spill damage on a year-round basis since the shellfish are suspended from anchored rafts and are submerged continuously in the water column. The timing of the harvest varies.

For more information on aquaculture, contact:

Aquaculture Coordinator
Alaska Department of Fish and Game
Juneau: 465-6150 Anchorage: 267-2333

Alaska Department of Environmental Conservation
Anchorage: 269-7638

Alaska Department of Natural Resources
Anchorage: 269-8546

3. *Historic Properties*

The Kodiak 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. On-Scene Coordinators (OSC) 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 OSC 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. A local resource for cultural resources information is the Alutiiq Museum, Kodiak, 486-7004.

National Historic Landmarks occur n the Subarea at:

Landmark	Location
Amalik Bay Archeological District	Alaska Peninsula
Three Saints Bay	Kodiak Island
Kodiak Naval Operating Base and Forts Greely and Abercrombie	Kodiak Island

4. *Subsistence and Personal Use Harvest*

Subsistence-related uses of natural resources play an important role in the economy and culture of all the communities in the Kodiak area. Generally, a subsistence economy is one 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.

A number of federal and state agencies manage subsistence resources in Alaska. Regulations regarding subsistence harvest may undergo substantial modification in the near future. Current information on harvest regulations for state lands can be obtained from the Alaska Department of Fish and Game.

Maps #14 and #15 in Attachment One indicate marine and freshwater subsistence areas. This information can be used during a spill event to identify the specific food sources at risk of contamination.

For specific local information on the locations and seasons of subsistence harvests, contact the village or tribal governments, listing provided in the Resources Section, Community Profiles.

For more information contact the Subsistence Division of the Alaska Department of Fish and Game in Anchorage at 267-2353.

5. *Commercial Fishing*

Commercial fishing is an important part of the culture and economy of Kodiak. Salmon and herring are two of the primary commercial fisheries in this subarea. Other commercially viable fisheries include crab, cod, pollock, and several ground fish species.

Commercial fisheries openings and closing are managed by both state and federal agencies, and vary by year and season. The Alaska Department of Fish and Game manages the approximately 800 streams in Kodiak in which salmon migration and spawning has been documented. Commercially harvested salmon stocks include chum, pink, coho, sockeye and chinook.

Maps of key commercial fishing areas are available in multiple Alaska Department of Fish and Game publications, the *Alaska Habitat Management Guide Reference Maps, Southwestern Region, Vols. I and II*

and the *Alaska Habitat Management Guide, Southwestern Region Map Atlas.* Specific information on which species are currently being harvested may be obtained from the Division of Commercial Fisheries Management and Development in Kodiak at 486-1825. There are also several active commercial fishing industry groups in Kodiak who may be able to provide specific information on the location and timing of fish runs as well as local tide and current conditions. These organizations are listed in the Resources Section of this plan.

See Maps #1 through #5 in Attachment One for commercial fishing resources, including herring spawning, pollock spawning, anadromous fish streams, salmon seining and set net areas, king and tanner crab fishing areas, and shellfish and clam harvest areas.

The timing of commercial fisheries openings/closings in Kodiak can be generalized as follows:

SALMON (seine and set net):	June through September
HERRING sac roe:	Mid-April through June
HERRING food or bait:	August through February
DUNGENESS CRAB:	May through December
TANNER CRAB:	January through March
GROUNDFISH:	year-round, varies by species
SHRIMP pot:	year-round
SHRIMP trawl:	June through February
SCALLOPS:	June through March
HALIBUT:	IFQ fishery; year-round

For index salmon stream escapement data, see Attachment Two.

6. *Sport Fishing and Hunting*

Important sport fishing rivers and streams in the Kodiak Archipelago include: the Buskin River, Salonie Creek, the American River, the Olds River, Roslyn Creek, the Pasagshak River, the Saltery River, the Uganik River, the Dog Salmon River, the Ayakulik (Red) River, the Karluk River, and the Afognak River. On the mainland, in Katmai National Park and Preserve, popular coho fishing occurs in August and September on the Big River. Kaflia Creek hosts a red salmn sport fishery from June through September.

The king salmon run in the Kodiak area occurs between June 1 through July 10th with the peak occurring around mid-June. Fishing for king salmon occurs primarily on the Karluk and Red (Ayakulik) Rivers. King salmon fishing has become popular on the Kodiak road system. Kings can be caught year around including during the winter months. The fishery is very popular with both recreational anglers and supports an active charter/guide business segment in the community. There is likely some troll fishing done out of lodges around Kodiak Island and in the outlying village communities. The red salmon run generally occurs between June 10 and August 1 on the Buskin, Pasagshak and Saltery Rivers. These three rivers can all be accessed by the road system on Kodiak. The runs on the Pasagshak and Saltery Rivers occur later than the run on the Buskin River. Red runs also occur on the Karluk, Red River, Uganik, Fraser, Upper Station and Litnik Rivers. Pink salmon are the most abundant fish on Kodiak and generally run between July 20 and August 20th. Pink salmon are plentiful in most of the streams on Kodiak, however the most productive streams are on the road system and include the Buskin, Russian, Salonie, American, Olds, Roslyn, and Saltery Rivers. The silver salmon run occurs from Mid-August through September in the Kodiak Archipelago. The run occurs earlier on the northern islands of Afognak and Shuyak than on the south end of Kodiak Island and peaks in early September. The more popular systems

on Afognak and Shuyak include Shangin Bay , Carry Inlet, Big Bay, Paul's Bay, and Litnik which are accessible by boat and plane. Silver fishing on the Kodiak road system are abundant by the first of September and generally peak later in the month. Natural runs occur in the Buskin, Pasagshak, American, Olds, Roslyn, and Saltery Rivers. The hatchery runs of silvers occur along Mill Bay, Mission, and Mayflower beaches. Larger silver runs also occur in the Uganik, Spiridon, Karluk, Red and Olga Bay Rivers.

Other sport fishing on Kodiak includes dolly varden, rainbow trout, steelhead and halibut. May and mid-July are the best times to catch dollies. In May, along the road system the best places to fish include the Buskin, Pasagshak , and Saltery Rivers. In June, salt water beaches for fishing dollies are Mission, Mill Bay, and Monashka Beach. From mid-July through October, the Buskin River offers dolly varden fishing. The American and Olds Rivers spawning grounds offer good fishing along the road system. Deer hunters find dolly varden fishing in the fall where tributaries enter large lakes.

There are 16 tributaries that the Alaska Department of Fish and Game has identified that support steelhead populations on the Kodiak Archipelago. The Karluk and Ayakulik Rivers are thought to contain the largest populations of steelhead on Kodiak and are also the most popular with sport fisherman. The fall run of steelhead begin entering Kodiak Island freshwater tributaries in early September. The steelhead overwinter in lakes and rivers and spawn in April-June, while adults that survive return to the sea in June and July. All flowing waters are closed to sport fishing for rainbow trout and steelhead fishing during the spawning season form April 1 to June 14. The best time to fish for steelhead is mid to late October. A catch and release fishery was established in 1996 on the Buskin River and lake during the months of November and December. For the remainder of the year this river is closed to steelhead and rainbow trout fishing in the Buskin River and the lake.

Approximately 30 lodges are located throughout the Kodiak Subarea that cater to sport fishing and hunting activities. Sport Fishing guides operating within the Kodiak National Wildlife Refuge on Kodiak, Uganik, and Afognak Islands are approved by the refuge

Halibut fishing around Kodiak Island occurs from May through September. Well known fishing spots near Kodiak City include waters near Spruce Cape. Long Island, Woody Island, Cape Chiniak, and Whale Pass. There are approximately 16 charter boat services that operate in the Kodiak Island area.

The Kodiak Island Borough lies within Game Management Units 8 and 9. Game Management Unit 8 includes all islands southeast of the centerline of Shelikof Strait, including Kodiak, Afognak, Whale, Raspberry, Shuyak Spruce, Marmot, Sitkalidak, Amook, and Chirkof Islands, the Trinity Islands, the Semidi Islands and the Barren Islands. Brown bear, caribou, deer, elk and goat are harvested in this unit. Game Unit 9 includes the Alaska Peninsula and adjacent islands. Black and brown bear as well as caribou, moose, sheep, wolf and wolverine are hunted in this unit.

7. *Recreational Sites and Facilities*

There are six Alaska State Parks in the Kodiak Subarea. These include the Buskin River State Recreation Site, Fort Abercrombie State Historic Site, and Pasagshak State Recreation site, which are accessible by the road system on Kodiak. Shuyak Island State Park, Woody Island State Recreation Site, and Afognak Island State Park can only be reached by boat or float plane.

The Katmai National Park and Preserve, Alaska Peninsula National Wildlife Refuge, Becharof National Wildlife Refuge, Alaska Maritime National Wildlife Refuge, and the Kodiak National Wildlife Refuge are

also located in the Kodiak Subarea. Most are accessible by boat or plane only. Maps #12 and #13 in Attachment One identify seasonal recreational areas in the Kodiak Subarea.

For information regarding state parks in the Kodiak Subarea contact the Department of Natural Resources, Division of Parks & Outdoor Recreation, in Kodiak at 486-6339. For information concerning the Katmai National Park and Preserve contact their Office in King Salmon at 246-3305. For information about the Kodiak National Wildlife Refuge and public use cabins contact their Visitor Center in Kodiak at 487-2600.

8. ***Commercial Tourism***

Commercial tourism in the Kodiak Archipelago revolves primarily around wildlife viewing. Visitors can reach Kodiak by only sea or air. Transportation is available to Kodiak from Anchorage and Homer on commercial aircraft. The Alaska Ferry System also serves the City of Kodiak. The City of Kodiak is the main attraction for visitors, who can then depart from the city on fishing charters and wildlife cruises. Accommodations for visitors are most plentiful on the road system on the northern end of Kodiak Island. Bear viewing on Kodiak attracts visitors off the road system via air taxis from the City of Kodiak. Longer stays at lodges, cabins and camps offer opportunities for wildlife viewing, bird watching. sport fishing, sea kayaking, hiking, and mountain biking. Cruise ships occasionally visit Kodiak. For more information contact the Kodiak Island Convention and Visitors Bureau at 486-4782.

Bear viewing is popular at Katmai National Park and Preserve on the Alaska Peninsula at Hallo Bay, Swikshak Bay, Kukak Bay, and Amailik Bay. Tourism along the Park's coastline usually originates in Kodiak or Homer.

9. ***Marinas and Ports***

There are few marinas and ports in the Kodiak Island Borough. The largest port is at the City of Kodiak which accommodates large commercial fishing vessels and fish processors, a charter boat fleet, U.S. Coast Guard facilities and vessels, and private boats. There are small boat harbors at Port Lions and Old Harbor. The village of Ouzinkie has docking facilities for the Alaska Ferry, but does not have a boat harbor. There are no marinas or ports at Larsen Bay, Akhiok, and Karluk. Harbor office contact information is listed in the Resources Section.

10. ***Fish Processing***

The companies listed below are canneries and major processors with permits issued by the State of Alaska:

Ocean Beauty, Inc., Kodiak	486-5791
Kodiak Salmon Packers, Inc., Larsen Bay	486-2250
Alaska Pacific Seafoods, Kodiak	486-3234
Alaska Fresh Seafoods, Inc., Kodiak	486-5749
Faros Seafoods, Inc., Kodiak	486-4156
Shelikof Plant-International Seafoods, Kodiak	486-4768
Marine Way Plant-International Seafoods, Kodiak	486-4768
Kodiak Seaside Seafoods, Kodiak	486-8575
Queen Fisheries-Kodiak Plant, Kodiak	481-5799
Ursin Seafoods, Inc., Kodiak	486-5724
Western Alaska Fisheries, Inc., Kodiak	486-4112
Emerald Isle Gourmet Seafoods, Kodiak	486-4857

Kodiak Abattior, Kodiak	487-2359
Ouzinkie Tribal Fisheries, Ouzinkie	680-2259

11. *Logging Facilities*

Logging activities occur in several locations in the Kodiak Subarea. The following organizations can be contacted with requests for specific information on location and timing of logging activities. Although the primary function of these organizations is not to provide such information, the individual members will be quite knowledgeable about environmental conditions and will often be willing to share information.

Current Log Transfer Facilities (LTFs) or logging camps are:

Location	Operator	Phone	Fax
Chiniak (logging camp)	Lesnoi, Inc. (In Kodiak)	486-8191	486-8181
Afognak Island:			
Kazakof/Danger Bay	ANC/Ben Thomas Logging	379-1119	379-1161
Big Sandy Lake	Koncor/Silver Bay Logging	381-2000	381-2003

Also: Afognak Native Corporation (ANC) in Kodiak at 486-6014 - (fax 486-2514)
Koncor Forest Products in Anchorage at 562-3335 - (fax 562-0599)

12. *Water Intake/Use*

The following table was generated by the Alaska Department of Environmental Conservation, Drinking Water and Water Treatment Section. The systems below include public permitted water use facilities by index number, source (groundwater, surface water, purchased water), facility name, and facility location. Additional information about facility owners can be obtained from the Drinking Water and Water Treatment Section at (907) 465-5300.

Name of System	Location	Source	State ID No.	Population Size Served
Whitestone Logging	Afognak Island	Surface Water	AK2250427	75
Akhiok	Akhiok	Surface Water	AK2250037	90
KIBSD Chiniak	Chiniak	Surface Water	AK2250168	32
Karluk Water System	Karluk	Surface Water	AK2250087	52
Kodiak Water System	Kodiak	Surface Water	AK2250011	9,547
USCG Station Kodiak	Kodiak	Surface Water	AK2250126	3,092
Larsen Bay Water System	Larsen Bay	Surface Water	AK2250134	335
Old Harbor	Old Harbor	Surface Water	AK2250061	320
Ouzinkie Water System	Ouzinkie	Surface Water	AK2250053	246
Port Lions	Port Lions	Surface Water	AK2250045	309

vi. 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*

Tugidak Island State Critical Habitat Area was established in 1988 to ensure the protection and enhancement of fish and wildlife habitat and populations, especially marine mammals, birds, fish, and shellfish. The island has been one of the largest harbor seal haulout and pupping areas in the world with an estimated peak population of over 20,000 seals. In addition, Tugidak Island attracts a great number of waterfowl, shorebirds, tundra swans, and loons. The eelgrass beds and rich marine life found in the island's lagoon attracts thousands of black brant and white-fronted geese, and provides wintering habitat for emperor geese.

Marmot Island Special Use Area was administratively designated in 1990 to minimize human disturbance of Steller sea lions, which use the eastern beaches of Marmot Island, and to protect and preserve important sea lion habitat. The Steller sea lion rookeries on the east side of the island were once the largest in Alaska, but have been steadily declining since the early 1980's. Steller sea lions are listed as threatened under the provisions of the Endangered Species Act. The Alaska Department of Natural Resources maintains management responsibility of special areas, and in the case of the Marmot Island Special Use Area, consults with Alaska Department of Fish and Game.

Shuyak Island State Park was established in 1984, and expanded in 1997, to protect the area's recreational and scenic resources, and the area's fish and wildlife habitat in order to preserve and enhance the continued use of the area for sport and subsistence hunting and fishing, trapping and recreational activities. The park encompasses most of the island's 47,000 acres. There are four public use cabins located on the northwestern side of the park.

Afognak Island State Park was designated in 1994. Afognak State Park, totaling 48,742 acres, is managed by the Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation. There is one public use cabin located on the south shore of Pillar Lake. Brown bear, elk, black-tailed dear, beavers, land otter, muskrat and squirrel are all abundant on the island. Marine wildlife found in the nearshore waters off Afognak include sea otters, harbor seals, humpback whales and Dall porpoises. Several species of seabirds are also found on Afognak such as tufted and horned puffins, black oystercatchers, and cormorants. Common and red-throated loons, mergansers and harlequin ducks are also abundant. Recreational activities on Afognak Island include sport fishing, and hunting, and wildlife viewing.

3. *Federal*

Alaska Maritime National Wildlife Refuge: Within the Kodiak area, over 30 islands, islets, and rocks are managed as part of the Refuge, including the Barren Islands north of the Kodiak Archipelago. The seven

named islands in the Barren Islands group host the largest gathering of nesting seabirds in the northern Gulf of Alaska. More than a half million breeding seabirds represent 18 species. Fork-tailed storm-petrels are the most abundant seabird on most of the islands. Tufted puffins are the most common birds seen during the day. East Amatuli Islands has one of the only two northern fulmar colonies in the northern Gulf of Alaska. Tens of thousands of murres and kittiwakes nest on the cliffs of East Amatuli and Nord islands. Brant and other waterfowl stop at Ushagat Island which has salt water lagoon habitat. The second largest Steller sea lion rookery in the region is located on Sugarloaf Island.

Alaska Peninsula National Wildlife Refuge: Managed by the U.S. Fish and Wildlife Service, the Refuge, established in 1980, lies on the Pacific side of the Alaska Peninsula and covers about 3,500,000 acres. The landscape includes active volcanoes along the Aleutian Range, lakes, rivers, tundra, and rugged coastline. Moose, caribou, wolves, brown bears, and wolverines reside on the Refuge. Sea lions, seals, sea otters (about 30,000), and whales live in the marine environment. The cliffs, bays and poorly-drained lowlands provide abundant habitat for millions of birds, particularly seabirds, waterfowl, and shorebirds that use the refuge primarily as a staging area during migration to and from nesting grounds in the Arctic. Seabirds also use the Refuge for breeding. All five species of Pacific salmon (king, coho, sockeye, pink and chum) spawn in the streams and lakes on the Refuge. Brown bears forage heavily in coastal marshes and along shorelines and are particularly susceptible in the spring. Big game hunting and sport fishing are popular uses.

Becharof National Wildlife Refuge: Managed by the U.S. Fish and Wildlife Service, the Refuge was created in 1980. The Refuge covers 1,200,000 acres and is dominated by Becharof Lake, the second largest lake in Alaska. The lake is surrounded by low rolling hills, tundra wetlands, and volcanic peaks. All five species of Pacific salmon (king, coho, sockeye, pink and chum) spawn in the streams and lakes on the Refuge. The salmon runs begin in June and continue to September in Bristol Bay. Salmon spawning streams attract one of the largest brown bear populations in the state. Moose, caribou, wolves, wolverines, fox, beaver are abundant. Sea otters, sea lions, harbor seals and whales inhabit the marine shoreline. The Refuge is a major source of salmon, grayling and arctic char. The cliffs, bays, and poorly-drained lowlands provide abundant habitat for millions of birds, particularly seabirds, waterfowl, and shorebirds that use the refuge primarily as a staging area during migration to and from nesting grounds in the Arctic. Seabirds also use the Refuge coastal areas for breeding. Eagles and peregrine falcons are common. Big game hunting and sport fishing are primary visitor uses.

Kodiak National Wildlife Refuge: Managed by the U.S. Fish and Wildlife Service, the Refuge was created in 1941 and expanded in 1980; it covers 1,800,000 acres encompassing the southwestern two-thirds of Kodiak Island, Uganik Island, the Red Peaks area on northwestern Afognak Island, and all of Ban Island.. The Refuge is managed to: conserve fish and wildlife, including Kodiak brown bear, salmon, sea otters, sea lions, and other marine mammals and migratory birds; fulfill international treaty obligations; provide for continued subsistence uses; and maintain water quality and quantity. The refuge is home to an estimated 2,300 brown bears, and at least 600 nesting pairs of bald eagles. More than 250 species of birds use the refuge, while more than 1.5 million seabirds and waterfowl overwinter in nearshore waters surrounding Kodiak Island. The refuge also provides spawning and rearing habitat for all five North American species of Pacific salmon. Salmon produced on the refuge make up approximately 65% of the total commercial harvest in the Kodiak Archipelago. Recreational opportunities include hunting, fishing, wildlife observation, photography, rafting and camping. The refuge also maintains several remote public-use cabins

Katmai National Park and Preserve: Managed by the National Park Service, the Park and Preserve covers over 4,000,000 acres on the Alaska Peninsula. Katmai was established in 1918 as a National Monument, and was expanded and re-designated in 1980. In 1912 a cataclysmic volcanic eruption created the Valley of Ten Thousand Smokes. Home to huge brown bears, the area also supports significant populations of salmon as well as providing for trophy sport fishing. Over 3,000,000 acres of the Park and Preserve are designated as Wilderness, including all of the coast and offshore islands within five miles of the mainland.

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.**

Insert land management map legend here: page 1 of 1

http://www.asgdc.state.ak.us/maps/cplans/base/cover1n3.pdf

Insert land management maps here: page 1 of 2

http://www.asgdc.state.ak.us/maps/cplans/kod/kod11n3.pdf

Insert land management map 2 of 2

http://www.asgdc.state.ak.us/maps/cplans/kod/kod21n3.pdf

vii. SENSITIVE AREA ATTACHMENT 1: RESOURCE AND SENSITIVE AREA MAPS FOR THE KODIAK SUBAREA

The following maps were prepared by the Kodiak Island Borough and are available online at the Subarea Plan Maps website for the Kodiak Subarea under Biologically Sensitive Areas Maps: http://www.asgdc.state.ak.us/maps/cplans/subareas.html.

MAP #1:	Fishery Resources - Herring Spawning, Pollock Spawning, Pollock Juvenile Rearing, Anadromous Fish Streams (pink salmon). Accompanied by a List of the Estimated Average Annual Peak Index Counts for Salmon Streams in the Kodiak Subarea from Aerial Surveys (1967 - 1994)
MAP #2:	Commercial Fishing Areas - Salmon Seining and Set Net Areas
MAP #3:	Commercial Fishing Areas - Herring, Pollock, Halibut, Cod, Scallops
MAP #4:	Fishery Resources - King and Tanner Crab
MAP #5:	Fishery Resources - Shellfish, Clam
MAP #6:	Marine Mammals - Harbor Seal Areas
MAP #7:	Marine Mammals - Sea Otters
MAP #8:	Marine Mammals, Terrestrial Mammals and Birds, Sea Lions, Brown Bears, & Seabirds
MAP #9:	Marine Mammals - Humpback Whales, Fin Whales
MAP #10:	Marine Mammals - Gray Whales, Dall's Porpoise, Minke Whales, Orca Whales
MAP #11:	Waterfowl - Ducks, Geese, Swans
MAP #12:	Recreation Areas - Fall, Winter
MAP #13:	Recreation Areas - Spring/Summer, Year-round
MAP #14:	Subsistence - Marine
MAP #15:	Subsistence - Salmon, freshwater fish
MAP #16:	Currents and Circulation
MAP #17:	Sensitive Areas - Rural Communities
MAP #18:	Sensitive Areas - Focus Groups, Kodiak community, resource agencies
MAP #19	Biological Hotspot Sites - as Identified by ADF&G (page D-43)

(Note: The Kodiak Island Borough has been unable to update these maps since first publication and some may be outdated, most notably maps #3, #4, #8, #12, and #13.)

viii. SENSITIVE AREA ATTACHMENT 2: ALASKA DEPARTMENT OF FISH AND GAME, INDEX SALMON STREAM ESCAPEMENT FOR THE KODIAK SUBAREA

This table is to be used in conjunction with the Alaska Department of Fish and Game's Atlas to the Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes, Southwest Region. The Atlas, made up of USGS quadrangle maps, is needed to locate the streams using the unique water body, or stream catalog number.

The table provides information that is used with the prioritization scheme located on pages D - 7 through D - 10 to identify salmon streams of major, moderate or lesser concern. To prioritize salmon streams a responder will need to know the USGS quadrangles for the spill trajectory and then locate the streams on the quadrangle. Using the stream catalog number, the responder can then cross-reference a stream to this table to determine if the stream is of major, moderate, or lesser concern.

ESTIMATED AVERAGE ANNUAL PEAK INDEX COUNTS FOR SALMON STREAMS IN THE KODIAK SUBAREA FROM AERIAL SURVEYS 1967-1994[1]

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd)	Pink (Even)	Chum
SELIEF	251-101	251-10-10010	799	1259	2592	3926	6
WASKANARESKA CREEK	251-102	251-10-10020		6	356	875	
MUSKOMEE BAY	251-103	251-10-10030	1	17	970	828	13
DOLPHIN CREEK	251-104	251-10-10040			155	106	
MALINA RIVER	251-105	251-10-10050	5558	1260	8847	41062	4400
Weir escapement	251-105w	251-10-10050	8308	44	2202	34311	
IRON CREEK	251-106	251-10-10005			300	800	
HERRING CAMP CREEK	251-109	251-10-10033			500		
MALKA BAY	251-201	251-20-10005		1400	1698	421	
MALINA BAY	251-202	251-20-10020	3	1200	366	4200	
CAPE CREEK	251-203	251-20-10030			3100	2900	
SIDE CREEK	251-204	251-20-10003			68	167	
HUNT CREEK	251-205	251-20-10006				150	
MARKER CREEK	251-206	251-20-10010		200	165	1086	
SITE CREEK	251-207	251-20-10023			200	75	
LONG LAGOON	251-301	251-30-10010	389	1074	7487	15000	602
THORSHEIM CREEK	251-302	251-30-10020	1434	912	4565	5000	32
Weir escapement	251-302w	251-30-10020	5673	281	15		32
SOUTH ARM CREEK	251-403	251-40-10030	6	100	2884	11023	
EAST ARM CREEK	251-404	251-40-10040	25	185	8618	13192	361
OLD CABIN CREEK	251-405	251-40-10050		500	42	5175	
HIDDEN LAKE CREEK	251-406	251-40-10190	210	1000	2838	4362	
LONG CANYON CREEK	251-407	251-40-10120			3249	2428	
DEVILS INLET CREEK	251-501	251-50-nc				32	
BLUEFOX CREEK	251-502	251-50-10021		3	78	749	
ESTER LAGOON CREEK	251-503	251-50-10030			41	343	
SW REDFOX CREEK	251-504	251-50-10045		125	4125	531	
SE REDFOX CREEK	251-505	251-50-10055		10	21287	2965	

ESTIMATED AVERAGE ANNUAL PEAK INDEX COUNTS FOR SALMON STREAMS IN THE KODIAK SUBAREA FROM AERIAL SURVEYS 1967-1994[1]

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd)	Pink (Even)	Chum
CROSSFOX CREEK	251-506	251-50-10065	1		412	270	
CATARACT CREEK	251-507	251-50-10070			12		
POOR CREEK	251-508	251-50-nc				2000	
HANDER CREEK	251-510	251-50-10023			1503	4000	
BIG BAY CREEK	251-601	251-60-10010	28	1340	846	864	
Weir escapement	251-601w	251-60-10010		1886			
HIDDEN COVE CREEK	251-602	251-60-10020	2		11	191	
SHANGIN NARROWS	251-701	251-70-10010		80		1148	
WEST SHANGIN BAY	251-702	251-70-10022		54	93	1066	
EAST SHANGIN BAY	251-703	251-70-10020		20		200	
CARRY BEAR CREEK	251-705	251-70-10025	9	988	328	1959	
WHITEY'S HOLE	251-706	251-70-10050	1	50	11		
Weir escapement	251-706w	251-70-10050		1023			
BACK BAY CREEK	251-811	251-81-10010			11		
BIG FORT CREEK	251-813	251-82-10090			150		
BIG WATERFALL	251-821	251-82-10010			1078	1644	
LITTLE WATERFALL	251-822	251-82-10020	60	25	57391	22755	5
Weir escapement	251-822w	251-82-10020	28	17	68062	44457	2
DELPHIN ISLAND	251-823	251-82-10026				4	
DELPHIN BAY	251-824	251-82-10031		200		500	
PORTAGE CREEK	251-825	251-82-10050	3774	1268	25203	20891	3
DISCOVERY BAY CREEK	251-826	251-82-10060			108	133	
BEAN CREEK	251-827	251-82-10070		135	415	1241	
OTTER CREEK	251-828	251-82-10045		72	3728	158	
ELK CREEK	251-829	251-82-10057	2	8	778	170	
CABIN CREEK	251-830	251-82-10050-2006			138	32	
PAUL'S BAY	251-831	251-82-10080	14314	5281	2714	3031	5389
weir escapement	251-831w	251-82-10080	17055	7592	7071	3215	8
BARNYARD CREEK	251-832				75		
SEAL BAY CREEK	251-901	251-90-10010	8	43	9042	9412	
SOUTH CREEK	251-902	251-90-10009		20	212	166	
ROCKY BAY CREEK	251-903	251-90-10005			300	325	
LONG TONKI	252-101	252-10-10010		402	2818	2870	
SHORT TONKI	252-102	252-10-10020		60	5062	2387	
TONKI CAMP CREEK	252-103	252-10-10011			1150		
TONKI FALLS CREEK	252-104	252-10-10013			325		
EAST SAPOSA CREEK	252-301	252-31-10010			2881	5020	
GRASSY LAGOON CREEK	252-302	252-31-10020		13	843	2758	
UNNAMED	252-305	252-31-10005			380	2113	
SAPOSA BAY	252-306	252-31-10013			6815	1720	3
RUTH BAY	252-307	252-31-10025	1500		1802	326	
BARRIER CREEK	252-308	252-31-10027			3		
LEFT HAND BAY	252-309	252-31-10017	1300		5465	2157	
HERMIT'S CREEK	252-317	252-32-10050		6	1		
MCDONALD'S LAGOON	252-318	252-31-10080		26	10011	2556	

ESTIMATED AVERAGE ANNUAL PEAK INDEX COUNTS FOR SALMON STREAMS IN THE KODIAK SUBAREA FROM AERIAL SURVEYS 1967-1994[1]

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd)	Pink (Even)	Chum
LITTLE AFOGNAK	252-319	252-32-10010		63	434	3352	
KITOI BAY	252-32				27750	73750	
LITTLE KITOI	252-323	252-31-10030	2399	475	40165	3138	516
BIG KITOI	252-324	252-31-10040	25	662	53738	11250	2754
DANGER BAY	252-33					900	
N.E. DANGER CREEK	252-331	252-33-10010	10	354	3845	7586	219
BIG DANGER	252-332	252-33-10020	5	381	14120	21892	1221
EAST DANGER CREEK	252-333	252-33-10030	5	2	4209	2046	1
OLD BEAVER CREEK	252-334	252-33-10005				211	
N.W. DANGER CREEK	252-335	252-33-10025			144	883	
P-A CREEK	252-337				3		
STEEP CREEK	252-338	252-33-10027			2		
CRACK CREEK	252-339	252-33-nc			7		
BACK BAY	252-341	252-34-10010	3	2	899	3087	
AFOGNAK RIVER	252-342	252-34-10020	50843	6189	12019	33069	685
weir escapement	252-342w	252-34-10020	71124	8324	12859	47258	7
MARKA BAY	252-343	252-34-10005	1	686	18245	63000	790
CORT'S CREEK	252-345	252-34	42	28	6469		19
CAMPBELL LAGOON	253-114	253-11-10040		125	580	211	5
LITTLE RIVER	253-115	254-10-10010	13569	1832	30002	76664	3050
UGANIK BAY	253-12		68000			16500	
S. ARM UGANIK	253-121	253-12-10010		100	3735	4770	3671
UGANIK RIVER	253-122	253-12-10020	44742	4118	108993	103321	1370
CAPE UGANIK CREEK	253-141	253-31-10200			925	275	
UNNAMED	253-142	253-31-10210			900		
FAWN CREEK	253-311	253-31-10100			850	136	
COHO CREEK	253-313	253-31-10030		146	443	816	
VIEKODA CREEK	253-321	253-32-10050		85	3172	2871	108
EAST VIEKODA CREEK	253-322	253-32-10020		75	188	200	
TERROR RIVER	253-331	253-33-10010		158	73217	67746	8272
BAUMANN'S	253-332	253-33-10020			38812	9264	1280
CLARA'S CREEK	253-333	253-33-10030			4470	1300	2
CHERNOF POINT CREEK	253-352	252-35-10020			113	100	
7-MILE BEACH	254-103	254-10-10120			1274	1677	
UNNAMED	254-105	254-10-10100			245	250	
UYAK BAY	254-20				225000		
UYAK 201 CREEK	254-201	254-20-10010			11537	4175	1000
UYAK RIVER	254-202	254-20-10020		1722	108642	49771	1493
EAST UYAK CREEK	254-203	254-20-10030		82	53916	7980	7081
BROWNS LAGOON	254-204	254-20-10100	2	735	8303	62821	1633
ISLANDS CREEK	254-205	254-20-10050			611	18	20
SHORT CREEK	254-206	254-20-10060			725		
LONG CREEK	254-207	254-20-10070			1748	275	
CABIN CREEK	254-208	254-20-10040			652		
GWEN'S CREEK	254-209	254-20-10003			390	100	

ESTIMATED AVERAGE ANNUAL PEAK INDEX COUNTS FOR SALMON STREAMS IN THE KODIAK SUBAREA FROM AERIAL SURVEYS 1967-1994[1]

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd)	Pink (Even)	Chum
TRAP CREEK	254-210	254-20-10005			900	150	
MARKER CREEK	254-211	254-20-10008			560		
RUINS CREEK	254-212	254-20-nc			697		1500
LARSEN BAY CREEK	254-213	254-10-10070			3498		
ZACHAR BAY	254-30					5000	
ZACHAR RIVER	254-301	254-30-10010		5103	38314	59576	1884
N.E. ZACHAR CREEK	254-302	254-30-10020			3333	4375	1666
SPIRIDON RIVER	254-401	254-40-10010	250	6545	20300	19080	1840
CLOVER ROCK	254-402	254-40-10020			760	933	
TELROD COVE	254-403	254-40-10050	3500		144	2681	
CHIEF COVE	254-404	254-10-10050			2528	990	
CAPE KULIUK	254-405	254-10-10030			250	575	
KARLUK RIVER	255-101	255-10-10010	395004	2416	69415	1057898	215
weir escapement	255-101w	255-10-10010	578551	1918	56846	1153160	212
LOW CAPE	256-101	257-10-nc				150	100
RED RIVER	256-201	256-20-10010	249130	1616	12195	595008	731
weir escapement	256-201w	256-20-10010	293632	1060	15662	520269	92
OLD RED RIVER	256-202	256-20-10020			705	5433	2000
CARAMEL CREEK	256-301	256-30-10010		420	5028	6641	9025
HALIBUT BAY	256-302	256-30-10020		288	425	1592	1447
GRANT'S LAGOON CREEK	256-303	256-30-10025		326	1400	30075	1458
STURGEON RIVER	256-401	256-40-10010	1	5127	8192	34853	4413
EAST STURGEON RIVER	256-402	256-40-10010-2003		898	3580	11154	6183
LITTLE SUKHOI	257-101	257-20-10010		1200			8726
BIG SUKHOI	257-102	257-20-10020		1104	2834	4280	1299
STEEP CREEK	257-301	257-30-10005	450	12	1500		50
AKALURA CREEK	257-302	257-30-10020	22854	3043	11725	17873	171
weir escapement	257-302w	257-30-10020	31748	3032	21221	22618	6
SILVER SALMON CREEK	257-303	257-30-10035	1889	1291	750	332	
UPPER STATION	257-304	257-30-10040	139820	5562	9710	8877	2
weir escapement	257-304w	257-30-10040	237180	4572	6313	5031	2
LITTLE DOG SALMON	257-305	257-30-10010		200	8751	9011	210
NARROWS CREEK	257-401	257-40-10010	3	62	5670	4362	766
HORSE MARINE	257-402	257-40-10020	5662	689	2013	6287	1457
DOG SALMON RIVER	257-403	257-40-10030	144912	3608	98331	85275	6148
weir escapement	257-403w	257-40-10030	224967	5059	140629	61929	1235
TALIFSON'S CREEK	257-404	257-40-10028			7350	1729	219
CHIP COVE CREEK	257-405	257-40-10050			4066	4375	55
SNUG COVE CREEK	257-406	257-40-10060			1500	1306	
AKHIOK CREEK	257-407	257-40-10070			202	1000	20
KEMPF BAY CREEK	257-408	257-20-nc				625	
DEADMAN BAY	257-50					4000	5000
DEADMAN RIVER	257-502	257-50-10020		2099	134035	55289	1178
ALPINE COVE CREEK	257-503	257-50-10030		21	12145	5331	920
HELLEN CREEK	257-504	257-50-10040			9462	230	

ESTIMATED AVERAGE ANNUAL PEAK INDEX COUNTS FOR SALMON STREAMS IN THE KODIAK SUBAREA FROM AERIAL SURVEYS 1967-1994[1]

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd)	Pink (Even)	Chum
N.E. PORTAGE	257-601	257-60-10010		453	9531	5814	4832
SULUA PINK CREEK	257-602	257-60-10200			12907	3184	2223
SULUA CHUM CREEK	257-603	257-60-10030		850	14771	4846	8992
TOMS CREEK	257-604	257-60-10040			18016	3272	2003
EAST PORTAGE CREEK	257-605	257-60-10035			3333	200	803
HUMPY RIVER	257-701	257-70-10010		2447	191092	131535	
SHAG BLUFF CREEK	257-702	257-60-10050			17100	1220	490
SEABORG BAY CREEK	257-703	257-70-10030			1975	405	
BOULDER BAY	258-101	258-10-10010		150	2875	1227	35
SANTA FLAVIA	258-201	258-20-10010		300	2833	801	3183
SHEARWATER BAY CREEK	258-202	258-20-10020			1943	1083	1888
PORT OTTER CREEK	258-203	258-20-10025		600	1110	457	1007
DOG BAY CREEK	258-204	258-20-10040		24	750	1631	5965
COXCOMB PT. CREEK	258-205	258-20-10050		6	1788	2618	4892
N.KILIUDA CREEK	258-206	258-20-10060			5326	12419	2865
W. KILIUDA CREEK	258-207	258-20-10069		970	20557	17200	9638
DUKALUK CREEK	258-208	258-20-10080		200	325	4807	2785
DEER CREEK	258-209	258-20-10054			1261	6675	462
KILIUDA SPIT CREEK	258-210	258-20-10056			5000	5287	204
MARKER GROVE CREEK	258-211	258-20-10110		50	215	233	732
PIVOT POINT	258-212	258-20-10120			4000	966	1190
BEAR CAMP CREEK	258-213	258-20-10073			9600	1100	2112
AMEE BAY CREEK	258-301	258-30-10010			633	102	1718
MCCORD BEACH	258-302	258-30-10020		100	835	126	1807
LEFT CAPE CREEK	258-303	258-30-10030			2	650	
GHOST ROCKS CREEK	258-304	258-30-10040			4557	1778	366
NUT ISLAND CREEK	258-305	258-30-10050			387	255	602
BUSH POINT CREEK	258-306	258-30-10060			150	260	500
FUGITIVE CREEK	258-307	258-30-10025		10	1100	80	575
OCEAN BEACH	258-401	258-40-10012	4526	3047	1833	4937	4028
WEDGE CREEK	258-402	258-40-10020		10	946	4525	903
ROLLING BAY	258-511	258-51-10010		2260	12250	10580	6035
NATALIA BAY	258-512	258-51-10020		17	2516	224	3165
NEWMAN BAY	258-513	258-51-10030		150	915	638	2720
NATALIA CABIN CREEK	258-514	258-51-10024			2925	60	775
DRY CREEK	258-515	258-51-10018			8000	50	1410
OUTSIDE CREEK	258-516	258-51-nc					75
MIDWAY CREEK	258-521	258-52-10010	135	6118	17135	19026	9748
BARLING CREEK	258-522	258-52-10020	2	2808	46592	39917	5463
OLD HARBOR CREEK	258-523	258-52-10015		380	505	2700	529
LAGOON CREEK	258-524	258-52-10012		40			
WEST THREE SAINTS	258-531	258-53-10010			1543	3200	1670
SW THREE SAINTS	258-532	258-53-10020			141	890	177
NE THREE SAINTS	258-533	258-53-10030		150	45	558	4
KAIUGNAK POINT	258-541	258-54-10012	100	1912	13792	11987	1250

ESTIMATED AVERAGE ANNUAL PEAK INDEX COUNTS FOR SALMON STREAMS IN THE KODIAK SUBAREA FROM AERIAL SURVEYS 1967-1994[1]

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd)	Pink (Even)	Chum
KAIUGNAK LAGOON	258-542	258-54-10020		175	23692	12723	5770
AVNULA CREEK	258-543	258-54-10005		300	2003	566	
BRUIN CREEK	258-544	258-54-10022		60	5957	3001	2250
KIAVAK PORTAGE	258-551	258-55-10045	6	200	5830	5191	1785
CAPE KIAVAK	258-552	258-55-nc			7750	3512	1310
KNOLL PT. CREEK	258-553	258-55-10010			6700	7935	6125
KIAVAK LAGOON	258-554	258-55-10040			1000	4250	987
KIAVAK SPIT	258-555	258-55-10050		30	155	1562	525
JAP BAY	258-601	258-60-10010		1450	1306	531	240
KAGUYAK BAY CREEK	258-602	258-60-10020	75	1500	16778	10270	1106
KAGUYAK FOX CREEK	258-603	258-60-10030			11260	7000	1614
SEVEN RIVER	258-701	258-70-10040		450	101917	82432	7000
WALTER'S CREEK	258-702	258-70-10050			17414	4850	
TUNDRA LAKES CREEK	258-703	258-70-10010			14080	6750	
SOW CREEK	258-704	258-70-10024			800	10515	
MELAVEDOF CREEK	258-705	258-70-10003	250		19000	250	
KAGUYAK VILLAGE CREEK	258-706	258-70-10002			10000	4900	
UNNAMED	258-707	258-70-10005			100		200
DOLINA POINT	258-801	258-80-10010	62		6133	5412	1508
NORTH BEACH CREEK	258-802	258-80-10020			20		
WHIRLPOOL POINT	258-803	258-80-10030			251	150	1600
CAMP CREEK	258-804	258-80-10040			90	4950	35
BEND CREEK	258-805	258-80-10050				20	
PYRAMID CREEK	258-807	258-80-nc			70	20	1155
STRIP CREEK	258-808	258-80-10080		260	250		808
GLOTECLOSS CREEK	258-809	258-80-10035			107		1755
PASSAGE CREEK	258-851	257-90-10100		966	1125	500	1106
SOUTH VIEW CREEK	258-852	257-90-10152			30	225	
TUGIDAK CREEK	258-853	257-90-10010		35			100
RUSSIAN HARBOR	258-901	258-80-10140			1333	355	1204
E. RUSSIAN CREEK	258-902	258-80-10140-2006			8480	1250	
KEVIN CREEK	258-903	258-80-10130			1575	400	500
MONASHKA CREEK	259-101	259-10-10015		193	3025	5866	101
PILLAR CREEK	259-102	259-10-10020	4	59	5154	4349	183
VIRGINIA CREEK	259-105	259-10-10015-2001		10	1958	4100	20
BUSKIN RIVER	259-211	259-21-10120	6363	2969	61893	82913	616
weir escapement	259-211w	259-21-10120	12104	8387	89852	92069	38
SARGENT CREEK	259-221	259-22-10010		72	2803	5587	538
RUSSIAN RIVER	259-222	259-22-10020		75	11196	6397	2388
SOLONIE CREEK	259-223	259-22-10030		302	16303	4843	1965
PANAMAROFF CREEK	259-224	259-22-10026		4		110	100
MIDDLE BAY	259-23			200		8000	
AMERICAN RIVER	259-231	259-23-10010		590	60550	31600	4566
HORSESHOE CREEK	259-232	259-22-10047				1200	
SALT CREEK	259-233	259-23-10030		34	2925	21056	1770

ESTIMATED AVERAGE ANNUAL PEAK INDEX COUNTS FOR SALMON STREAMS IN THE KODIAK SUBAREA FROM AERIAL SURVEYS 1967-1994[1]

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd)	Pink (Even)	Chum
SLOUGH CREEK	259-234	259-23-10010-2003		207	5000	3500	1260
PEAT BEACH CREEK	259-235	259-23-10033			1400	500	
SID OLDS	259-242	259-24-10020	6	1186	43800	48085	7452
KALSIN CREEK	259-243	259-24-10030	2	172	9700	2395	615
FRANK'S CREEK	259-244	259-24-nc		375	400	107	
MYRTLE CREEK	259-245	259-24-10050		106	4130	3087	
MAYFLOWER BEACH	259-246	259-24-10004		60			
ROSLYN CREEK	259-251	259-25-10010	1	484	9507	23615	1248
WEST FORK TWIN CREEK	259-252	259-25-10020		11	2452	7386	100
CAPELIN CREEK	259-253	259-25-10030			113	4546	
CHINIAK RIVER	259-254	259-25-10040		97	8370	7387	167
CHINIAK LAGOON	259-255	259-25-10050		27			50
CRESCENT CREEK	259-362	252-36-10010		220	125		300
BARABARA CREEK	259-363	252-36-10030	1672	185	200	4083	
GOAT CREEK	259-364	252-36-10040			3283	1183	20
KIZHUYAK RIVER	259-365	252-36-10050		607	33860	14340	1226
PESTCHANIE CREEK	259-366	252-36-10060		20	3906	3566	36
FEW CREEK	259-367	252-36-10045			120	50	
DOVOLNO CREEK	259-368	252-36-10054			3240	1200	
MORE CREEK	259-369	252-36-nc				500	75
SHERATIN RIVER	259-371	252-37-10010		99	15010	19785	7265
HORSE CREEK	259-372	252-37-10007			1197	1016	10
NEW CREEK	259-373	252-37-nc			910		
CORRAL CREEK	259-381	252-38-10030			3750	4800	3166
RED CLOUD RIVER	259-382	252-38-10020	3	75	7703	3341	1448
HOLLIE CREEK	259-391	252-39-10010		100	4780	3600	1200
NEVA CREEK	259-392	252-39-nc		200	4672	5100	500
AZIMUTH CREEK	259-393	259-10-10010		17	692	823	200
SEREDNI POINT CREEK	259-394	252-39-10005		600	408	2140	150
MONKS LAGOON	259-395	259-10-10050		166	2062	65	100
SOLDIER'S BAY	259-397	252-39-10020		400	3625	1850	350
KNEE BAY CREEK	259-399	252-39-10067			3		
SACRAMENTO RIVER	259-401	259-30-10010		907	12486	3366	1255
TWIN PEAKS CREEK	259-402	259-30-10040		125	65	355	100
VALLEY CREEK	259-403	259-30-10050		133	536	225	
BURTON CREEK	259-404	259-30-10060		200	113	252	
ZENTNER CREEK	259-410	259-41-10013			6410	1527	433
PASAGSHAK RIVER	259-411	259-41-10010	6433	1691	3578	1314	250
MIAM RIVER	259-412	259-41-10020-2002	1210	1650	20948	24362	1896
NOSE CREEK	259-413	259-41-10017			255		400
HURST CREEK	259-414	259-41-10040		243	18942	20292	2050
SALTERY CREEK	259-415	259-41-10050	27732	2097	69401	20098	6591
ROUGH CREEK	259-416	259-41-10060		1443	5911	5061	9191
WILD CREEK	259-417	259-41-10070			286	362	1018
HORT SLOUGH CREEK	259-417A	259-41-nc			400	1100	1092

ESTIMATED AVERAGE ANNUAL PEAK INDEX COUNTS FOR SALMON STREAMS IN THE KODIAK SUBAREA FROM AERIAL SURVEYS 1967-1994[1]

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd)	Pink (Even)	Chum
HIDDEN BASIN	259-418	259-41-10077			2450	1486	3354
WEST BASIN CREEK	259-419	259-41-10090			140	123	1303
GLOTTOF CREEK	259-420	259-41-10080			1000	200	916
LAROSE BIGHT	259-421	259-42-10010			813	150	2040
GOAT LAKE CREEK	259-422	259-42-10020	80		6313	2563	2792
KILIUDA PASS CREEK	259-423	259-42-10027		50	2609	2341	3384
EAGLE HARBOR	259-424	259-42-10039		2052	20207	17565	5441
BUCK CREEK	259-425	259-42-10048			2000	181	152
GULL POINT CREEK	259-426	259-42-10060			650	171	761
DELTA CREEK	259-427	259-42-10037		100	150	895	72
GULL CAPE LAGOON	259-428	259-42-10080			1700		6244
DOUGLAS CREEK	262-101	262-10-10100		50	183	187	243
CLEAR CREEK	262-102	262-10-10080	4	500	2695	1550	3768
MONUMENT CREEK	262-103	262-10-10070	1		720	940	866
GLACIER LAKE CREEK	262-104	262-10-nc	30		200		1605
CALVING GLACIER CREEK	262-105	262-10-10060				1000	240
TRIPLE LAKES CREEK	262-106	262-10-10040	452	25	1933	1200	300
LONG MUD CREEK	262-107	262-10-10030	80		460	533	1102
PRODUCTIVE FORKS	262-108	262-10-10010			1316	83	2150
BLUFF CREEK	262-109	262-10-10035					1400
LONG SLOUGH CREEK	262-110	262-10-10035-2005	25	50			
BROAD VALLEY CREEK	262-113	262-10-10020			3800		
SWIKSHAK RIVER	262-151	262-15-10010	19907	7353	3750	13000	2900
BIG RIVER	262-152	262-15-10020		4730	27571	16269	3247
VILLAGE CREEK	262-153	262-15-10030			30490	17191	1370
CHINIAK LAGOON	262-154	262-15-10040			1210	3224	6791
WOLF CREEK	262-155	262-15-10015			450		
NINAGIAK RIVER	262-201	262-20-10010		3662	1253	1050	5857
HOOK CREEK	262-202	262-20-10020			3100	25	1484
SERPENT CREEK	262-203	262-20-10030		862	4785	6350	8788
HALLO CREEK	262-204	262-20-10040	2		520	755	3590
CAPE CHINIAK CREEK	262-205	262-20-10050			12334	5214	7485
OLE'S CREEK	262-206	262-20-10005			6000		2000
LITTLE NINAGIAK	262-207	262-20-10015					9200
DEVIL'S LAKE CREEK	262-253	262-25-nc			125	1355	200
YUGNAK CREEK	262-254	262-25-10080			108	2137	300
STARFISH CREEK	262-255	262-25-10050			349	150	
SOURCE CREEK	262-256	262-25-10060			79	41	105
KUKAK RIVER	262-271	262-25-10030			5060	2491	2795
KUKAK VALLEY CREEK	262-272	262-25-10018			1925	3400	4772
KAFLIA CREEK	262-301	262-30-10010	21125	650	2300	3455	
HALFERTY CREEK	262-351	262-35-10010	1195		3771	2458	3500
WEISS CREEK	262-352	262-30-10030			4900		600
SANDY CREEK	262-401	262-40-10010			1050	1114	37
MISSAK CREEK	262-402	262-40-10020			4283	2400	1400

ESTIMATED AVERAGE ANNUAL PEAK INDEX COUNTS FOR SALMON STREAMS IN THE KODIAK SUBAREA FROM AERIAL SURVEYS 1967-1994[1]

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd)	Pink (Even)	Chum
KINAK CREEK	262-451	262-45-10010		1000	37083	33041	4159
W. HIDDEN HARBOR	262-452	262-45-10020	2000		1050		
LOW PASS CREEK	262-453	262-45-nc			1100	2000	
GEOGRAPHIC CREEK	262-501	262-50-10050			29050	5316	
AVALANCHE CREEK	262-502	262-50-10072			1660	200	10
GIEGERICH CREEK	262-503	262-50-10020			1000		
RIED CREEK	262-504	262-50-10031				1000	
DAKAVAK	262-551	262-55-10010			28085	34217	1153
KATMAI CREEK	262-601	262-60-10006				2000	2014
ALOGOGSHAK CREEK	262-602	262-60-10020		6500	2800	13500	2248
CLAM CREEK	262-603	262-60-10030			2000	12910	2500
KASHVIK CREEK	262-604	262-60-10040		6833	41653	34523	9880
WRECKAGE CREEK	262-605	262-60-10050			3220	1600	100
SKIMPY CREEK	262-606	262-60-10028			20	3600	
ATMO CREEK	262-607				4300	2000	100
BIG ALINCHAK	262-651	262-65-10010		900	54069	21576	4896
LITTLE ALINCHAK	262-652	262-65-10020			20118	2681	671
PTERODACTYL CREEK	262-653	262-65-10030			24887	4991	550
BEAR BAY CREEK	262-654	262-65-10040	682		4985	6185	4476
BEAR LAKE CREEK	262-655	262-65-10055	463		800	150	2191
WEST BEAR CREEK	262-656	262-65-10038			4675	1700	450
HELEN CREEK	262-701	262-70-10010			5895	1852	633
PORTAGE CREEK	262-702	262-70-10020	6		14158	15708	1812
TERESA CREEK	262-703	262-70-10030			17206	8875	4257
TRAIL CREEK	262-704	262-70-10040			4812	4430	4644
KATIE CREEK	262-705	262-70-10050			3993	2127	300
PUALE CREEK	262-706	262-70-10025		60	2000	60	1342
OIL CREEK	262-751	262-75-10010			14766	22765	75
DRY BAY	262-752	262-75-10020		2000	3014	3438	8222
JUTE CREEK	262-801	262-80-10010			2669	1951	1005
KANATAK	262-802	262-80-10020	1252	350	22846	11800	1037
SALMON CREEK	262-803	262-80-10012			250	160	600
LOG JAM CREEK	262-804	262-80-10014			200		
LITTLE BIG CREEK	262-850	262-85-10012			5000	900	
BIG CREEK	262-851	262-85-10010	122	350	172230	63230	2187
DES MOINES CREEK	262-852	262-85-10020		1	21350	8530	2163
PASS CREEK	262-853	262-85-10030			8625	6287	5205
SHORT CREEK	262-854	262-85-10040			9430	76918	850
HIDDEN CREEK	262-855	262-85-10050			15		83
SPIT CREEK	262-856	262-85-10045	6		5776	3150	1572
ALAI CREEK	262-857	262-85-10070			10	933	2875
KIALAGVIK CREEK	262-858	262-85-10080			4520	950	5185
ICY PEAK CREEK	262-859	262-85-10090			2400	825	7402
SLOUGH CREEK	262-860	262-85-nc			75		2016
KAYAKLIUT CREEK	262-861	262-85-10098			2450	500	500

ESTIMATED AVERAGE ANNUAL PEAK INDEX COUNTS FOR SALMON STREAMS IN THE KODIAK SUBAREA FROM AERIAL SURVEYS 1967-1994[1]

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd)	Pink (Even)	Chum
POINT CREEK	262-862	262-85-10096			200		
TINY CREEK	262-865	262-85-10042			50	800	25
W. COAL CREEK	262-866	262-85-10016			800	200	
IMUYA CREEK	262-951	262-85-10110			7091	4168	1962
CIRC CREEK	262-952	262-85-10142	7		9900	6200	
KILOKAK CREEK	272-963	272-96-10300			1000	5450	8000

[1]Data provided by J. Blackburn, ADFG, Commercial Fisheries Management and Development Division, Kodiak.

NORTH SLOPE SUBAREA CONTINGENCY PLAN
SENSITIVE AREAS
SECTION

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i. 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 the North Slope Subarea. This information is specific to the North Slope. 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 Contingency 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:

- ARRT 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, Appendix 1)
- 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 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. 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 necessary to adequately complete the Sensitive Areas Section was compiled. Identifying relative priorities among resources and resource uses takes considerable coordination and discussion among resource management agencies. Plans are being developed to further conduct information gathering, compilation, prioritization, and presentation to add to the information required in this section for the next update.

In January 2010, Audubon Alaska, in cooperation with Oceana, published the *Arctic Marine Synthesis Atlas of the Chukchi and Beaufort Seas*. This information is incorporated with the permission of Audubon Alaska.

The Alaska Clean Seas (ACS) *ACS Technical Manual: Map Atlas* includes maps of the coastal area between Demarcation Point and Point Hope. The Atlas identifies sensitive areas and prescribes response tactics for selected areas. The ACS material was developed with input from federal and state and local agencies. This information is incorporated, by reference, into this section (with the permission of ACS). See the Geographic Response Strategies Section for a quick-reference guide to the *ACS Technical Manual*. In the electronic version of this plan, hyperlinks are provided for ready access to the contents of the *ACS Technical Manual*.

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:

Doug Mutter
Department of the Interior
Office of Environmental Policy
and Compliance
1689 C Street, Room 119
Anchorage, Alaska 99501
271-5011
FAX 271-4102
email: douglas_mutter@ios.doi.gov

Jack Winters
Alaska Department of Fish and Game
Habitat Division
1300 College Road
Fairbanks, Alaska 99701
459-7285
FAX 459-7303
email: jack.winters@alaska.gov

ii. 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 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 Lab/Ted Stevens Marine Research Institute 907-789-6600
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

Agency	Resources	Point of Contact
SHORELINE TYPES		
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: – North Slope Borough	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

Agency	Resources	Point of Contact
COMMERCIAL HARVEST		
Alaska Department of Fish and Game	fishing permits, seasons	Commercial Fisheries Division Fairbanks 907- 459-7274
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
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 907-459-7206
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
North Slope Borough	subsistence activities	Department of Wildlife Management Barrow 907-852-0350
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 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

Agency	Resources	Point of Contact
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
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

iii. 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.

The following criteria were developed as a tool 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 countermeasures

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
- Inland Habitat Types:
  - Riparian willow
  - Connected lakes
  - Freshwater springs
  - Deep lakes
- Recurring Leads and Polynyas in Sea Ice
- Threatened or Endangered Species Habitat

    - Polar Bear Critical Habitat
    - Spectacled Eider Critical Habitat
- Spotted Seal Haulout Areas (> 10 animals)
- Ringed Seal Lairs and Pupping Areas
- Walrus Haulout Areas
- Gray Whale Nearshore Migration and Feeding Areas
- Beluga Whale Concentration Areas
- Bowhead Whale Nearshore Migration Routes
- Polar Bear Denning and Feeding Areas
- Bear Concentration Areas (marine mammal/carcasses; salmon)
- Caribou Calving and Insect Relief Areas
- Large Seabird Colonies (> 100 birds)
- Waterfowl and Shorebird Spring and Fall Concentration and Staging Areas
- Waterfowl Molting Concentration Areas
- Anadromous Fish Spawning and/or Rearing Streams (i.e., salmon, Dolly Varden, whitefish)
- Land Management Designations:
    - Federal: Wilderness and Wilderness Study Areas
        - Wild and Scenic Rivers
        - National Natural Landmarks
        - Research Natural Areas (Toolik Lake, Galbraith Lake)
        - Specially Designated Areas
- 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
- River Floodplains

C. AREAS OF MODERATE CONCERN

- Shoreline Geomorphology - Coastal Habitat Types:
    - Beaded tundra streams
- Upland Habitat Types:
    - Drained lake basins
- Spotted Seal Haulout Areas (< 10 animals)
- Ringed Seal Shorefast Ice Concentration Areas
- Seabird Colonies (10 - 100 birds)
- Waterfowl and Shorebird Nesting Concentration Areas
- Shorebird Molting Concentration Areas
- Polar Bear General Distribution
- Bearded Seal General Distribution
- Walrus General Distribution
- Caribou Migration Routes
- Muskox Riparian Habitat

- 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
- 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

The North Slope Borough, in their Coastal Management Plan, has identified Areas Meriting Special Attention based on unique ecological, recreational, cultural, geophysical, or developmental values.

1. *Cape Thompson Area Meriting Special Attention*

The seacliffs of this area provide essential nesting habitat for 9 species of raptors and ravens, and one of the largest concentrations of murres and kittiwakes in the eastern Chukchi Sea. This is one of the northernmost seabird colonies in the U.S. Marine mammals migrate offshore, including: the bowhead whale, gray whale, beluga whale, walruses, polar bears, and ringed, spotted and bearded seals. This area has traditionally been used as a subsistence hunting and gathering area.

2. *Kasegaluk Lagoon and Barrier Island System Area Meriting Special Attention*

The waters of the lagoon and the nearshore waters seaward of the barrier islands represent a high use area for beluga whales and other marine mammals. Belugas use the nearshore waters seaward of the barrier islands throughout the summer. The barrier islands and lagoon are used by shorebirds and waterfowl for spring migration, resting, nesting, feeding, molting, and fall migrations staging. This is an important subsistence use area, including egg gathering, waterfowl hunting, sealing, fishing, walrus hunting, and whaling. Cross Island and Barter Island are also important to threatened polar bears, due to the presence of Bowhead Whale carcasses from subsistence harvests.

iv. 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.

SHORELINE GEOMORPHOLOGY

CATEGORY	LOW	MEDIUM	HIGH
COASTAL HABITAT TYPES		Beaded tundra streams	River deltas Sheltered lagoons Open lagoons Salt Marshes Barrier islands Mudflats Spit beaches Protected bays
LAKE AND RIVER HABITAT TYPES	Exposed rocky cliffs & banks Bedrock shores & ledges, rocky shoals Eroding scarps/banks in unconsolidated sediment Exposed man-made structures	Sand beaches & bars Mixed sand & gravel beaches & bars Gravel beaches & bars Gently sloping banks Exposed flats Riprap	Sheltered scarps in bedrock Vegetated steep sloping blufs Sheltered man-made structures Vegetated low banks Sheltered sand & mud & muddy substrates Marshes
UPLAND HABITAT TYPES	TO BE DEVELOPED	TO BE DEVELOPED	TO BE DEVELOPED

RINGED SEALS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE		pack ice	shorefast ice
SUSCEPTIBILITY		year around	
HUMAN HARVEST			year around

The shorefast ice between Cape Lisburne and Point Lay has one of the highest densities of ringed seals.

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			ice-edge
SUSCEPTIBILITY		year around	
HUMAN HARVEST			year around

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

Pupping in Chukchi Sea =========

Present in Beaufort Sea ==========

Present in Chukchi Sea ==========

SPOTTED SEALS

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

The largest known concentration of spotted seals in Alaska haulout at Kasegaluk Lagoon from mid-July until late October or early November.

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

Coastal haulouts/
Concentration areas

Chukchi Sea ==========

Beaufort Sea ==========

BELUGA WHALES

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE[1]	< 10	10 - 100	> 100
SUSCEPTIBILITY	Dec 1 - Mar 31	Aug 1 – Nov 31 (Chukchi Sea) May 15 - Oct 31 (Beaufort Sea)	Apr 1 - July 31 (Chukchi Sea)
HUMAN HARVEST	Sept 10-Mar 31 (Chukchi Sea) Oct 20 - July 31 (Beaufort Sea)		Apr 1 - Sept 10 (Chukchi Sea) Aug 1 - Oct 20 (Beaufort Sea)

[1] Between June 20 and August 15 large numbers of Beluga whales concentrate in Kasegaluk Lagoon.

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

Nearshore migration

Chukchi Sea ==========

Beaufort Sea ==========

Calving =======

BOWHEAD WHALES

CATEGORY	LOW	MEDIUM	HIGH
SUSCEPTIBILITY	Nov 16 - Mar 20 (Chukchi Sea)	July 1 – Nov 15 (Chukchi Sea) July 1 - July 31 (Beaufort Sea)	Mar 20 - June 30 (Chukchi Sea) Apr 15 - June 30 Aug 1 - Oct 31 (Beaufort Sea)
HUMAN HARVEST[2]	June 16 - Nov 1 (Chukchi Sea)		Apr 1 - June 15 (Chukchi Sea) Aug 1 - Oct 20 (Beaufort Sea)

[2] During the ice-covered months in the Beaufort and Chukchi seas whales are unavailable for harvest.

Critical Life Periods J F M A M J J A S O N D

Nearshore migration
Chukchi Sea ==========
Beaufort Sea ==========
Calving ==========

GRAY WHALES

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Nov 1 – Apr 30; (Chukchi Sea) Jun 1 - Oct 31 (Beaufort Sea)	May 1 – May 31 Sep 1 – Oct 31 (Chukchi Sea)	Jun 1 – Aug 31 (Chukchi Sea)
SUSCEPTIBILITY		When Present	

Critical Life Periods J F M A M J J A S O N D

Nearshore migration & feeding
Chukchi Sea ==========

WALRUS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Nov 1 - May 1	May 1 - June 15 Oct 1 - Oct 31	June 15 - Sept 30
SUSCEPTIBILITY		year around	
HUMAN HARVEST	May 1 - May 15 Sep 1 - Oct 30		May 15 - Aug 20

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	Pack ice	Shore-fast ice and active ice areas	Denning areas during entrance/emergence; feeding areas such as leads/polynyas; coastal beaches and barrier islands
SUSCEPTIBILITY	Summer (June-August)		Fall, winter, spring (September-May)
HUMAN HARVEST	June - September (Chukchi Sea) June - August (Beaufort Sea)	October, February (Chukchi Sea) September, January - March (Beaufort Sea)	November - January, March - May (Chukchi Sea) October - December, April - May (Beaufort Sea)

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 BEARS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE			April 15 – Nov 15
SUSCEPTIBILITY	Nov 15-Apr 30		May 1 - Nov 15
HUMAN HARVEST	June 1-Aug 30		Sept 1 - May 31

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

Denning ========== =========

Concentration w/mamal & salmon ==========

Food sources ========

CARIBOU

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE[3]			
SUSCEPTIBILITY	Nov 1 - Mar 15	My 15-May 20 Jne 10-June 30 Aug 15-Sep 15	May 20 - June 10 July 1 - Aug 15
HUMAN HARVEST			Year around

[3] There are four caribou herds that utilize various portions of this region. Depending on the herd and the climatic conditions; abundance may vary widely. As a result, specific abundance figures will not 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 ========

Migrations ======== =======

MUSKOXEN

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Three groups of muskoxen reside in this region of the state. Their range is currently expanding with major concentrations occurring along the river systems. There is a declining population, particularly in the eastern group.		
SUSCEPTIBILITY		Year around	
HUMAN HARVEST	Muskoxen are harvested from the Itkillik River to the Canadian border.		

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[4-9]	Oct 1 - May 15	May 15 - Jun 20	June 20 - Sept 30
HUMAN HARVEST		July 1 - Aug 15 (Chukchi Sea) July 10 - Aug 1 Oct 1 - Nov 15 (Beaufort Sea)	Apr 1 - Jun 30; Aug 15 - Sept 30 (Chukchi Sea) May 1 - Jul 10; Aug 1 - Sept 30 (Beaufort Sea)

[4] Spectacled Eider - are in the area from late May through freeze-up, large aggregations occur offshore seasonaaly.

[5] Steller's Eider - are concentrated in the Barrow area from early June to September.

[6] Common Eider - nesting and brood-rearing on barrier islands from late June to mid-August.

[7] Snow geese - brood-rearing is concentrated at Putuligayuk, Sagavanirktok, Kadleroshilik, and Shaviovik river deltas; Howe Island, and Foggy Island Bay from early July to mid-August.

[8] Brant - brood-rearing is concentrated at Putuligayuk, Kuparuk and eastern Colville River deltas; mouth of East Creek to Oliktok Point from early July to mid-August.

[9] Yellow-billed loon - concentrated between the Meade and Colville rivers around deep lakes from mid-May to mid-September.

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

Arrival/Nesting/brood rearing ============

Molting/feeding concentrations ======

Fall migration =========

SEABIRDS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 10	10 – 100	> 100
SUSCEPTIBILITY	Nov 1 - Jan 31	Feb 1 - March 31	May 1 - Sept 30
SPECIES DIVERSITY	1 – 3	4 – 6	> 6
HUMAN HARVEST[9]			May 1 - July 30

9. Seabird eggs utilized by Native communities from late June through July.
Most of the worlds population of Ross' Gull is found in nearshore areas of the Barrow area from September through October.

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

At breeding colonies ==========
Feeding near colonies ==========
Non-breeders (feeding) ==========during open water==========

SALMON (pink and chum)

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Due to limited information and the finite number of fishbearing streams in the area; all anadromous fish streams in this area are considered important.		
SUSCEPTIBILITY	June 15 - Aug 1		Aug 1 - June 15
HUMAN HARVEST			June 15 - Aug 30

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

Spawning =====
Eggs/fry in gravels ========== ==========

DOLLY VARDEN/ARCTIC CHAR

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Due to limited information and the finite number of fishbearing streams in the area; all anadromous fish streams in this area are considered important.		
SUSCEPTIBILITY		June 16 - Sept 15	Sep 15 - June 15
HUMAN HARVEST	Oct 1 - June 15		June 16 - Sep 30

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 North Slope Streams		
SUSCEPTIBILITY		June 15 - Aug 31	Sept 1 - June 15
HUMAN HARVEST			July 1 - Sept 15 Oct 1 - Nov 15

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

Spawning =======
Overwintering ========== ==========
Spring migration ======
Fall migration =======

FRESHWATER FISH

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Limited Data are Currently Available on Fish Populations in North Slope Streams		
SUSCEPTIBILITY		July 15 - Aug 31	Sept 1 - July 15
HUMAN HARVEST	Oct 1 - May 30	June 1 - Sept 30	

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 & Study Areas National Natural Landmarks
STATE LANDS	Public Land[10]		Critical Habitats Refuges

[10] 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

v. SENSITIVE AREAS: PART FOUR – BIOLOGICAL 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. Several industry and non-governmental generated references that have had agency input and review are incorporated by reference.

- Alaska Clean Seas has produced the *ACS Technical Manual: Map Atlas* (Revision 2010), which describes coastal currents and sensitive areas along the coast between Demarcation Point, on the USA-Canada border, and Point Hope. Tactical response methods are proposed for selected sensitive areas. Development is mapped, as are drainage patterns. The atlas may be found at: http://www.alaskacleanseas.org/tech-manual/
- See the *Environmental Atlas of the Trans Alaska Pipeline System* (1993), by Alyeska Pipeline Service Company (Alyeska Atlas). The Alyeska Atlas consists of 25 maps covering the length of the Trans-Alaska Pipeline System (TAPS) and brief narratives about mammals, birds and fish found along the TAPS corridor. Each map has an overlay with the following types of information identified:
  (1) Recreation Sites/Areas
  (2) Scenic Areas
  (3) Special Areas
  (4) Subsistence Use Areas
  (5) Wildlife Areas (bear, bison, caribou, sheep, fox, wolf, grouse, moose, otter, raptor, swan, waterfowl, whale)
  (6) Fish Hatchery
  (7) Fish Stream (anadromous, non-anadromous, overwinter)
  (8) Site, Den or Nest
  (9) Direction of View, Migration, Movement or Distribution
  (10) Oil Spill Containment Site

- In January 2010, Audubon Alaska, in cooperation with Oceana, published the *Arctic Marine Synthesis Atlas of the Chukchi and Beaufort Seas*. The atlas has a discussion of the synthesis of various data sources in to summary GIS maps, and discusses data gaps. Below is a list of maps in the atlas. The atlas may be found at: http://ak.audubon.org/arctic-marine-synthesis-atlas-chukchi-and-beaufort-seas

PHYSICAL OCEANOGRAPHY
1. Project Area
2. Bathymetry
3. Ecoregions
4. Ocean Circulation
5. Sea Ice Dynamics
6. Sea Floor Substrate
7. Sea Surface Temperature
8. Observed Climate Change

WATER COLUMN AND BENTHIC LIFE
9. Chlorophyll-a
10. Net Primary Productivity
11. Zooplankton
12. Benthic Biomass
13. Opilio Crab

FISH
Oceanodromous
14. Capelin
15. Pacific Herring

16. Saffron Cod
Anadromous
17. Pink Salmon
18. Chum Salmon
BIRDS
Audubon Alaska WatchList
19. Yellow-billed Loon
20. Red-throated Loon
21. Spectacled Eider
22. Steller's Eider
23. King Eider
24. Common Eider
25. Long-tailed Duck
26. Ivory Gull
27. Kittlitz's Murrelet
Other Species
28. Northern Fulmar
29. Short-tailed Shearwater
Concentration Areas
30. Seabird Colonies
31. Important Bird Areas
MAMMALS
Terrestrial/Marine
32. Polar Bear
33. Arctic Fox
Pinnipeds
34. Pacific Walrus
35. Ribbon Seal
36. Spotted Seal
37. Ringed Seal
38. Bearded Seal
Cetaceans
39. Bowhead Whale
40. Beluga Whale
41. Gray Whale
PEOPLE
42. Energy Development and Protected Areas
43. Human Impact
44. Predicted Climate Change

- In September 2011, Audubon Alaska published the *Place-based Summary of the Arctic Marine Synthesis Atlas of the Chukchi and Beaufort Seas*. This document provides two-page fact sheets summarizing synthesis information for the following places within the subarea, and may be located at: http://ak.audubon.org/sites/default/files/documents/place-based_summary_of_the_arctic_marine_synthesis_final.pdf
  - Cape Thompson & Cape Lisburne--Chukchi Sea US
  - Ledyard Bay--Chukchi Sea US
  - Kasegaluk Lagoon--Chukchi Sea US
  - Chukchi Lead System--Chukchi Sea US
  - Hanna Shoal--Chukchi Sea US
  - Peard Bay--Chukchi Sea US
  - Barrow Canyon--Beaufort Sea, Chukchi Sea US
  - Dease Inlet & Elson Lagoon--Beaufort Sea US
  - Smith & Harrison Bays--Beaufort Sea US
  - Western Beaufort Shelf & Lead System--Beaufort Sea US
  - Beaufort Lagoons & Barrier Islands--Beaufort Sea US, Canada
  - *Eastern Beaufort Shelf & Lead System--Beaufort Sea Canada
  - *MacKenzie River Delta--Beaufort Sea Canada

  *pending

B. *HABITAT TYPES*

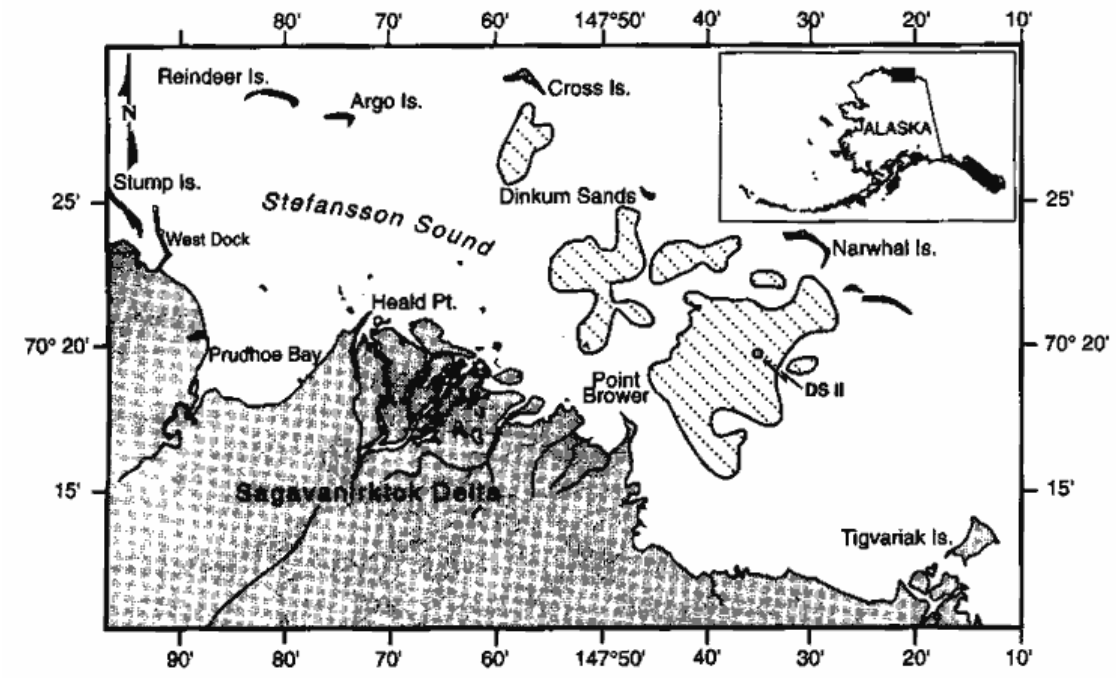
Shoreline habitats have been defined and ranked according to Environmental Sensitivity Index (ESI) standards produced by the National Oceanic and Atmospheric Administration (NOAA) in *Environmental Sensitivity Index Guidelines* (October 1997). Seasonal ESI maps in poster and atlas formats were produced for the subarea in 1999, with an update and expansion in 2005, as shown on the following index map. These maps are available on the internet at: http://www.asgdc.state.ak.us/maps/cplans/subareas.html.

Updated ESI information can 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 (near bottom) 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, and the boulder patch.

The Boulder Patch—lies in about 20 feet of water in Stefansson Sound, and consists of rocks and cobbles covered with a rich community of organisms. There are big boulders, large kelp, soft corals and sea anemones, and sponges and fish and colorful red and brown algae. The rocks themselves are unlike anything north of the Brooks Range. Minerals in the rocks more closely resemble those found in Canada's McKenzie River area several hundred miles to the east. Plants and animals have evolved unique ways of surviving the dark, frigid water (see map by Ken Dutton).



2. *Shoreline Habitats*

Habitats (estuarine, large lacustrine and riverine) ranked from least (#1) to most (#10) 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 flat mud to sand substrate—highly organic mud is common.

3. *Upland Habitats*

At this time, no uplands or wetlands classifications directly related to sensitivity to oil spills have 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

Insert ESI index map here

http://www.asgdc.state.ak.us/maps/cplans/ns/PDFs/ESI_DATA/INDEX.PDF

Wetland status map figure here

http://www.r7.fws.gov/fisheries/nwi/index.htm

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[4] and critical habitat occur in this subarea:

Endangered Species Act of 1973 Protected Species and Critical Habitat			
Listed species	**Stock**	**Latin Name**	**Status**
Bowhead whale*	Western Arctic	*Balaena mysticetus*	Endangered
Western Pacific gray whale*		*Eschrichtius robustus*	Endangered
Humpback whale*		*Megaptera novaeangliae*	Endangered
Spectacled eider**		*Somateria fischeri*	Threatened
Steller's eider**		*Polysticta stelleri*	Threatened
Eskimo curlew**		*Numenius borealis*	Endangered
Polar bear**		*Ursus maritimus*	Threatened
Yellow-billed loon**		*Gavia adamsii*	Candidate
Pacific walrus**		*Odobenus rosmarus divergens*	Candidate
Kittletz's murrelet**		*Brachyramphus brevirostris*	Candidate

Designated Critical Habitat	
Species Group	**General Reference Area**
Polar bear	Selected coastal areas are designated as critical habitat (see maps below)
Spectacled eider	Ledyard Bay is designated as critical habitat for molting (see map below)

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

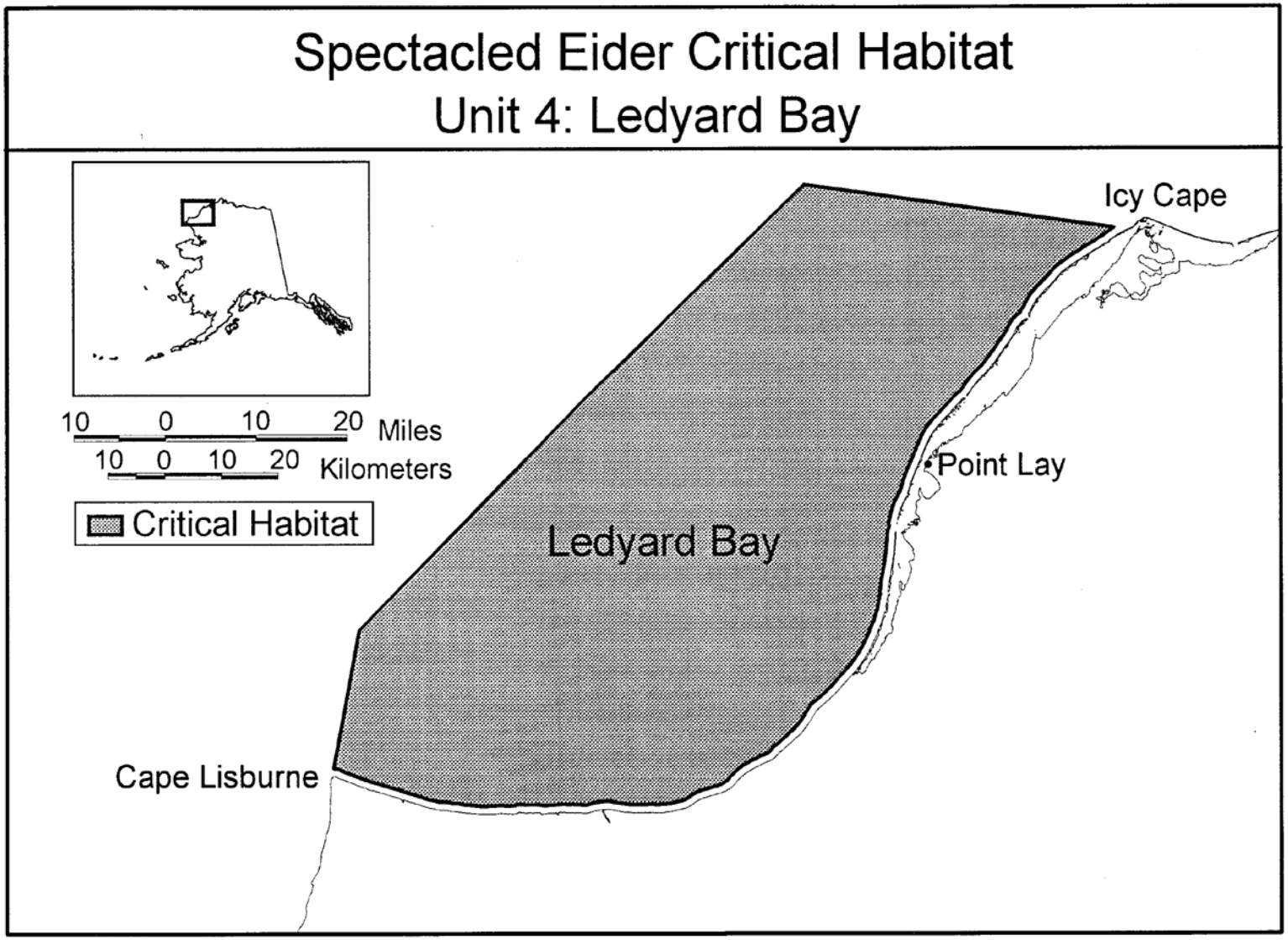
[4] In its definition of species, the Endangered Species Act of 1973, as amended, includes the traditional biological species concept of the biological sciences and "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds 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."

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


Spectacled Eider Critical Habitat
Unit 4: Ledyard Bay
10 0 10 20 Miles
10 0 10 20 Kilometers
Critical Habitat
Icy Cape
Point Lay
Ledyard Bay
Cape Lisburne

Insert polar bear critical habitat map #1 of 2:

http://alaska.fws.gov/fisheries/mmm/polarbear/maps_final/index_2of3.pdf

Insert polar bear critical habitat map #2 of 2:

http://alaska.fws.gov/fisheries/mmm/polarbear/maps_final/index_1of3.pdf

2. ***Fish and Wildlife***

(a) Fish

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

ANADROMOUS AND MARINE 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

Fish are found in marine waters, most streams and some lakes of the North Slope Subarea. If the depth of the water exceeds three or four meters (as ice depth may exceed two meters by late winter), fish may be found in a particular waterbody year-round. Fish may use shallow lakes (< 2-3 m deep) in summer if the lakes are connected to a stream system 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. Anadromous fish commonly use brackish nearshore waters near river deltas and landward of the barrier islands during summer. Small, shallow streams or lagoons connecting directly to the sea may be used by anadromous fish during the summer months. These same areas may be used by freshwater resident fish if these areas are near major rivers and within the influence of the freshwater plume.

Overwintering areas are confined to deep lakes; major rivers that have deep, discontinuous pools; and rivers that have perennial groundwater springs (usually indicated by the formation of aufeis fields in winter). Virtually all major rivers have areas with conditions suitable for overwintering fish. Although many rivers have not been examined for overwintering fish, those portions of rivers with depths greater than 2-3 meters should be considered potential fish overwintering habitat and protected accordingly.

Freshwater Fish found in North Slope lakes and streams include arctic grayling, round, humpback, and broad whitefish, least cisco, arctic char, stream-resident Dolly Varden, slimy sculpin, burbot, lake trout, ninespine stickleback, and northern pike. Freshwater species may be found in the deeper lakes and in rivers and streams containing perennial springs and/or deep waters suitable for overwintering.

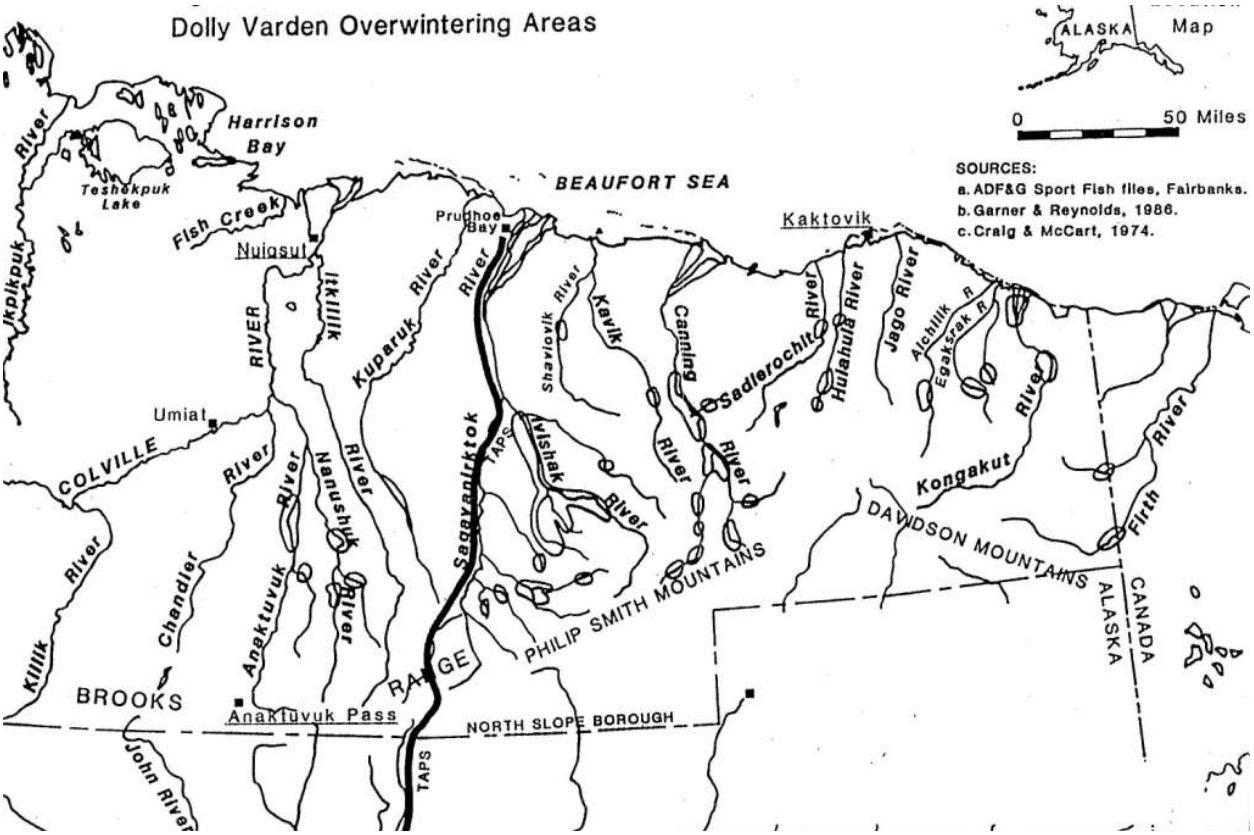
Most lakes deep enough to contain freshwater fish year-round in the eastern and central portions of the North Slope are within the mountain and the foothills provinces. A few lakes within the Colville River delta are deep enough to over winter fish. West of the Colville River, most of the lakes deep enough to contain fish are found within the coastal plain province between Barrow and the Colville River. A few deep lakes containing fish also are found in the western foothills and mountains.

Anadromous Whitefish (broad and humpback whitefish, least and arctic cisco) migrate from overwintering areas to estuarine and nearshore brackish marine waters at breakup during mid-May to early July. Whitefish remain in the nearshore marine and estuarine environment for several weeks to several months. They return to overwinter and spawn in major rivers in September and October (except mature arctic cisco which return to the Mackenzie River drainage in Canada to spawn.

Anadromous 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 in mid-May to early July. The map below illustrates their known overwintering areas. Fish feed in the nearshore marine environment from several weeks to several months and 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. These highly restricted areas occur in drainages from the Colville River eastward to the Alaska-Canada border. Few anadromous Dolly Varden are found in streams along the northern Chukchi Sea coast. Significant numbers of Dolly Varden are found in the Noatak, Kivalina and Wulik River drainages, portions of which are included in this subarea.

Salmon Pink and chum salmon are found in limited numbers in the Beaufort and northern Chukchi Sea drainages of the North Slope Subarea. They occur in major rivers in the North Slope Subarea from the Kukpuk River in the southwestern portion of the region to the Canning River in the eastern portion of the region. Salmon are more abundant in the Chukchi Sea drainages than in the Beaufort Sea drainages. Salmon spawning occurs in August or September. Eggs incubate in the stream gravels over the winter and fry, hatched in late winter, migrate to sea following breakup in late May to late June. Chinook (kings) are reported to occur as far east as the Sagavanirktok River, and sockeye (reds) are reported southeast of Barrow, but no established spawning runs are recorded.

Marine Fish Arctic cod and fourhorn sculpin are the most common marine fish species in nearshore waters. Pacific herring, capelin, arctic flounder and saffron cod are also found nearshore, particularly during the open water period in the Chukchi Sea.


Dolly Varden Overwintering Areas
ALASKA Map
0 50 Miles
SOURCES:
a. ADF&G Sport Fish files, Fairbanks.
b. Garner & Reynolds, 1986.
c. Craig & McCart, 1974.
BEAUFORT SEA
Harrison Bay
Teshekpuk Lake
Fish Creek
Nuiqsut
Prudhoe Bay
Kaktovik
Umiat
COLVILLE River
Chandler River
Killik River
Anaktuvuk River
Nanushuk River
Itkillik River
Kuparuk River
Sagavanirktok River
TAPS
Shaviovik River
Kavik River
Canning River
Sadlerochit River
Hulahula River
Jago River
Aichilik R.
Egaksrak R.
Kongakut River
Firth River
DAVIDSON MOUNTAINS
PHILIP SMITH MOUNTAINS
RANGE
BROOKS
Anaktuvuk Pass
NORTH SLOPE BOROUGH
CANADA
ALASKA
John River

(b) Birds

Geese, Loons, and Tundra Swans (see the following maps) Canada, snow, and greater white-fronted geese, brant, tundra swans, and loons (Pacific, red-throated, and yellow-billed) nest along lakes, wetlands, and rivers within the North Slope Subarea, primarily within the coastal plain province. Important brood-rearing and fall staging areas include salt marshes, mudflats, river deltas, lagoons, and coastal tundra areas along the Beaufort and Chukchi Sea coasts. Birds arrive from early May through June, nest during June and July, molt and rear young during July and August, and undertake fall migration during late August through September. Twenty to sixty thousand non-breeding and sub-adult geese migrate to the large lake area north and east of Teshekpuk Lake (from the Kogru River to Smith Bay) to molt in July and early August. Other smaller molting areas for geese include the Colville, Canning, Okpilak, Putuligayuk, Kuparuk, and Sagavanirktok River deltas; and the Icy Cape area within Kasegaluk Lagoon. The Icy Cape area within Kasegaluk Lagoon and Peard Bay are important fall staging areas along the Chukchi Sea coast. Yellow-billed loons are a species of concern within a Federal-State Conservation Plan currently being drafted. Most breeding concentrations are found between the Mead and Colville rivers, primarily around large, deep lakes that support resident fish.

Most brant nest in colonies adjacent to the coast, but some are as far as 30 kilometers inland. The largest colonies of breeding brant are on the Colville River delta. Colonies also occur on the Sagavanirktok and Kuparuk River deltas. The Colville River delta is also an important nesting area for yellow-billed loons and white-fronted geese, and an important molting area for non-breeding tundra swans. The Canning, Colville, and Kongakut River deltas are high-density tundra swan nesting areas.

Two nesting colonies of snow geese occur in Alaska: one on an island in the Kukpowruk River delta and one on Howe Island, off the Sagavanirktok River delta. Snow geese are concentrated on Howe Island and the Sagavanirktok River delta for nesting, brood-rearing, and molting from late May through mid-to-late September. Snow geese are abundant fall migrants on the coastal plain and foothills of the Arctic National Wildlife Refuge in mid August through late September. Up to 325,000 snow geese use the coastal plain and the foothills between the Hulahula and Aichilik Rivers as a fall feeding area before migrating south.

Ducks Ducks nest throughout the Subarea. Important feeding and fall staging areas for ducks include river deltas, lagoons, waters shoreward of barrier islands, salt marshes, mudflats, and coastal tundra areas. Nesting, brood-rearing, and migration periods are similar to those described for geese. Many waterfowl follow the offshore Chukchi lead system during their spring migration.

Tens to hundreds of thousands of oldsquaw congregate in protected waters to molt and feed intensively from late June to late September before beginning their fall migration (late August to late September). These molting and feeding areas include Demarcation and Peard bays; waters shoreward of barrier islands and spits; and the lagoon systems of the Chukchi and Beaufort Sea coasts. Most molting surf scoters are found in Harrison Bay, offshore of the Colville River delta. Barrier islands serve as important nesting habitat for common eiders. Several thousand common eiders nest in colonies along the barrier islands and islets of the Chukchi and Beaufort Sea coasts. Peard and Kugrua Bays also serve as molting and brood-rearing areas for king and common eiders, and long-tailed ducks. Hundreds of thousands of king eiders molt and feed in offshore waters along the Chukchi Sea coast from late June through August. Some eiders use nearshore areas of Peard Bay and areas within Kasegaluk Lagoon for molting. Fall migration for king eiders occurs from late July to as late as November in the Chukchi Sea.

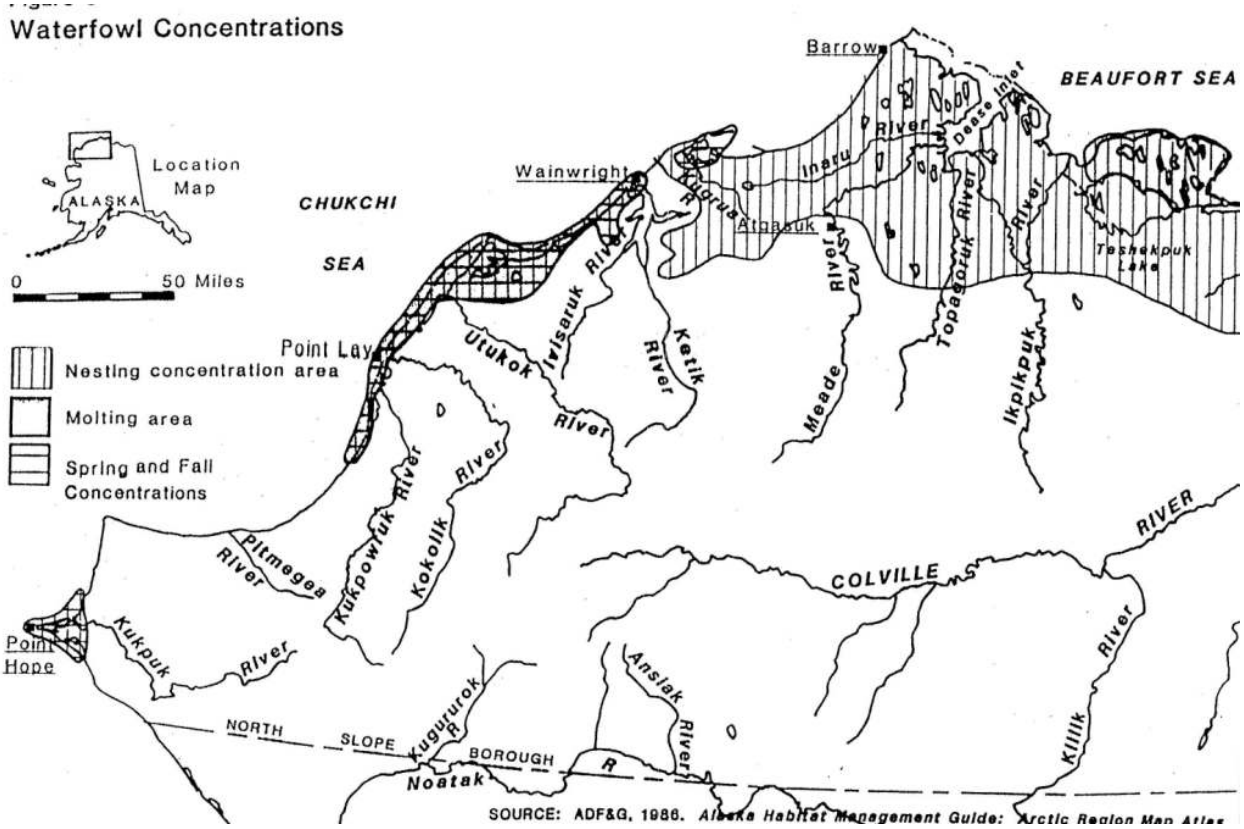
For more information on waterfowl in Alaska, see the U.S. Fish and Wildlife Service web site at: http://alaska.fws.gov/mbsp/mbm/waterfowl/waterfowl.htm

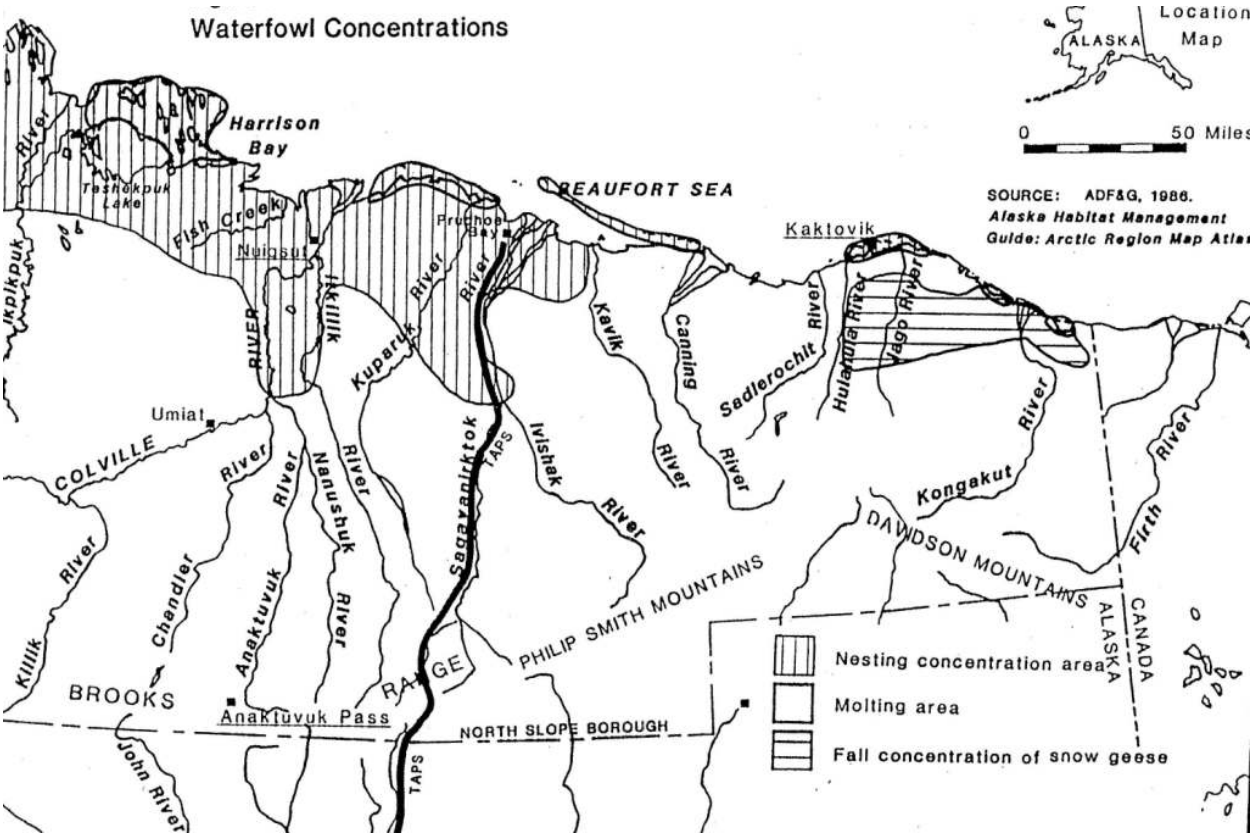
Seabirds The Seabird Population Map illustrates the location of known seabird colonies. Seabirds (murres, puffins, kittiwakes, gulls) are most abundant in the Cape Thompson and Cape Lisburne areas. Capes Thompson, Lewis, and Lisburne have colonies of cliff-nesting seabirds numbering between 100,000 and 1,000,000 birds. These seabirds arrive in mid-May and occupy the colonies through September. Gulls and terns nest on lakeshores, barrier islands, and spits throughout the North Slope Subarea. Twenty to forty thousand Ross' gulls from Siberian nesting areas (most of the world's population) occur in the nearshore areas of the Barrow area in mid-September to mid-October. Black guillemots nest primarily on barrier islands of the Plover Islands group, although small groups may be found east to Jago Spit. A major colony of black guillemots also occurs at the Seahorse Islands in Peard Bay. In addition to the breeding seabirds, large numbers of non-breeders (e.g., auklets and shearwaters) also occur in the marine waters 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 Additional information on seabirds may be found at: http://axiom.seabirds.net/maps/north-pacific-seabirds

Shorebirds (sandpipers, plovers, phalaropes) arrive in the North Slope Subarea beginning in late May and 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, salt marshes, river deltas, and mudflats in mid-July and August to feed before their fall migration in August or September (some may begin their fall migration in July). Concentration areas include Beaufort, Simpson, Elson, and Kasegaluk Lagoons; the Hulahula, Canning, Sagavanirktok, Fish Creek, and Colville River deltas; the mouth of the Kuk River, and Peard Bay. 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

Raptors Commonly occurring raptors in the North Slope Subarea include golden eagles, peregrine falcons, gyrfalcons, rough-legged hawks, snowy owls, and short-eared owls. Except for snowy owls and gyrfalcons, which are year-round residents, all other raptors winter in areas south of the North Slope. The migratory species arrive on the North Slope in early May and depart in late August or September. With the exception of the tundra-nesting snowy and short-eared owls, raptors nest on the cliffs, bluffs and steep terrain common in the foothills and mountains. 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


Waterfowl Concentrations
Location Map
ALASKA
0
50 Miles
Nesting concentration area
Molting area
Spring and Fall Concentrations
CHUKCHI SEA
BEAUFORT SEA
Barrow
Wainwright
Point Lay
Point Hope
Inaru River
Meade River
Ikpikpuk River
Teshekpuk Lake
Utukok River
Ivisaruk River
Ketik River
Kukpowruk River
Kokolik River
Pitmegea River
Kukpuk River
COLVILLE RIVER
Kuguruk R.
Ansiak River
Killik River
NORTH SLOPE BOROUGH
Noatak R.
SOURCE: ADF&G, 1986. Alaska Habitat Management Guide: Arctic Region Map Atlas


Waterfowl Concentrations
Location Map
ALASKA
0
50 Miles
SOURCE: ADF&G, 1986.
Alaska Habitat Management Guide: Arctic Region Map Atlas
Harrison Bay
BEAUFORT SEA
Prudhoe Bay
Kaktovik
Nuiqsut
Fish Creek
Teshekpuk Lake
Umiat
COLVILLE River
Chandler River
Anaktuvuk River
Killik River
Nanushuk River
Sagavanirktok River
TAPS
Ivishak River
Kavik River
Canning River
Sadlerochit River
Hulahula River
Jago River
Kongakut River
Firth River
DAVIDSON MOUNTAINS
PHILIP SMITH MOUNTAINS
BROOKS RANGE
Anaktuvuk Pass
NORTH SLOPE BOROUGH
John River
ALASKA
CANADA
Nesting concentration area
Molting area
Fall concentration of snow geese

Insert 1 page seabird colony map here

http://www.asgdc.state.ak.us/maps/cplans/ns/ns5seabird.pdf

(c) Marine Mammals

Polar Bears are associated with sea ice along the Beaufort and Chukchi Sea coasts. During summer, polar bears are concentrated along the southern edge of the pack ice, although they may be found on land when the pack ice edge is near shore. Coastal aggregations of polar bears are particularly vulnerable to the effects of an oil spill during the open water/broken-ice period. Specific coastal aggregation areas include Cross Island, Barter Island, and Point Barrow. When on shore, bears commonly feed on beached marine mammal carrion. In winter, polar bears are found along the pack ice/shorefast ice flaw zone, although they may be seen along the coastline at any time. Polar bears may also be found inland along bluffs and river and creek drainages, particularly in the fall when females are searching for suitable denning habitat. In late October or November, pregnant females seek out denning areas in snowdrifts on land (mostly within 50 km of the coast), offshore islands (particularly the Flaxman and Cottle Island groups), on shorefast ice, or drifting sea ice. Females and cubs emerge from the maternity dens in late March/early April. 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 Three species of seal commonly occur in the nearshore waters of the North Slope Subarea: ringed seal, bearded seal, and spotted seal. For more information on seals, see the National Marine Fisheries Service web site at: http://www.fakr.noaa.gov/protectedresources/seals/default.htm

The ringed seal is the most common species of seal found in the Chukchi and Bering Seas. 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 from late March until July, with peak molting occurring in June. Molting occurs on shorefast ice as well as on large flat ice flows in the pack ice. During summer, most ringed seals are found along the edge of the permanent ice pack. They return to nearshore areas in late fall and early winter as the shorefast ice reforms. The shorefast ice between Cape Lisburne and Point Lay has one of the highest densities of ringed seals within the North Slope Subarea.

The largest known concentration (several thousand) of spotted seals in Alaska haul out on sandy spits and shoals at Kasegaluk Lagoon from mid-July until freeze-up in late October or early November. Additional haulout and concentration areas along the Chukchi Sea coastline include the mouth of the Kugrua River in southern Peard Bay, and the mouth of the Kuk River. Haulout and concentration areas in the Beaufort Sea include the Colville River delta, Oarlock Island in Dease Inlet, and the mouth of the Piasuk River in Smith Bay. Seals move out of the Beaufort Sea from September to mid-October as the shorefast ice reforms.

Bearded Seals are primarily along the pack ice-edge and consequently are not found frequently in nearshore waters. Bearded seals are more common in the Chukchi Sea than in the Beaufort Sea.

Beluga Whales Two populations of belugas summer in the northeastern Chukchi and Alaskan Beaufort Seas, the Beaufort Sea (BS) stock and the Eastern Chukchi Sea (ECS) stock. Belugas in the Eastern Chukchi Sea stock congregate in summer (June and July) immediately offshore of and within Kasegaluk Lagoon, between Point Lay and Icy Cape, Alaska, to feed, molt and calve. Belugas in the Beaufort Sea stock congregate in summer in the Mackenzie River Estuary, Yukon Territory, in early summer, also to feed, molt, and calve. The two stocks overlap temporally and spatially during the late summer and fall (and winter when they presumably all migrate to the Bering Sea).
Belugas begin to migrate north from the Bering Sea into the Chukchi Sea in late-March, moving through the Chukchi and Beaufort Seas in April-May (see following maps). In June-June many of the belugas

aggregate at their respective areas (Kasegaluk Lagoon for the ECS stock, and Mackenzie River Delta for the BS stock). Belugas can range far to the north during the summer and early autumn (June–October; see following maps). In September-October, many belugas migrate west or south toward the Bering Strait, taking migratory routes offshore or across the Beaufort Sea shelf, instead of using nearshore waters. Belugas from these two stocks continue to migrate south of the Bering Strait where they will spend the winter months (see following maps). For more information on beluga whales, see the NOAA web site at: http://www.fakr.noaa.gov/protectedresources/whales/beluga.htm

Bowhead Whales One bowhead whale stock is found in summer and fall in the northeastern Chukchi Sea and Alaskan Beaufort Sea, the Bering-Chukchi-Beaufort (BCB) or Western Arctic stock. Bowhead whales migration north from the Bering Sea in the spring traveling in nearshore open leads, or polynas, in the ice. The whales appear in the Point Hope/Cape Lisburne area in late March through early May. Most of the whales move past Barrow from late April through May. Bowhead whales migrate offshore from Point Barrow to their summer feeding grounds in Canadian waters. During their fall migration in the Beaufort Sea (August to November), bowhead whales travel west closer to shore than during the spring migration. Fall migration in the Chukchi Sea, however, occurs further offshore than in the spring. Known feeding concentration areas (August to October) are found between the Alaska/Canada border and Pokok Lagoon, and from Pitt Point to Point Barrow (see following maps). For more information on bowhead whales, see the NOAA web site at:
http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/bowheadwhale.htm

Humpback whales occur throughout much of the North Pacific Ocean and into the Bering and Chukchi Seas. It is uncertain as to whether individuals seen in these waters are from the Central or Western North Pacific stock. Sightings in the northeasten Chukchi and Beaufort Seas remain rare. In August 2007, a mother-calf pair was sighted from a barge approximately 87 km (54.1 mi) east of Barrow in the Beaufort Sea. Three humpback sightings were reported in 2007and one in 2008 during surveys of the eastern Chukchi Sea. A single humpback was observed between Icy Cape and Wainwright feeding near a group of gray whales during aerial surveys of the northeastern Chukchi Sea in July. This may be a recent phenomenon, as no humpback whales were sighted during previous surveys in the Chukchi Sea from1982 through 1991. Additional sightings of four humpback whales occurred in 2009 south of Point Hope. It is possible humpback whales are expanding their present range due to climate changes resulting in increased prey. For more information on humpback whales, see the NOAA web site at:
http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/humpbackwhale.htm

Other Whales Gray whales enter the Chukchi Sea and occasionally the Beaufort Sea during the ice free season (June to October). They concentrate in the nearshore waters (mainly in August and September) between Icy Cape and Barrow (including Peard Bay), and most of the waters around the Lisburne Peninsula (see following maps). Killer and fin whales are seen occasionally along the Chukchi Sea coast. Humpback whales are not common in the northeastern Chukchi Sea or Alaskan Beaufort Sea, although there have been recent sightings near Pt. Barrow. Humpback whales have been seen and heard with some regularity in recent years (2009-2011) in the southern Chukchi Sea, often feeding in very close proximity to feeding gray whales. The area where humpback whales have been sighted in September can be seen in a following map. It is possible that humpback whales are present in the Chukchi Sea earlier than September. For more information on whales, see the National Marine Fisheries Service web site at: http://www.fakr.noaa.gov/protectedresources/whales/default.htm

Harbor porpoise are seen in both the Beaufort and Chukchi seas. These animals are likely from the Bering Sea stock, the population of which is estimated at over 48, 000. Incidences of entanglement in

subsistence nets, beached carcasses, and live sightings near Point Barrow suggest regular use of, at least, the northeast Chukchi and far western Beaufort Seas. They are also occasionally seen during fall aerial survey. Harbor porpoise were sighted during vessel surveys of the Chukchi Sea in 2006 through 2009 in higher numbers and farther offshore than previously documented. The increased number of harbor porpoise in the Arctic may represent a range extension.

For more information on whales and porpoises in the subarea, see the NOAA web site at: http://www.afsc.noaa.gov/NMML/cetacean/bwasp/flights_COMIDA.php

Walruses Since the record loss of sea ice in the Chukchi Sea in September 2007, walruses have been hauling out in large numbers along the coast in Alaska. Haulouts were reported from several areas in 2007 with estimates of several hundred to thousands of animals depending on location. In 2008, enough remnant ice persisted through the summer and fall that large haulouts in Alaska did not occur. In 2009, a haulout of about 3,000 animals formed at Icy Cape. A haulout has formed just north of the village of Point Lay on the barrier island in 4 of the last five years: 2007, 2009, 2010, 2011. It numbered from a few hundred to a few thousand in 2007 and 2009, peaked at greater than 30,000 animals in 2010, and perhaps 20,000 in 2011. (No formal counts are available; estimates are from aerial overflights). Haulouts have been forming earlier each year and persist for about 4-6 weeks. Movement studies by the U.S. Geological Survey indicate that the animals along the Alaska coast eventually make their way to the Russian coast and then move south with the advancing sea ice in the fall. See the following map for the walrus range and haulouts. For more information on walrus, see the U.S. Geological survey web site at: http://alaska.usgs.gov/science/biology/walrus/index.html

Insert walrus range map here, page 1 of 1

http://alaska.fws.gov/fisheries/mmm/walrus/pdf/walrus_range_map.pdf

Insert NOAA/National Marine Mammal Laboratory Cetacean Maps, including references, here
16 pages (pages D-44 - D-59)

http://private.alaskarrt.org/Files/NMML_NS_Cetacean_Maps.pdf

(d) Terrestrial Mammals

Caribou Caribou are found throughout the subarea during the entire year, but are more abundant during the spring and summer, particularly in the eastern and western sections of the region. Calving occurs in early June for the four herds that use the region. **Figures 12-13** illustrate caribou calving areas. During the peak insect harassment season (July to mid August), caribou seek insect relief along coastlines and river deltas, barrier islands, mudflats, lake margins, gravel bars, snow and aufeis fields, and on windy mountain slopes and ridges.

The Porcupine Caribou Herd (PCH) is generally found in northeastern Alaska and northwestern Canada. The PCH calves on the northern foothills of the Brooks Range and on the coastal plain from the Yukon Territory to the Canning River. Calving occurs most frequently in the uplands of the Jago River, extending as far west as the Sadlerochit River and east to the Aichilik River. Calving occurs in relatively snow-free areas from late May to mid-June, with peak calving occurring in the first week of June. The herd generally forms large aggregations following calving and may move to the coast during mid-summer when insect harassment is at its peak. By early August, most of the herd is scattered widely throughout the Brooks Range and into Canada. The PCH uses two major winter ranges: the central Yukon Territory in Canada and northeastern Alaska in the vicinity of Arctic Village. Some caribou may winter on the north side of the northeastern Brooks Range. The 2010 population estimate was 169,000 animals.

The Central Arctic Herd (CAH) generally uses the area between the Colville and Canning rivers. The CAH calves in the low hills southwest of Bullen Point east to the Canning River delta; in the low hills of the Kuparuk and Ugnuravik river drainages; and in the Kuparuk development area. Some calving also occurs in the thaw-lake coastal plain portion of these areas. Caribou seek insect relief along the coast from the Colville River delta to the area of the Kuparuk River delta, and from the Sagavanirktok River delta to Camden Bay. A gradual southward movement to wintering areas in the foothills and mountains of the northcentral Brooks Range begins in late August or early September. The distribution of the CAH may overlap with that of the WAH on winter range in some years, and may overlap with the distribution of the PCH on summer range.

The Teshekpuk Lake Herd (TLH) is generally found between the Colville River delta and Wainwright. Calving generally occurs to the northeast of Teshekpuk Lake, although the area southwest of Teshekpuk Lake also was used. Insect relief areas for this herd during late June through late July include the Beaufort Sea coast from the Ikpikpuk River east to the Kogru River and Atigaru Point, the Ikpikpuk River delta, the Kealok Creek delta, and the edges and islands of Teshekpuk Lake. During winter, the herd disperses to the east and west of Teshekpuk Lake, with major concentrations occurring in the Dease Inlet area. Overlap of the TLH with the WAH may occur on fall and winter ranges.

The Western Arctic Herd (WAH) range extends west of the Dalton Highway from the coast into the Brooks Range, down the Kobuk and Noatak river valleys, and southwest into portions of the Seward Peninsula and Nulato Hills. The primary calving area for the WAH (referred to as the Utukok calving grounds) occurs in the area of the middle and upper Utukok River, the middle Kokolik River, and the headwaters of the Ketik and Colville Rivers. Following calving, the herd generally moves west toward the Lisburne Hills before dispersing to summer range. Summer range includes the northern slopes and foothills of the Brooks Range, the arctic coastal plain of the North Slope, and portions of the western and central Brooks Range south of the continental divide. Wintering areas include the coastal plain of the North Slope, the northern foothills of the Brooks Range, the Seward Peninsula, and some of the major river valleys on the south side of the western and central Brooks Range.

Insert caribou range map here, page 1 of 1

http://www.adfg.alaska.gov/static/species/speciesinfo/caribou/images/caribou_herds.jpg

Muskoxen With the exception of rare, temporary dispersions, muskoxen are currently absent from the Arctic National Wildlife Refuge. West of the Refuge to the Colville River, numbers have been reduced, but stabilized at below a few hundred animals. Other small groups may be found further west along the Chukchi Sea coast and the Seward Peninsula. Muskoxen are found primarily along major river drainages throughout the year. 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 in late April to mid-June. Surveys conducted by cooperating agencies found 190 muskoxen west of the Arctic Refuge and 101 muskoxen east of the Arctic Refuge, suggesting that the total population is at least 291 animals. In 2006, 296 muskoxen were counted during a census of the same region. In northeastern Alaska, numbers of muskoxen were relatively stable for the past 6 years also indicating that the population has not declined further.

Brown Bear Brown bear are distributed across the North Slope, but at relatively low density. Riparian habitat is important from April through November, but concentrations may be found after emerging from their dens in spring when salmon spawn. Concentrations may also be found in caribou calving grounds and migration corridors, and at beached marine mammal carcasses. Denning begins in mid-October, and a den site may be only a small knoll that facilitates snow drifting.

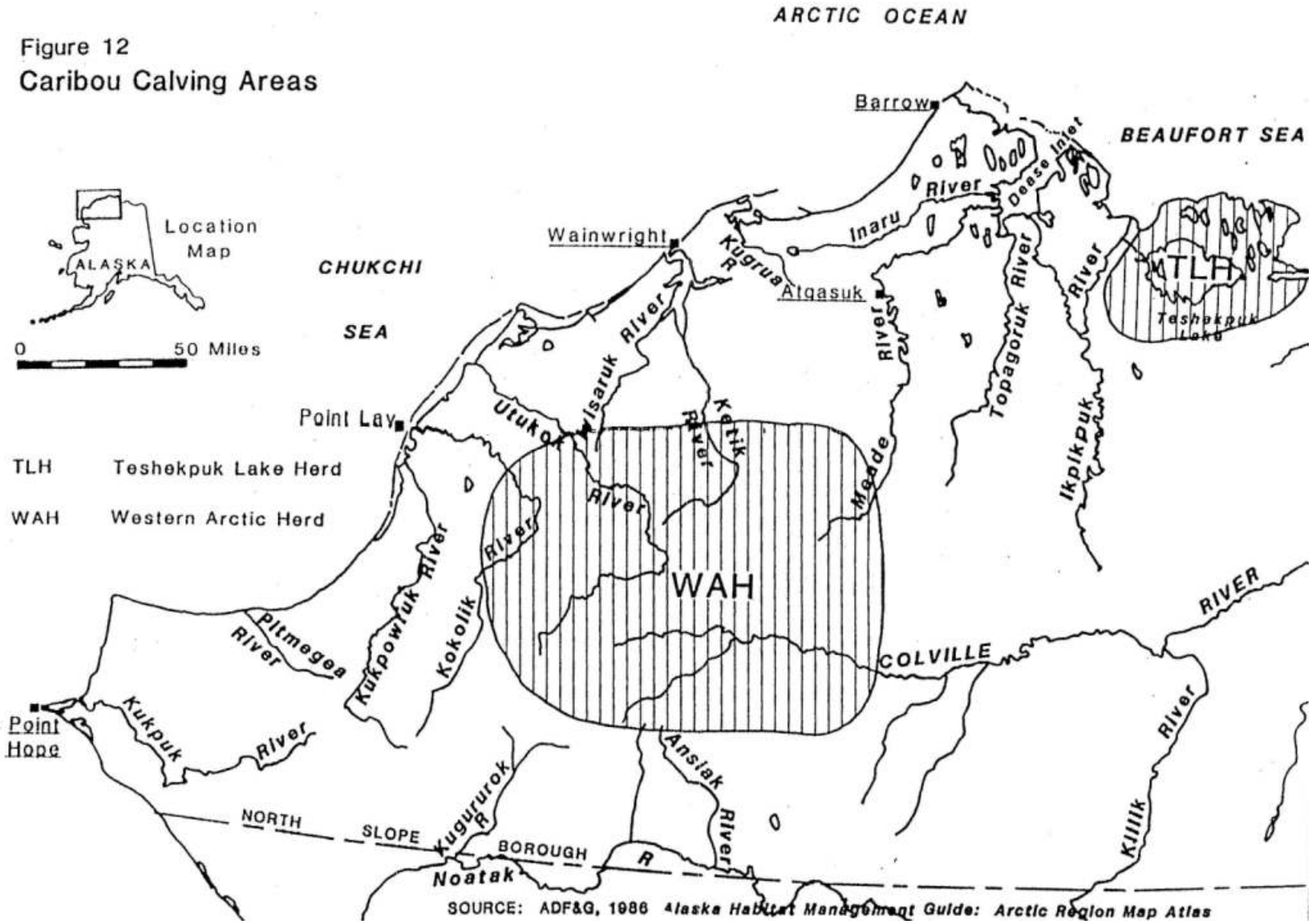
Moose Moose are found along the major river valleys of the North Slope, and are common in between and including the Colville and Canning River drainages. Moose may be found from the mountains of the Brooks Range onto the coastal plain, although they are more common in the foothills. Important habitat for moose includes riparian willow stands along the major rivers and tributary streams, particularly during winter. Calving occurs in late May and early June.

Dall Sheep Dall sheep are found throughout the Brooks Range from the Alaska-Canada border to the Wulik Peaks area of the extreme western end of the range. Small groups of sheep may be found on isolated mountains (e.g., Slope Mountain along the Dalton Highway) in the transition area between the mountain and the foothills provinces. Sheep often concentrate during winter on windblown slopes and ridges along major river valleys where shallow snow cover allows feeding on low-growing plants. During summer, sheep disperse to smaller valleys, mountain peaks, and other areas inaccessible to them during winter. Mineral licks are important habitat used primarily from late May through mid-July, although sheep may be seen at these sites from April through October. Lambing occurs mid-May through mid-June.

Wolves and Foxes Wolves and foxes are found throughout the subarea. Arctic foxes generally occupy 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.

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

Figure 12
Caribou Calving Areas



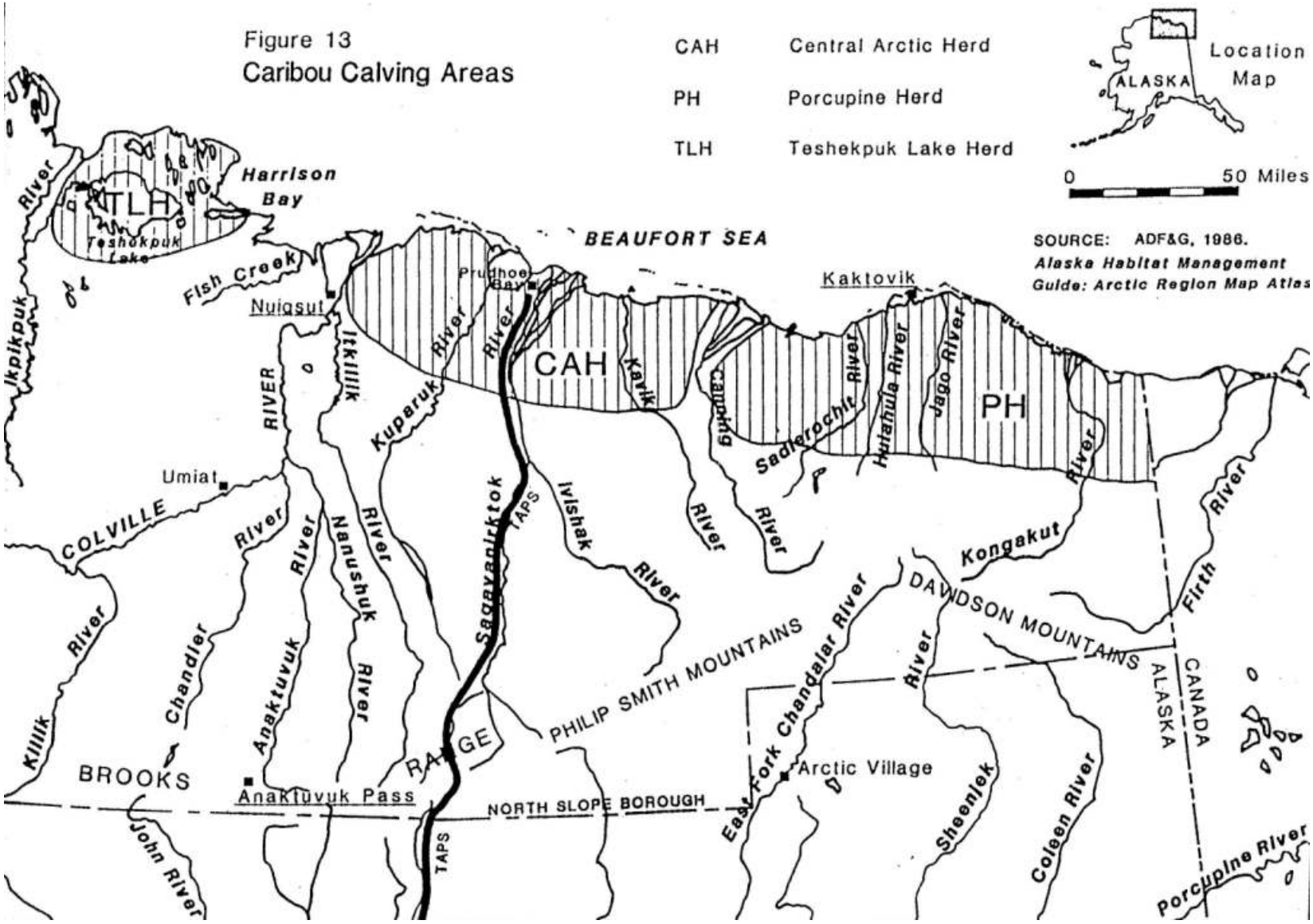


Figure 13
Caribou Calving Areas
CAH Central Arctic Herd
PH Porcupine Herd
TLH Teshekpuk Lake Herd
Location Map
ALASKA
0 50 Miles
SOURCE: ADF&G, 1986.
Alaska Habitat Management Guide: Arctic Region Map Atlas
BEAUFORT SEA
Harrison Bay
TLH
Teshekpuk Lake
Fish Creek
Nuiqsut
Prudhoe Bay
Kaktovik
CAH
PH
Umiat
COLVILLE RIVER
Kuparuk River
Sagavanirktok River
TAPS
Ivishak River
Canning River
Sadlerochit River
Hulahula River
Jago River
Kongakut River
Firth River
Ikpikpuk River
Itkillik River
Nanushuk River
Anaktuvuk River
Chandler River
Killik River
PHILIP SMITH MOUNTAINS
DAVIDSON MOUNTAINS
East Fork Chandalar River
Arctic Village
Sheenjek River
Coleen River
Porcupine River
CANADA
ALASKA
BROOKS RANGE
Anaktuvuk Pass
NORTH SLOPE BOROUGH
John River

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 North Slope Subarea			
Global Rank	**State Rank**	**Scientific Name**	**Common Name**
G3G4	S3S4	Astragulus nutzotinensis	A milk vetch
G4T3T4	S2S3	Cardamine microphylla ssp. blaisdellii	Small-leaf bittercress
G3T3T4Q	S2	Cardamine microphylla ssp. microphylla	Small-leaf bittercress
G5	S3	Carex atherodes	Awned sedge
G4	S2S3	Carex heleonastes	Hudson Bay sedge
G4?	S2	Carex holostoma	Arctic marsh sedge
G4	S3	Cerastium regelii	
G2G4q	S2S4	Claytonia porsildii	
G3?	S2S3	Colopodium wrightii	
G4	S2S3	Colpodium vahlianum	
G5T5	S2S3	Cypripedium calceolus ssp parviflora	
G4	S1S2	Draba adamsii	
GNR	S1S2	Draba micropetala	
G4G5	S4	Draba palanderiana	Palander's whitlow grass
G4	S1	Draba pauciflora	Fewflower draba
G3G4	S1S2	Draba porsildii	
G4	S1	Draba subcapitata	Ellesmereland whitlowgrass
G5T4T5	S1	Erigeron acris var kamtschaticus	
G2	S2	Erigeron muirii	Muir's fleabane
G5	S2	Erigeron ochroleucus	Buff fleabane
G4T3T4	S3	Erigeron porsildii	Largeflower fleabane
G2G3	S2	Eurybia pygmaea	
G3G4	S1	Festuca edlundiae	none
G4	S2S3	Koeleria asiatica	Eurasian Junegrass
G2Q	S2	Mertensia drummondii	Drummond's bluebells
G3	S3	Montia bostockii	Bostock's miners lettuce
G4G5	S2S3	Oxygraphis glacialis	Kamchatka buttercup
G4?T2T3Q	S2S3	Oxytropis arctica var barnebyana	Barneby's locoweed
G3G4	S3S4	Oxytropis scammaniana	Scamman's crazy-weed
G2G3Q	S2S3	Oxytropis tananensis	Field locoweed
G3G4	S3	Papaver alboroseum	
G3	S2S3	Papaver gorodkovii	
G3	S3	Papaver walpolei	
G5?	S1	Pedicularis hirsuta	Hairy lousewort
G4G5	S1	Pleuropogon sabinei	False semaphoregrass
G3G4T1	S1	Poa hartzii ssp. alaskana	Alaskan bluegrass
G4	S2S3	Potentilla rubricaulis	Rocky mountain cinquefoil
G5	S1S2	Potentilla stipularis	Stipulated cinquefoil
G4	S2S3	Puccinellia vahliana	Vahl's Alkali grass

Rare Plants Known From the North Slope Subarea			
Global Rank	**State Rank**	**Scientific Name**	**Common Name**
G3G4	S2S3	Puccinellia wrightii	Wright's alkaligrass
G4T3T4	S2	Ranunculus glacialis var. chamissonis	Glacier buttercup
G4	S1	Ranunculus sabinei	Sardinian buttercup
G2	S2	Rumex krausei	
G4	S3S4	Salix chamissonis	A willow
G5	S1	Saxifraga aizoides	Yellow mountain saxifrage
G5T2T3Q	S2S3	Smelowskia calycina var porsildii	Porsild's false candytuft
G2G3Q	S2S3	Smelowskia media	Fernleaf false candytuft
G3	S3	Stellaria alaskana	
G5	S2S3	Stellaria umbellata	Umbellate chickweed
G3	S3	Symphyotrichum yukonense	Yukon aster
G3	S3	Thlaspi arcticum	Arctic pennycress
G5T4Q	S2	Trisetum sibiricum ssp. litorale	Siberian oatgrass

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)

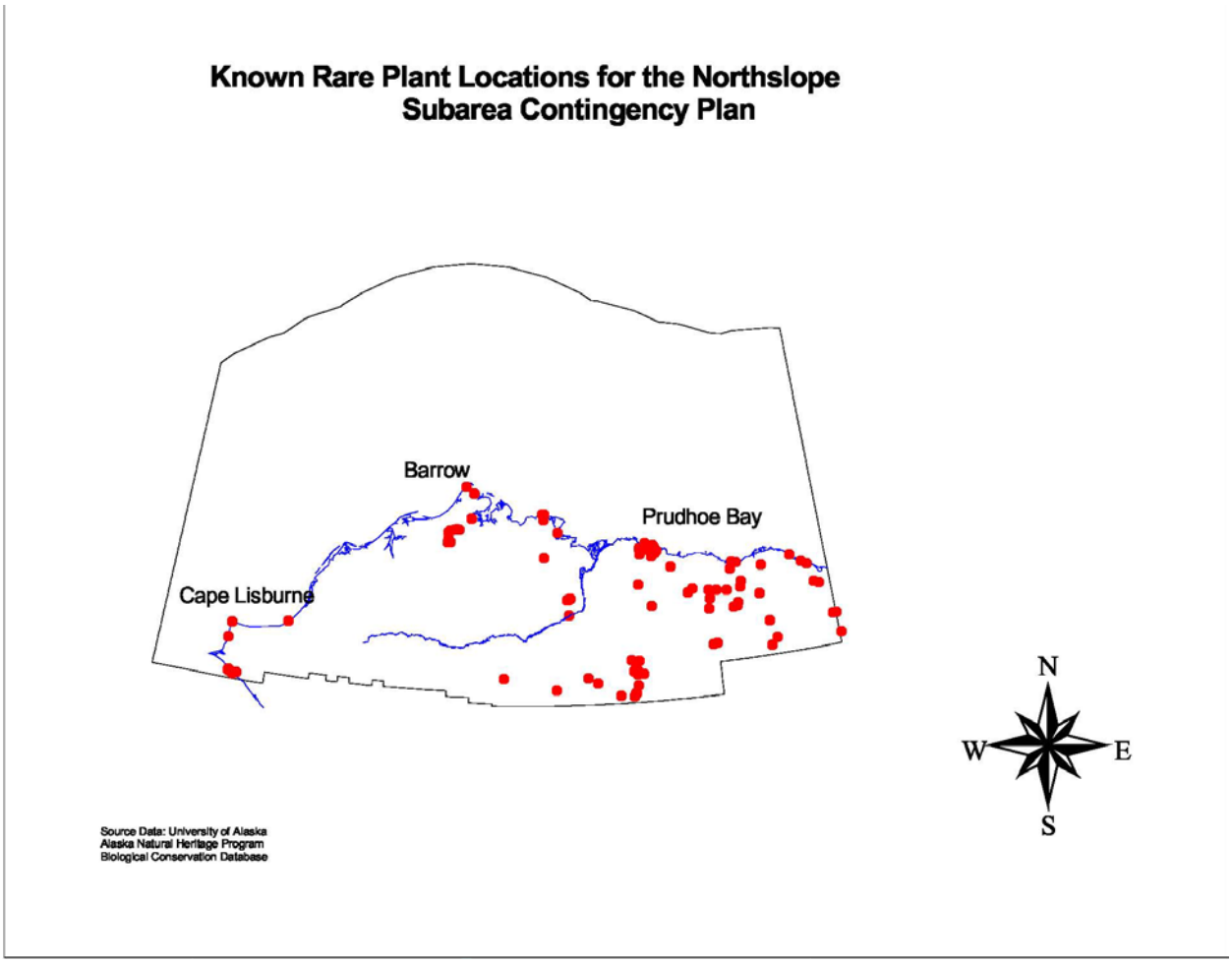
S2: Imperiled in state. (6-20 occurrences)

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 occurrences)

S5: Demonstrably secure in state.

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


Known Rare Plant Locations for the Northslope
Subarea Contingency Plan
Barrow
Prudhoe Bay
Cape Lisburne
N
W
E
S
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 on the North Slope.

2. *Aquaculture Sites*
There are no sites on the North Slope.

3. *Cultural Resources*
The North Slope 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 (FOSC) 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 FOSC 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 North Slope 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 and the Alaska Boards of Fisheries and Game made all decisions regarding the management of subsistence resources and harvest rights. In 1990, however, the federal government became responsible for assuring a federal subsistence priority on federal public lands, and in 1999 on federal reserved waters. The Federal Subsistence Board adopts subsistence regulations that are administered by the various federal agencies on federal public lands. State regulations still apply to state and private lands and for non-subsistence harvests on all lands. As a consequence, the number of agencies involved in managing subsistence resources and 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 regular modification. Current information on harvest regulations can be obtained from the Alaska Department of Fish and Game Subsistence Division or the U.S. Fish and Wildlife Service Office of Subsistence Management.

Communities with traditional subsistence harvests include: Atqasuk, Nuiqsut, Point Hope, Wainwright, Anaktuvuk Pass, Barrow, Kaktovik, and Point Lay.

5. *Commercial Fishing*
The only commercial fishery in the North Slope Subarea is a family-run operation located near the mouth of the Colville River, targeting least and Arctic cisco. Fishing is done during October and November and utilizes nets strung underneath the river ice. As fishing periods are adjusted yearly by emergency openings and closures, contact Alaska Department of Fish and Game for current fishing

periods. Updated information may be found at their Commercial Fisheries web site: http://www.adfg.alaska.gov/index.cfm?adfg=fishingCommercial.main

6. *Sport Fishing and Hunting*

Sport fishing and hunting may occur at a wide variety of locations in the 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 a spill. Sport hunting on the Arctic National Wildlife Refuge is focused mainly on caribou, Dall sheep, and grizzly bear. 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*

Touring and camping take place at informal locations along the Dalton Highway (haul road) from mid-June to September 1.

The Arctic National Wildlife Refuge River hosts river float trips, backpacking, wildlife viewing, and sport hunting activities. River float trips by small parties are common on the Hulahula, Kongakut, and designated Wild Rivers: the Sheenjak, Ivishak, and Wind rivers.

8. *Commercial Tourism*

Commercial tours are generally seasonal, in the ice-free months. Organized tours to Barrow, Prudhoe Bay, and along the haul road are most prevalent. Guided eco-tourism occurs mostly in the parks and refuges.

9. *Marinas and Ports*

(See the Resources Section)

10. *Fish Processing*

There are no known fish processing facilities in the subarea.

11. *Logging Facilities*

There are no known logging facilities in the 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 System	Location	State ID No.	Source
NSB SD - Nunamiut School	Anaktuvuk Pass	350049	Groundwater
NSBU - Anaktuvuk Pass	Anaktuvuk Pass	350057	Groundwater
NSBU - Atqasuk PWS	Atqasuk	320094	Surface
Barrow Utilities & Electric Coop	Barrow	320078	Surface
Inupiat Water Delivery	Barrow	320060	Purchased
UIC - NARL	Barrow	320052	
UIC - NARL - Bottled Water	Barrow	320816	
Water Services	Barrow	320230	
NSBU - Kaktovik	Kaktovik	320248	Surface

Name of System	Location	State ID No.	Source
Waldo Arms	Kaktovik	320719	
NSBU - Nuiqsut	Nuiqsut	320264	Tagruk Lake
NSBU - Point Hope	Point Hope	320426	Surface
Point Hope Day Care	Point Hope	320662	
NSBU - Point Lay	Point Lay	320256	Eluiqinilik Lake
Alyeska Pipeline	Pump Station 1	333039	
Alyeska Pipeline	Pump Station 2	320214	
Alyeska Pipeline	Pump Station 3	320010	
Alyeska Pipeline	Pump Station 4	320036	
Toolik Field Station (BLM)	Toolik Lake		Groundwater
NSBU - Wainwright	Wainwright	320086	Merekruak Lake
Wainwright Coop	Wainwright	320769	

vi. 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.

(a) State

State owned lands extend from the Arctic National Wildlife Refuge to the National Petroleum Reserve and from Prudhoe Bay south and west along the TAPS pipeline corridor. There are no legislatively designated areas for special uses in the North Slope subarea. The State also owns submerged lands three miles out from most of the coastline.

(b) Federal

Gates of the Arctic National Park and Preserve About 250 miles northwest of Fairbanks, the Gates of the Arctic was established in 1980 and encompasses approximately 7,952,000 acres. The area is managed to protect its wild and undeveloped character, for mountaineering and wilderness recreation, and to protect habitat and wildlife. Subsistence uses are permitted for local residents. Caribou, moose, Dall sheep, grizzly bear, wolves and raptors are in abundance. The Tinayguk/North Fork, John, upper Alatna, upper Kobuk, and Noatak rivers are nationally designated Wild and Scenic Rivers. Web page: http://www.nps.gov/gaar/index.htm

Noatak National Preserve The Noatak encompasses approximately 6,460,000 acres and was created in 1980 to protect wildlife, habitat, and archeological resources, and provide opportunities for scientific research. The Noatak River is a nationally designated Wild and Scenic River. Web page: http://home.nps.gov/noat/index.htm

Arctic National Wildlife Refuge The 19,049,236 acre Refuge extends from the Brooks Range north to the Arctic coastal plain and east to the Canadian border, and includes the range of the Porcupine caribou herd (about 169,000 animals in 2010). The Refuge also supports musk ox, Dall sheep, wolves, wolverines, grizzly and polar bears, and over 200 migratory and resident bird species. Snow blankets the ground 9 months of the year and permafrost is near the surface of the ground. The upper Sheenjek and Wind Rivers are nationally designated Wild and Scenic Rivers. Float trips, sport fishing, backpacking, hunting, wildlife viewing, and subsistence are primary Refuge activities. Web page: http://www.fws.gov/refuges/profiles/index.cfm?id=75600

Alaska Maritime National Wildlife Refuge Alaska Maritime National Wildlife Refuge (Refuge) areas at Cape Lisburne and at Cape Thompson, plus public lands on islands, islets, rocks, reefs, sandy barrier islands, and spires in the Chukchi Sea make up the Chukchi Sea Unit of the Refuge. The 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 complete Refuge. Cape Thompson and nearby Cape Lisburne are the two largest arctic seabird colonies in the United States

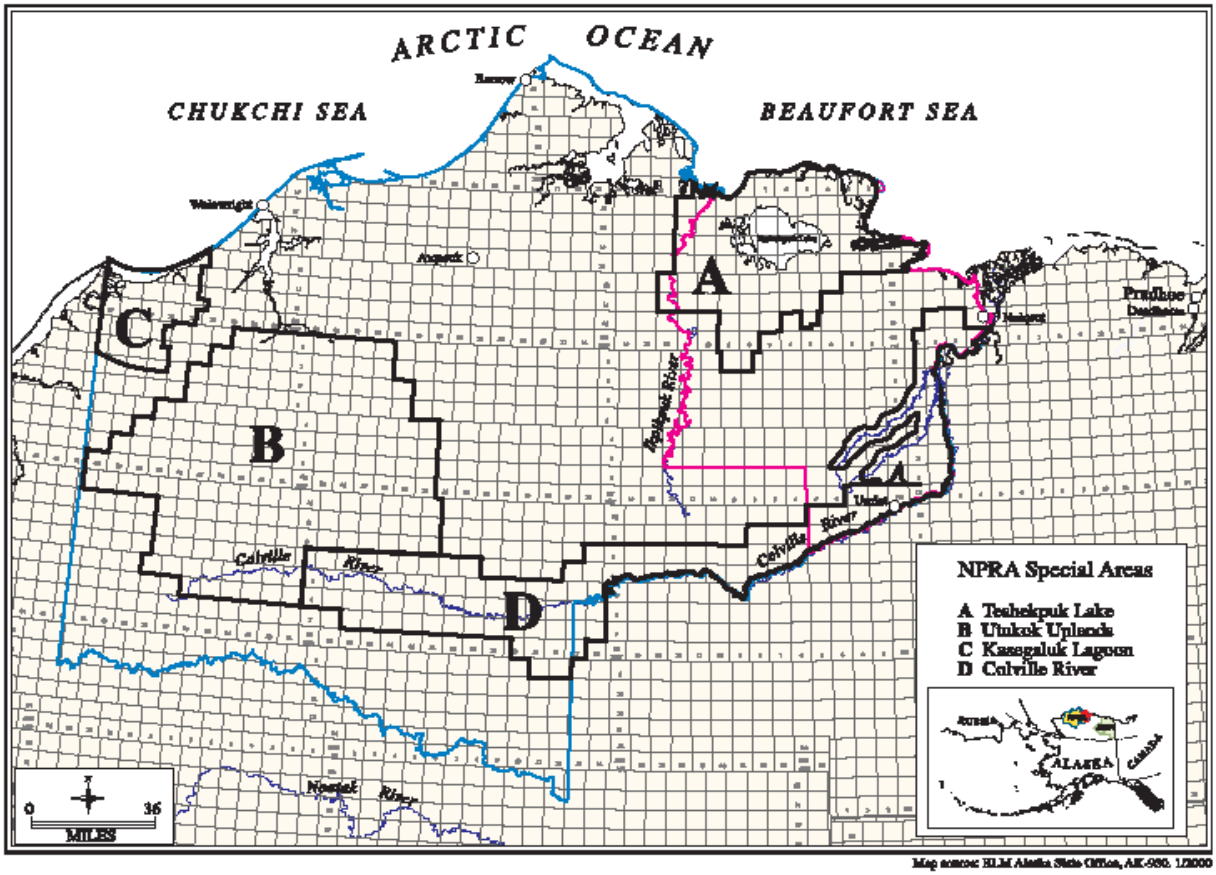
with over 1 million nesting seabirds. For some birds such as cormorants, this is as far north as they nest. Arctic-adapted black guillemots replace pigeon guillemots at these northern latitudes; however, a few pigeon guillemots nest at Cape Thompson. Only black guillemots nest at Cape Lisburne, 50 miles north. Several thousand common eiders nest in colonies along the barrier islands and islets of the Chukchi Sea Unit. Portions of the Refuge are also home to sea lions, seals, walrus, polar bear, and sea otters. Wildlife viewing, photography, backpacking, and subsistence are primary uses of the Refuge. Web page: http://alaska.fws.gov/nwr/akmar/index.htm

National Petroleum Reserve in Alaska The National Petroleum Reserve in Alaska (NPRA) lies between the Brooks Range and the Arctic Ocean, west of the Colville River. It is a 23 million acre tract, with significant Arctic wetland ecosystems that support black brant, Canada geese, pintail ducks, tundra swans, greater whitefronted geese, the entire North American population of Steller's eiders, a significant percentage of the world's population of spectacled eiders, and shorebirds. Other riverine habitat support arctic peregrine falcons and other raptors, moose, fur-bearers and overwintering fish. Upland areas support caribou (450,000+), Dall sheep, musk oxen, and barren ground grizzly bear. Polar bear denning occurs along the northern portions of NPRA along bluffs and inland along river and creek drainages where sufficient snow accumulates. Cultural values include more than a thousand historic and prehistoric sites. Paleontological values in the form of dinosaur beds which contain six of the seven known Alaska dinosaurs are also present. Recreation includes adventure tourism, river running, watchable wildlife, and tundra trekking. Subsistence and oil and gas exploration are also uses of NPRA. Web page: http://www.blm.gov/ak/st/en/prog/energy/oil_gas/npra.html

A 1998 *Final Integrated Activity Plan/Environmental Impact Statement* prepared by the Bureau of Land Management and Minerals Management Service for the northeast portion of NPRA identified sensitive resources and use areas (see following map). This was amended in January 2005. An EIS was completed for the northwest NPRA planning area in November 2003. Special Areas within NPRA include:

- Utukok Uplands Special Area This area of about 4 million acres provides crucial habitat for feeding and calving for the Western Arctic caribou herd, which is dependent on the area vegetation. A high concentration of grizzly bears in the area depend upon a prey base supported by the moist tundra and alpine tundra communities, which dominate.
- Teshekpuk Lake Special Area This 1.7 million acre area is crucial habitat for extremely high concentrations of nesting, molting, and pre-migration staging waterfowl. The area also supports a resident caribou herd dependent upon the wet tundra community.
- Colville River Special Area This area of about 2.3 million acres is known for its raptors, such as the arctic peregrine falcon, which depend upon a prey base supported by the high brush community along the river. Moose, caribou, grizzly bears, waterfowl, and shorebirds are attracted to the area because of the rich vegetation and the fauna it supports.
- Kasegaluk Lagoon This is an outstanding example of a barrier island lagoon environment. There are large concentrations of waterfowl that stage and feed prior to migrating south. Numerous marine mammals, such as beluga whales, feed in the area.

The figure on the following page illustrates the locations of the NPRA Special Areas.


ARCTIC OCEAN
CHUKCHI SEA
BEAUFORT SEA
Wainwright
Atqasuk
Barrow
Nuiqsut
Prudhoe Bay
Anaktuvuk River
Colville River
Itkillik River
A
B
C
D
NPRA Special Areas
A Teshekpuk Lake
B Utukok Uplands
C Kasegaluk Lagoon
D Colville River
ALASKA
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36
MILES

Trans-Alaskan Pipeline Utility Corridor:

- Toolik Lake Area of Critical Environmental Concern/Research Natural Area Toolik Lake Area contains 82,800 acres and has a large number of research projects related to the Long Term Ecological Research efforts of the U. S. and the international community. These research projects have produced valuable information concerning the resources on the North Slope and other Arctic environments. A sensitive plant species, *Montia bostockii*, is found in the Toolik Lake area.
- Galbraith Lake Area of Critical Environmental Concern This area encompasses 56,000 acres and has the highest concentration of historic and prehistoric cultural resources of any region yet inventoried along the Corridor. Three of these sites have been nominated to the National Register of Historic Places, with more potentially eligible. The area is crucial for lambing and mineral licks for Dall sheep. The northern side of the Brooks Range, north of Atigun Pass, has high scenic values and remarkable geology and paleontology.
- West Fork Atigun Area of Critical Environmental Concern These 8,500 acres are designated sensitive for the use by Dall sheep for lambing and the availability of mineral licks.
- Chandalar Shelf Development Node These 1,700 acres have administrative facilities for BLM and State of Alaska DOT. This area is the proposed location for any road service related commercial facilities that may be required in the future.
- Vulnerable Areas Downstream from TAPS Utility Corridor See Attachment One for rivers, creeks and significant bodies of water in geographical order along the Trans-Alaska Pipeline System Utility Corridor from North to South within the subarea.
- See the web page at: http://www.jpo.doi.gov/TAPS/TAPS.htm

2. *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.

Insert land management index map here

http://www.asgdc.state.ak.us/maps/cplans/base/cover1n3.pdf

Insert land management designations map here--1 of 8 pages

http://www.asgdc.state.ak.us/maps/cplans/ns/NSlopeMap1of8.pdf

Insert land management designations map here--2 of 8 pages

http://www.asgdc.state.ak.us/maps/cplans/ns/NSlopeMap2of8.pdf

Insert land management designations map here--3 of 8 pages

http://www.asgdc.state.ak.us/maps/cplans/ns/NSlopeMap3of8.pdf

Insert land management designations map here--4 of 8 pages

http://www.asgdc.state.ak.us/maps/cplans/ns/NSlopeMap4of8.pdf

Insert land management designations map here--5 of 8 pages

http://www.asgdc.state.ak.us/maps/cplans/ns/NSlopeMap5of8.pdf

Insert land management designations map here--6 of 8 pages

http://www.asgdc.state.ak.us/maps/cplans/ns/NSlopeMap6of8.pdf

Insert land management designations map here--7 of 8 pages

http://www.asgdc.state.ak.us/maps/cplans/ns/NSlopeMap7of8.pdf

Insert land management designations map here--8 of 8 pages

http://www.asgdc.state.ak.us/maps/cplans/ns/NSlopeMap8of8.pdf

vii. SENSITIVE AREA ATTACHMENT 1: FISH STREAMS ALONG THE TRANS-ALASKA PIPELINE SYSTEM

U.S. BUREAU OF LAND MANAGEMENT

The following are excerpts of information generated by the U.S. Bureau of Land Management and presented in "Fish Streams Along the Trans-Alaska Pipeline System: A Compilation of Selected References With Current TAPS Stationing," BLM Open File Report 105 (Fourth Edition) December 2005.

Fish Species Codes (Adapted from Johnson and Rockwell, 1981)		
?	Fish Present?	
AB	Alaska blackfish	Dallia pectoralis
AC	Arctic char	Salvelinus alpinus
AL	Arctic lamprey	Lampetra japonica
AS	American shad	Alosa sapidissima
RB	Burbot	Lota lota
BC	Bering cisco	Coregonus laurettae
BL	American brook lamprey	Lampetra sp.
BW	Broad whitefish	Coregonus nasus
CA	Arctic cisco	Coregonus autumnalis
CD	Sculpin	Family: Cottidae
CI	Cisco	Coregonus sp.
CN	Slimy sculpin	Cottus cognatus
CS	Least cisco	Coregonus sardinella
CT	Cutthroat trout	Oncorhynchus clarkii
DS	Chum (dog) salmon	Oncorhynchus keta
DV	Dolly Varden	Salvelinus malma
GR	Arctic grayling	Thymallus arcticus
HO	Pond smelt	Hypomesus olidus
HW	Humpback whitefish	Coregonus pidschian
IN	Inconnu (sheefish)	Stenodus leucichthys
KO	Kokanee	Oncorhynchus nerka
KS	Chinook (king) salmon	Oncorhynchus tshawvtscha
LC	Lake chub	Couesius plumbeus
LS	Longnose sucker	Catostomus catostomus
LT	Lake trout	Salvelinus namaycush
LW	Lake whitefish	Coregonus clupeaformis
NP	Northern pike	Esox lucius

Fish Species Codes (Adapted from Johnson and Rockwell, 1981)		
OM	Rainbow smelt	Osmerus mordax
PS	Pink (humpback) salmon	Oncorhynchus gorbuscha
PW	Pygmy whitefish	Prosopium coulteri
RB	Rainbow trout	Oncorhynchus mykiss
RS	Sockeye (red) salmon	Oncorhynchus nerka
RW	Round whitefish	Prosopium cylindraceum
SR	Stickleback	Family: Gasterosteidae
S9	Ninespine stickleback	Pungitius pungitius
SH	Steelhead trout	Oncorhynchus mykiss
SK	Sucker	Family: Catostomidae
SS	Coho (silver) salmon	Oncorhynchus kisutch
TP	Trout —Perch	Percopsis omiscomaycus
WF	Whitefish	Coregonus sp.

EXPLANATION OF HEADINGS

SECTION 00 BPM OPEN FILE REPORT – TAPS FISH STREAMS 04/01/87 PAGE 00 OF 00

MP / STREAM NAME(s) / A/S / Comments	FISH SPECIES	A / D	JaFeMrApMaJuJlAuSeOcNoDe PERIOD OF SENSITIVITY	FIELD STATION	MER T / R / SEC	REFER -ENCE
4.12 1.37	(Edge) Lakes TAPS A/G; Causeway	?		21736 21796 1550+00 1541+70	U 10N 14E 20	AB E F
277.14 91	PROSPECT CREEK TAPSA/G;BLOCKPOINT	CN;GR;KS LS;NP;RW	Y E S CCCCCCCCCCCCCCCCCC	1463150 1463408 1590++00	F 22n 14w 31	AB E FG
*790.9 2	(Grey Stream) TAPS B/G; CMP	DV; SS	CCCCSSSSSSSSjlauCCCCC	4176212 506+06	C 09S 05W 28	AB E

ABBREVIATIONS:

SECTION 00 = Section 01 is Pump Station. 1 to Pump Station. 2; Section 10 is Pump Station. 10 to Pump Station 11.

MP = The distance in miles from Pump Station 1; *Prefix denotes extrapolated mileage not field checked.

AS = Alyeska Pipeline Service Company (G-100 as-builts) alignment sheet number.

STREAM NAME = Adapted from Johnson and Rockwell, 1981. For example: YUKON RIVER denotes a name recognized by the U.S. Geological Survey; (Small or Jackie's CK) denotes a non-USGS recognized popular name; [Snowpad CK] denotes a new name used in this list.

COMMENTS = TAPS A/G denotes above-ground pipe mode; TAPS B/G denotes below-ground mode; CMP is a corrugated-metal-pipe or culvert; LWC is a low water crossing; BLOCKPOINT is a physical barrier to vehicle passage; CAUSEWAY, BRIDGE, and PARALLEL are self-explanatory.

FISH SPECIES CODES = Adapted from Johnson and Rockwell, 1981. See explanation of codes.

ADAD = "YES" denotes anadromous fish stream designated by Alaska Dept. Fish and Game.

PERIOD OF SENSITIVITY = C denotes Critical period of fish usage; S denotes Sensitive period of fish usage. NOTE: UNDERLINING of a stream's period of sensitivity denotes the recommended sensitivity period if fish return in the future.

FIELD STATION = Distance in feet from Pump Station No 1 as estimated in field; * Prefix denotes an extrapolated stationing not field checked.

G-5 = Obtained from "Selected References" and refers to construction drawings.

MER = Meridian – U is Umiat; F is Fairbanks; C is Copper River.

T = Tier or Township; R = Range; Sec. = Section.

REFERENCE = see "Selected References"

SELECTED REFERENCES:

(A) Alaska Pipeline Office. 1977. Interim report on zones of restricted activity for fish and wildlife along the Trans-Alaska Pipeline. U.S. Dept. of the Interior. Anchorage. AK. (February 16, 1977: 37pp).

(B) Johnson, Richard L. and Julius Rockwell, Jr. (Revised by J. Rockwell, Jr.). 1981. List of streams and other water bodies along the Trans-Alaska oil pipeline route (Fourth Revision: Draft). U.S. Dept. of the Interior, Alaska Pipeline Office, Anchorage, AK (May 1, 1981).

(C) Elliott, George V. 1980. First interim report on the evaluation of stream crossings and effects of channel modifications on fishery resources along the route of the Trans-Alaska Pipeline. U.S. Fish and Wildlife Service, Anchorage, AK (June, 1980: 77pp).

(D) Elliott, George V. 1982. Final report on the evaluation of stream crossings and effects of channel modifications on fishery resources along the route of the Trans-Alaska Pipeline. U.S. Fish and Wildlife Service, Anchorage AK (March 1982: 110 pp).

(E) Office of Special Projects. 1982. [no title]. U.S. Bureau of Land Management, Anchorage, AK. (May 6, 1982). [This list is commonly referred to as Ken Hunt's list and includes comments from the Alaska Dept. of Fish and Game].

(F) Office of the Federal Inspector for ANGTS. 1984. List of fish stream data. Anchorage, AK (February 13, 1984: 50 pp).

(G) DenBeste, J. and P. McCart. 1984. Catalog of streams associated with the Trans Alaska pipeline System in the northern district. Volume IV. Prepared for Alyeska Pipeline Service Company by Aquatic Environments Inc., Anchorage, AK. (April 1984: 67 pp).

(H) Roberson, Kenneth. 1985 (letter of 12/18). [Comments on First Edition of 1/1/86]. Alaska Dept. of Fish and Game, Glennallen, AK.

(I) Alyeska Pipeline Service Co. 1986 (letter of May 12, No. 86-3642) [Comments on First Edition of 1/1/ 86]. Anchorage AK.

Anadromous Fishes: Alaska Department of Fish and Game, Habitat Division. 1985. Catalog of waters important for spawning, rearing or migration of anadromous fishes, as revised March 29, 1985 effective May 19, 1985; Regions II, V, and VI. Juneau, AK.

(J) Gnath, D.G., D.W. Lieb, and M. Wiedmer. 2002. Trans-Alaska Pipeline System 2002 Fish Habitat Survey. Alaska Department of Fish and Game, Habitat and Restoration Division, Technical Report No. 02-07, Anchorage, AK.

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
3. 3.90 1.37	(Edge) Lakes TAPS A/G; Causeway	?			20842 21314 1550+00 1541+70	U 10N 14E 20	A ,B, E, F
4.12 137	(Edge) Lakes TAPS A/G; LWC				21736 21796 1550+00 1541+70	U 10N 14E 20	A ,B, E, F
4.12 137	(Edge) Lakes TAPS A/G; Causeway				21496 21976 1550+00 1541+70	U 10N 14E 20	A ,B, E, F
5.19 137	(Grayling Gulch) TAPS A/G; BLOCKPOINT	S9		jafemrapSSSSSSSSSeocnode	26939 27159 1478+52	U 10N 14E 29	A ,B, E, F
11.08 136	Unnamed Lake TAPS A/G; LWC	S9		jafemrapSSSSSSSSSeocnode	58498 58558	U 19N 14E 28	J
17.99 135	(Low Life CK) TAPS B/G; LWC	S9		jafemrapSSSSSSSSSeocnode	94930 825+00	U 08N 14E 28	E, F
20.50 22.41 134	SAGAVANIRKTOK RIVER SIDE CHANNELS and FLOODPLAIN TAPS B/G; LWCs	AC? CN GR, RW	Y E S	jafemrapCCCCSSauseocnode Sag River mainstem system and all side channels are specified as being important for the spawning, rearing or migration of anadromous fish.	108528 118300 5479+00 5396+10	U 17N 14E 8, 17, 18 & 19	A ,B, E, F
  134	Pond TAPS B/G;PARALLEL ONLY TAPS DOES NOT CROSS	GR		jafemrapCCCCSSauseocnode	 5388+33 5383+55	U 17N 14E 19	B

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
  134	Pond TAPS B/G;PARALLEL ONLY TAPS DOES NOT CROSS	GR		jafemrapCCCCSSauseocnode	 5374+75 5370+50	U 17N 14E 19	B
24.03 134	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC?GR		jafemrapCCCCSSauseocnode	126900 5296+83	U 07N 14E 30	A, B, F
24.91 133	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC?GR		jafemrapCCCCSSauseocnode	131525 5251+61	U 07N 14E 31	A ,B, E, F
25.10 133	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC?GR		jafemrapCCCCSSauseocnode	132525 5241+61	U 07N 14E 31	F
25.15 133	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC?GR		jafemrapCCCCSSauseocnode	132810 5238+76	U 07N 14E 31	F
25.53 133	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC?GR		jafemrapCCCCSSauseocnode	134950 5210+93	U 06N 14E 06	A, B
25.63 133	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC?GR		jafemrapCCCCSSauseocnode	135300 5207+43	U 06N 14E 06	E
27.70 28.80 133	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC; BB? BW? CN? GR? RW? S9?		jafemrapCCCCSSauseocnode	146100 152500 5103+20	U 06N 13E 13&24	A ,B, E, F
29.67 30.45 132	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC; BB? BW?CN? GR; GR; RW? S9?		jafemrapCCCCSSauseocnode	156400 160750 4951+44	U 06N 14E 30	A ,B, E, F

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
30.44 132	(Thelma CK) TAPS B/G; LWC	AC;CN?; GR; S9		jafemrapCCCCSSauseocnode	160750 4951+44	U 06N 14E 30	F
32.90 132	SAGAVANIRKTOK RIVER SIDE CHAN (Short CK) TAPS B/G; LWC	AC? GR?		jafemrapCCCCSSauseocnode	173600 4829+00 4827+89 4822+31	U 05N 14E 07	A, E A, B, E, F
33.40 132	SAGAVANIRKTOK RIVER SIDE CHAN (Sylvia CK) TAPS B/G; LWC	AC;GR; S9?		jafemrapCCCCSSauseocnode	176200 4800+00	U 05N 14E 07	A, B, E, F
37.46 131	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? GR?		jafemrapCCCCSSauseocnode	197100 198500 1095+00	U 05N 14E 32	A, B, E, F
37.90 131	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS BG; LWC	AC? CN; GR		jafemrapCCCCSSauseocnode	200250 1077+00	U 05N 14E 03	A, B, E, F
38.55 131	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? CN; GR		jafemrapCCCCSSauseocnode	203320 1045+00 1042+00	U 05N 14E 03	A, B, E A, B, E, F
  131	SAGAVANIRKTOK RIVER SIDE CHAN (Ghost CK) TAPS B/G; TAPS DOES NOT CROSS				 974+68	U 04N 14E 15	B, F
40.22 131	SAGAVANIRKTOK RIVER SIDE CHAN (Ghost CK) TAPS B/G; LWC	AC? CN? GR;S9		JafemrapCCCCCCCCCCocnode	212225 957+00 952+94	U 04N 14E 15	A, E, F B, E
40.68 131	SAGAVANIRKTOK RIVER SIDE CHAN. (Ghost CK) TAPS B/G; LWC	AC?CN? GR;S9		jafemrapCCCCCCCCCCocnode	214525 937+70	U 04N 14E 16	A, B, E, F

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
40.80 131	SAGAVANIRKTOK RIVER SIDE CHAN (Ghost CK) TAPS B/G; LWC	AC?CN? GR;S9		jafemrapCCCCCCCCCCocnode	215300 929+95	U 04N 14E 16	E
40.98 131	SAGAVANIRKTOK RIVER SIDE CHAN (Ghost CK) TAPS B/G; LWC	AC?CN? GR;S9		jafemrapCCCCCCCCCCocnode	216100 924+58	U 04N 14E 21	B
41.16 131	SAGAVANIRKTOK RIVER SIDE CHAN (Ghost CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCCCCCCCocnode	217275 905+50	U 04N 14E 21	A, B, E, F
41.39 131	SAGAVANIRKTOK RIVER TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCCCCCCCocnode	218525 893+50	U 04N 14E 21	A, B, E, F
41.77 131	SAGAVANIRKTOK RIVER SIDE CHAN (Ghost CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCCCCCCCocnode	220525 872+00	U 04N 14E 21	A, B, E, F
42.13 130	SAGAVANIRKTOK RIVER SIDE CHAN (Ghost CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCCCCCCCocnode	222500 853+25	U 04N 14E 27	B, E
42.25 130	SAGAVANIRKTOK RIVER SIDE CHAN (Ghost CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCCCCCCCocnode	223100 846+16	U 04N 14E 27	B
42.28 130	SAGAVANIRKTOK RIVER SIDE CHAN (Ghost CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCCCCCCCocnode	223150 843+08	U 04N 14E 27	B, E
42.54 130	SAGAVANIRKTOK RIVER SIDE CHAN (Ghost CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCCCCCCCocnode	224525 831+30	U 04N 14E 27	A, B, F

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
42.64 130	SAGAVANIRKTOK RIVER SIDE CHAN (Ghost CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCCCCCCCocnode	225075 826+50	U04N 14E 27	A, B, F
43.04 130	SAGAVANIRKTOK RIVER SIDE CHAN (Ghost CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCCCCCCCocnode	227200 804+68	U 04N 14E 34	B, F
43.71 130	SAGAVANIRKTOK RIVER SIDE CHAN (Ghost CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCCCCCCCocnode	230800 768+86	U 04N 14E 34	B
43.95 130	SAGAVANIRKTOK RIVER SIDE CHAN (Ghost CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCCCCCCCocnode	232075 756+49	U 04N 14E 34	B
44.34 130	SAGAVANIRKTOK RIVER SIDE CHAN (Ghost CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCCCCCCCocnode	234100 736+81	U 03N 14E 03	B, F
44.59 130	SAGAVANIRKTOK RIVER SIDE CHAN (Ghost CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCCCCCCCocnode	234950 728+68	U 03N 14E 03	B F
47.50 48.93 130 129	SAGAVANIRKTOK RIVER SIDE CHANNELS AND FLOODPLAIN (Extension CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCSSSCCCocnode	251000 258600 557+50 539+10 531+70 531+00 525+10 500+25 500+00 492+35 491+40	U 03N 14E 23 & 26	A EF B EF B EF A E A E A E B EF B EF A E

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
49.90 129	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? GR; S9		jafemrapCCCCSSSCCeocnode	263950 437+00	U 03N 14E 35	B E F
50.07 129	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? GR; S9		jafemrapCCCCSSSCCeocnode	264600 430+00	U 03N 14E 35	A B E F
  129	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; DOES NOT CROSS				 414.20		A E
50.40 129	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? GR; S9		jafemrapCCCCSSSCCeocnode	266500 412+57	U 02N 14E 02	B E F
50.50 129	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; PARALLEL ONLY	AC? GR; S9		jafemrapCCCCSSSCCeocnode	NO TAPS XING 410+53	U 02N 14E 02	B E F
50.78 129	SAGAVANIRKTOK RIVER SIDE CHAN. (Wood CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCSSCCCCocnode	268000 396+00 395+41	U 02N 14E 01	 A E G B EFG
51.44 129	SAGAVANIRKTOK RIVER SIDE CHAN. (Wood CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCSSCCCCocnode	271700 360+60	U 02N 14E 12	B E G
51.56 129	SAGAVANIRKTOK RIVER SIDE CHAN. (Wood CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCSSCCCCocnode	272200 355+07	U 02N 14E 12	B E FG
52.16 129	SAGAVANIRKTOK RIVER SIDE CHAN. (Wood CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCSSCCCCocnode	275300 322+25	U 02N 14E 12	AB E FG

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
52.97 129	SAGAVANIRKTOK RIVER SIDE CHAN. (Wood CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCSSCCCCocnode	279700 281+50	U 02N 14E 13	B E FG
53.12 129	SAGAVANIRKTOK RIVER SIDE CHAN. (Wood CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCSSCCCCocnode	280400 266+00	U 02N 14E 13	A E G
53.36 129	SAGAVANIRKTOK RIVER SIDE CHAN. (Wood CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCSSCCCCocnode	281600 265+76	U 02N 14E 13	B E FG
53.41 129	SAGAVANIRKTOK RIVER SIDE CHAN. (Wood CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCSSCCCCocnode	282000 258+61	U 02N 14E 24	B E FG
53.57 129	SAGAVANIRKTOK RIVER SIDE CHAN. (Wood CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCSSCCCCocnode	282800 246+28	U 02N 14E 24	B E FG
  129	SAGAVANIRKTOK RIVER SIDE CHANEL TAPS B/G; DOES NOT CROSS				NO TAPS XING 242+80		B E FG
53.93 128	SAGAVANIRKTOK RIVER SIDE CHAN. (Wood CK) TAPS B/G; LWC	AC? CN? GR; S9		jafemrapCCCCSSCCCCocnode	284655 284704 233+50	U 02N 14E 24	B E FG
54.02 128	SAGAVANIRKTOK RIVER SIDE CHAN. (Wood CK) TAPS B/G; LWC	AC? CN? GR S9		jafemrapCCCCSSCCCCocnode	285185 285255 216+96 210+92	U 02N 14E 24	 B EFG B EFG
61.93 62.90 127	SAGAVANIRKTOK RIVER MAIN CHANNEL TAPS B/G; BLOCKPOINT	AC:BB; BW;CA; CN;CS DS;GR; HW?PS; RW;S9		SSSSSSSSCCCCSSCCCCCCSSSS	327000 *332329 1197+12 1143+83	U 01N 14E 26 & 27	AB E F

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
67.08 67.71 126	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; BLOCKPOINT	AC:BB; BW;CA; CN;CS DS;GR; HW?PS; RW;S9		SSSSSSSSCCCCSSCCCCCCSSSS	*354159 357500 933+28 897+87	U 01S 14E 22 & 23	AB E F
69.71 126	(Mark CK) TAPS B/G; LWC	AC;BB CN;GR; RW;S9?		jafemrapCCCCSSCCCCocnode	368058 792+00	U 01S 14E 34	AB E FG
69.77 126	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; BLOCKPOINT	AC;CN? GR;S9		jafemrapSSSSSSSSSSSnode	368400 791+00 790+40	U 01S 14E 34	 AB EFG F
70.36 126	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC?CN? GR?S9?		jafemrapSSSSSSSSSSSnode	371500 ?	U 02S 14E 03	 I
70.51 126	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC;CN? GR;S9		jafemrapSSSSSSSSSSSnode	372315 ?	U 02S 14E 03	B E F I
70.54 126	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC;CN? GR;S9		jafemrapSSSSSSSSSSSnode	372450 747+12	U 02S 14E 03	AB F
70.72 125	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC;CN? GR;S9		jafemrapSSSSSSSSSSSnode	373400 ?	U 02S 14E 04	 I
70.81 125	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC;CN? GR;S9		jafemrapSSSSSSSSSSSnode	373875 734+30	U 02S 14E 04	AB E F
71.16 125	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC?;CN? GR?S9		jafemrapSSSSSSSSSSSnode	375700 714+00	U 02S 14E 09	B E F I

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
71.45 125	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; CMPs	AC?;CN? GR?;S9?		jafemrapSSSSSSSSSSSnode	377250 698+26 697+50	U 02S 14E 09	 I AB E B EF
125 APL/AMS-4 SAGAVANIRKTOK RIVER SIDE CHANNEL						B	
71.55 125	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC?;CN? GR?S9?		jafemrapSSSSSSSSSSSnode	377780 696+00 693+87	U 02S 14E 09	 I B F AB
72.06 125	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? CN? GR? S9?		jafemrapSSSSSSSSSSSnode	380500 666+00	U 02S 14E 16	AB E F
72.45 125	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? CN? GR? S9?		jafemrapSSSSSSSSSSSnode	382568 643+50	U 02S 14E 16	B F I
72.59 125	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? CN? GR? S9?		jafemrapSSSSSSSSSSSnode	383268 637+00	U 02S 14E 16	B F I
72.68 125	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? CN? GR? S9?		jafemrapSSSSSSSSSSSnode	383778 632+50	U 02S 14E 16	B F I
73.03 125	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? CN? GR? S9?		jafemrapSSSSSSSSSSSnode	385607 616+70	U 02S 14E 16	B F I
75.34 125	SAGAVANIRKTOK RIVER SIDE CHANNEL (Spoiled Mary CK) TAPS B/G; LWC	AC; CN; GR		jafemrapCCCCSSCCCCocnode	397819 492+00	U 02S 14E 33	AB G

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
75.68 75.79 125	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? GR?		jafemrapCCCCSSauseocnode	399600 400150 489+35 469+75	U 02S 14E 33	AB E F I
76.04 76.41 125 124	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; BLOCKPOINT	AC;BB; BW;CA; CN;CS; DS;GR; HW?PS; RW;S9		SSSSSSSSCCCCSSCCCCCCSSSS	401498 403455 463+00 446+00	U : U 02S : 03S 14E : 14E 33 : 4	AB E F
78.85 124	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? GR?		jafemrapCCCCSSauseocnode	*416353 314+45	U 03S 14E 16	B F I
79.40 124	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? GR?		jafemrapCCCCSSauseocnode	*419218 285+80	U 03S 14E 17	B F I
79.51 124	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? GR?		jafemrapCCCCSSauseocnode	*419218 280+00	U 03S 14E 20	B F I
79.60 124	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? GR?		jafemrapCCCCSSauseocnode	*420598 272+00	U 03S 14E 20	B F I
79.91 124	(Woody CK) TAPS B/G; LWC	GR		jafemrapSSSSSSSSSSocnode	*422115 256+83	U 03S 14E 20	AB E F
80.34 124	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? GR		jafemrapCCCCSSauseocnode	*424180 236+18	U 03S 14E 20	B F

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
83.25 84.22 123	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; BLOCKPOINT	AC;BB; BW;CA; CN;CS DS;GR; HW?PS: RW;S9		SSSSSSSSCCCCSSCCCCCCSSSS	*439572 444700 82+26 58+15	U 04S 14E 5, 7&8	AB E F
84.51 123	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS A/G; LWC	AC? GR?		jafemrapCCCCSSauseocnode	446158 446234 42+00 40+00 38+00	U 04S 14E 07	I B B B
84.93 123	(Dan or Charlotte CK) TAPS A/G; BRIDGE & 2 CMPs	AC;CN; GR;RW; S9	YES	jafemrapCCCCSSCCCCocnode 448439BRE448509 448509CMP448559 448679CMP448739	448439 448739 20+12	U 04S 14E 08	AB E FG
85.10 123	(Lori CK) TAPS A/G; LWC	GR		jafemrapSSSSSSSSSSocnode	459029 459099 1722+00	U 04S 14E 29	AB E FG
91.93 122	(Stump CK) TAPS A/G; LWC	CN;GR; LT;S9		jafemrapSSSSSSSSSSocnode	485366 485425 1499+00	U 05S 14E 16	B F G
92.19 92.36 122	(Clarke's Lake) TAPS A/G; Causeway & CMP	CN;GR; LT S9		CCCCCCCCCCCCSSSSCCCCCCCC	486739 487636 1489+28 1481+00	U 05S 14E 16	AB E FG
92.96 122	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS A/G; LWC	AC? CN; GR;RW; S9?		jafemrapCCCCSSSCCSSSnode	490853 490922 1445+25	U 05S 14E 21	A B F
93.36 122	SAGAVANIRKTOK RIVER SIDE CHANNEL TAPS B/G; LWC	AC? CN?; GR;S9		jafemrapCCCCSSSCCSSSnode	492917 492973 1424+79	U 05S 14E 21	AB E F

Section MP / A/S	Stream Name(s) / Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
95.79 121	(Arthur CK) TAPS A/G; LWC	AC;BB; CN;GR		jafemrapCCCCSSSCCCocnode	505760 505825 1297+50	U 05S 14E 32	AB E FG
96.12 121	(Gustafson Gulch) TAPS A/G; LWC	AC;BB; CN;GR		jafemrapCCCCSSSCCCocnode	507485 507550 1280+00	U 06S 14E 05	AB E FG
96.60 121	(Gustafson Gulch) TAPS A/G; DOES NOT CROSS	GR		jafemrapCCCCSSSCCCocnode	NO TAPS XING 1255+00	U 06S 14E 06	F
99.07 121	(Polygon CK) TAPS A/G; LWC	AC;BB; CN;GR		jafemrapCCCCSSSCCCocnode	523070 523145 1125+03	U 06S 14E 19	AB E FG
99.99 120	(Poison Pipe CK) TAPS A/G; LWC	AC;CN; GR		jafemrapCCCCSSSCCSSSocnode	527926 527986 1077+10	U 06S 14E 19	AB E FG
100.31 120	(Climb CK) TAPS A/G; CMP	AC;GR		jafemrapCCCCSSSCCCocnode	529599 529669 1060+34	U 06S 14E 30	AB E FG
100.81 120	(Dennis CK) TAPS A/G; LWC	AC;GR		jafemrapSSSSSSSSSSocnode	532280 532345 1033+60	U 06S 14E 30	AB E FG
100.89 120	(Bassett CK) TAPS A/G; LWC	GR?			532671 532738 1029+97	U 06S 14E 30	AB E FG
102.45 120	(Rudy CK) TAPS A/G; LWC	AC;CN; GR		jafemrapCCCCSSSCCCocnode	540899 540969 949+99	U 07S 14E 05	AB E FG

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
103.43 120	(Oksrukuyik CK) TAPS A/G; BLOCKPOINT	AC;BB; BW;CN; GR;RW?		jafemrapCCCCSSSCCCCCocnode	546161 546102 895+76	U 07S 14E 08	AB E FG
104.57 120	(Margaret's Marsh) TAPS B/G; LWC	AC?GR? S9		jafemrapCCCCSSSCCCCCnode	552155 837+00	U 07S 14E 16	B F I J
113.52 119	(Thiele's Trickle) TAPS A/G; LWC	GR;		jafemrapSSSSSSSSSSSSocnode	599383 599438 1513+06	U 08S 14E 23	AB E F
114.86 119	(Shifish CK) TAPS A/G; LWC	AC?GR? DV		jafemrapSSSSSSSSSSSSnode	606434 606494 1441+40	U 08S 13E 27	B F I J
119 APL-1(Shifish CK)							B
115.76 119	(Shifish CK) TAPS A/G; LWC	AC?GR?		jafemrapSSSSSSSSSSSSnode	611203 611273 1398+20	U 08S 13E 28	B F I
117.06 118	(Oksrukuyik CK) TAPS A/G; BLOCKPOINT	AC;BB? CN;GR; LT;RW?		jafemrapCCCCSSSCCCCCnode	618290 618360 1323+71	U 08S 13E 32	AB E FG
123.92 117	TOOLIK RIVER TAPS A/G; BLOCKPOINT	AC;GR		jafemrapSSSSSSSSSSSSnode	654304 968+30	U 09S 12E 16	AB E FG
124.80 117	(East Fork KUPARUK RIVER) TAPS A/G; LWC	CN?GR		jafemrapSSSSSSSSSSSSnode	658915 658985 921+90	U 09S 12E 17	AB E FG

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
126.33 117	KUPARUK RIVER TAPS A/G; BLOCKPOINT	AC?CN; GR;LT?		jafemrapCCCCSSSCCCCCnode	666969 667043 842+00	U 09S 12E 19	AB E FG
127.04 117	(Holt CK) TAPS A/G; LWC	GR		jafemrapCCCCSSSCCCCCnode	670736 670806 804+36	U 09S 11E 25	AB E FG
127.17 116	(Becky CK) TAPS A/G; LWC	GR		jafemrapCCCCSSSCCCCCnode	671416 671488 799+82	U 09S 11E 25	AB E FG
128.62 116	(Becky CK) TAPS A/G; LWC	GR		jafemrapCCCCSSSCCCCCnode	679066 679141 721+20	U 09S 11E 35	AB E FG
130.38 116	(Yan CK) TAPS A/G; LWC	CN?GR?		jafemrapSSSSSSSSSSSnode	688360 688420 629+00	U 10S 11E 03	B F I
132.95 115	(Moss CK) TAPS A/G; LWC	AC?GR?		jafemrapCCCCSSSCCCCCnode	701958 702028 494+00	U 10S 11E 23	AB E F I
115 APL-3 : (Terry CK)						B	
133.48 115	(Terry CK) TAPS A/G; LWC	AC?GR		jafemrapSSSSSSSSSSSnode	704769 704839 465+91	U 10S 11E 23	AB E FG
134.01 115	(Mack CK) TAPS A/G; LWC	AC?;GR		jafemrapSSSSSSSSSSSnode	707537 707597 438+29	U 10S 11E 26	AB E FG

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
134.25 115	(Ed CK) TAPS A/G; LWC	GR?LT?		jafemrapSSSSSSSSSSSnode	708796 708855 425+79	U 10S 11E 26	B I
134.33 115	(Ed CK) TAPS A/G; LWC	AC;GR; LT?		jafemrapSSSSSSSSSSSnode	709205 709275 421+74	U 10S 11E 26	AB E FG
134.85 115	(Tributary Jill CK) TAPS A/G; LWC	AC?GR?		jafemrapSSSSSSSSSSSnode	711974 712034 394+50	U 10S 11E 26	AB E FG I
135.11 115	(Jill CK) TAPS A/G; LWC	AC?GR		jafemrapSSSSSSSSSSSnode	713343 713413 380+60	U 10S 11E 35	AB E FG
142.02 114	ATIGUN RIVER TAPS A/G; BLOCKPOINT	AC;BB; CN;GR; LT;RW		jafemrapCCCCSSSCCCCCSSSS	749548 750162 20+94	U 11 12 32	AB E FG
143.22 114	(Tee Lake Outlet) TAPS A/G; LWC	AC;BB; CN;GR LT;RW		jafemrapCCCCCCCCCCCCSSSS	756223 756293 155+29	U 12S 12E 05	A B CDE FG
141 143.28 114 114	(Tee Lake Outlet) TAPS AG; LWC	AC;BB; CN;GR; LT;RW		jafemrapCCCCCCCCCCCCSSSS	756523 756592 153+43	U 12S 12E 05	A B C DE FG
143.70 114	(Tee Lake Inlet) TAPS A/G; LWC	AC;BB; CN;GR; RW		jafemrapCCCCCCCCCCCCSSSS	758730 130+60	U 12S 12E 05	A B C DE FG
114 APS-2 (Tee Lake Inlet - CMP)							BCD

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
114	(Tad CK) TAPS A/G; DOES NOT CROSS	AC? GR?		DRAINS TO VANISH CREEK	NO TAPS XING 40+43	U 12S 12E 16	B F
145.67 114	(Vanish CK) TAPS A/G; LWC	AC;CN; GR;RW		jafemrapCCCCSSSCCCCCnode	769092 769162 35+80	U 12S 12E 16	AB D E FG
114	(Tributary Holden CK) TAPS A/G; DOES NOT CROSS	AC;GR		DRAINS TO HOLDEN CREEK	NO TAPS XING 31+59	U 12S 12E 16	B
145.76 114	(Holden CK) TAPS A/G; LWC	AC;CN; GR;RW		jafemrapCCCCSSSCCCCCnode	769595 769665 30+44	U 12S 12E 16	AB D E FG
146.48 114	(Mainline Spring CK) TAPS A/G; LWC	AC;BB; CN;GR; RW		jafemrapCCCCSSSCCCCCnode	773367 773437 1227+00	U 12S 12E 21	AB D E F
147.39 114	(One-One-Three CK) TAPS A/G; LWC	AC;CN; GR;RW		jafemrapSSSSSSSSSSSSnode	778418 778478 1176+95	U 12S 12E 28	B D F
147.56 114	(Roche Mountonnee CK) TAPS A/G; BLOCKPOINT	AC;CN; GR;LT; RW		jafemrapCCCCSSSCCCCCnode	779139 779318 1168+75	U 12S 12E 28	AB DE FG
152.19 113	(Waterhole CK) TAPS A/G; LWC	GR		jafemrapSSSSSSSSSSSSnode	803507 803572 924+83	U 13S 12E 16	B D F
153.04 113	(One-Fifty-Three Mile CK) TAPS A/G; LWC	GR		jafemrapSSSSSSSSSSSSnode	808015 808068 885+24	U 13S 12E 21	B F

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
153.25 113	(Tyler CK) TAPS A/G; LWC	CN;GR; RW		jafemrapSSSSSSSSSSSnode	809149 809209 882+00	U 13S 12E 21	AB D FG
153.33 113	(Tyler CK) TAPS A/G; LWC	CN;GR; RW		jafemrapSSSSSSSSSSSnode	809558 809628 879+00	U 13S 12E 28	AB D FG
153.47 112	(One-One-Two CK) TAPS A/G; LWC	GR		jafemrapSSSSSSSSSSSnode	810288 810353 871+00	U 13S 12E 28	B D F
153.59 112	(Tyler CK) TAPS A/G; LWC	CN;GR; RW		jafemrapSSSSSSSSSSSnode	810947 811012 860+00	U 13S 12E 28	AB D FG
154.12 112	(Trevor CK) TAPS A/G; LWC	AC;CN; GR;RW		jafemrapCCCCSSSCCCCCnode	813716 813786 837+00	U 13S 12E 28	AB E F
157.10 112	ATIGUN R. & FLOODPLAIN (One-Five-Seven Mile CK) TAPS A/G; LWC	AC;BB? CN;GR; LT?RW		jafemrapSSSSSSSSSSSnode	829563 681+00	U 14S 12E 07	AB E F
157.14 112	ATIGUN R. & FLOODPLAIN (Why Bother CK) TAPS A/G; LWC	AC;BB? CN;GR; LT?RW		jafemrapSSSSSSSSSSSnode	829715 678+30	U 14S 12E 07	AB E F
157.25 112	ATIGUN R. & FLOODPLAIN (Who CK) TAPS B/G; LWC	AC;BB?CN;C LT?RW		jafemrapSSSSSSSSSSSnode	830300 673+00	U 14S 12E 07	AB E F

Section MP / A/S	Stream Name(s) / Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
157.25 165.45 112 111	ATIGUN R. & FLOODPLAIN TAPS A/G; LWC	AC;BB? CN;GR; LT?RW		jafemrapSSSSSSSSSSSnode	830300 639+50 634+00 628+00 625+00 622+26	U 14S 12E 07	 BD EF BD EF BD EF BD EF BD EF
					620+67 584+40 564+00 559+72 544+10	U 14S 12E 17	BD EF BD EFG BD EF BD EF BD EF
					537+80 536+41 534+68 527+00 523+00 502+90	U 14S 12E 20	D EF BD EF BD EF BD EF BD EF BD EFG
  111 110	ATIGUN R. & FLOODPLAIN TAPS B/G; LWC	AC?BB? CD?GR; LT?RW?		jafemrapSSSSSSSSSSSnode	497+73 495+40 481+62 480+60 476+45 467+35 461+52	U 14S 12E 20	BD EF BD EF BD EF BD EF BD EF BD EF BD EF
111 110	Continued ATIGUN R. & FLOODPLAIN	AC?BB? CD?GR; LT?RW?			454+56 450+67		BD EF BD EF
					428+42 410+00 409+25 386+00 377+00 373+60 368+00 350+00 347+50 299+00	U 14S 12E 32	ABD EF B D EF B D EF B D EF B D EF B D EF ABD EF ABD EF ABD EF BD F

Section MP A/S	Stream Name(s) Comments	Fish Species	ADAD	Period of Sensitivity JaFeMrApMaJuJlAuSeOcNoDe	Field Station G-5	Meridian T R SEC	Reference
					873550 242+00	U 15S 12E 18	BD FG

NORTHWEST ARCTIC SUBAREA CONTINGENCY PLAN
SENSITIVE AREAS
SECTION

LIST OF FIGURES

i. SENSITIVE AREAS: INTRODUCTION – NORTHERN ARCTIC

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 conduct 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 frequently 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:

- *ARRT Dispersant Use Plan for Alaska* (see *Unified Plan, Annex F, Appendix I*: https://dec.alaska.gov/spar/ppr/plans/uc/Annex%20F%20Appendix1(Jan%2016).pdf)
- *ARRT In Situ Burning Guidelines for Alaska* (see *Unified Plan, Annex F, Appendix 2*: https://dec.alaska.gov/spar/ppr/plans/uc/Annex%20F%20Appendix2-3(Jan%2010).pdf)
- *ARRT Wildlife Protection Guidelines for Alaska* (see *Unified Plan, Annex G*: https://dec.alaska.gov/spar/ppr/plans/uc/Annex%20G%20(Oct%202012).pdf)
- *ARRT Historic Properties Protection Guidelines for Alaska Federal On-Scene Coordinators* (see *Unified Plan, Annex M:* https://dec.alaska.gov/spar/ppr/plans/uc/Annex%20M%20(Jan%2010).pdf)
- *ARRT Places of Refuge Guidelines (*see *Unified Plan, Annex O:* https://dec.alaska.gov/spar/ppr/plans/uc/Annex%20O%20(Jan%2010).pdf)
- 2014 Bering Strait Marine Life and Subsistence Use Data Synthesis: http://oceana.org/publications/reports/the-bering-strait-marine-life-and-subsistence-data-synthesis
- 2017 Ecological Atlas of the Bering, Chukchi, and Beaufort Seas. http://ak.audubon.org/sites/g/files/amh551/f/ecoatlasberingchukchibeaufort_chapter7_metadata.pdf

Federal OSCs in Alaska are working in cooperation with the U.S. Department of the Interior's (DOI) Office of Environmental Policy and Compliance and the U.S. Fish and Wildlife Service (USFWS), and with the U.S. Department of Commerce (DOC), National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) and the Office of Response and Restoration (OR&R) to ensure response activities 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:* http://dec.alaska.gov/spar/ppr/plans/uc/mou/ky-ESA%20MOA(2001).pdf).

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 and can be found at https://dec.alaska.gov/spar/ppr/plans/uc/Annex%20N%20(Jan%2010).pdf.

Section G of the Subarea Contingency Plan contains site-specific Geographic Response Strategies (GRS) 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 of the Northwest Arctic and the guidelines in the *Unified Plan* are also intended for use by facility/vessel operators who are required to develop an industry oil spill prevention and contingency plan as per state regulations 18 AAC 75.400 – 495. 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. Given seasonal fluctuations in species distribution and abundance, as well as site-specific data that may be gathered during an incident, the material included in this plan offers general information that should be refined as needed during a response. Future updates to this document will continue to add information relevant to response activities.

In January 2010, Audubon Alaska, in cooperation with Oceana, published the Arctic Marine Synthesis Atlas of the Chukchi and Beaufort Seas. This information is incorporated with the permission of Audubon Alaska and is available at http://ak.audubon.org/conservation/arctic-marine-synthesis-atlas-chukchi-and-beaufort-seas.

A substantial effort to develop and refine a sensitive areas database was undertaken by Alaska Clean Seas (ACS) and produced in their Alaskan Bering Sea Coastal Resources Manual, Norton Sound Region. The ACS material was developed with input from federal, state, and local agencies. This information is incorporated, by reference, into this section (with the permission of ACS).

Many of the maps presented in this section are available on-line at http://www.asgdc.state.ak.us/maps/cplans/subareas.html.

Figure D-1 shows the seaward boundary of the Northwest Arctic Subarea and its relationship to the other subareas. While this contingency plan is specific to the Northwest Arctic Subarea, we note that there are ecological connections to the adjacent subareas; for example, migratory species and ocean currents may cross planning boundaries. Suggestions, comments, and more current information are requested. Please contact either:

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Office of Environmental Policy and Compliance
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Jack Winters
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Division of Habitat
1300 College Road
Fairbanks, Alaska 99701
(907) 459-7289
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email: jack.winters@alaska.gov

Figure D-1. Seaward boundaries of Northwest Alaska and adjacent subareas.

ii. 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 907-459-7289
U.S. Department of the Interior	Migratory birds, sea otters, polar bears, walrus, certain 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, certain endangered marine species, anadromous fish in marine waters, effects of oil on fisheries resources, hydrocarbon chemistry, dispersants	Protected Resources Division Juneau 907-586-7630 Alaska Region Marine Mammal Stranding Network 877-925-7773
	Essential Fish Habitat, federally-managed commercial fish stocks, including corals, special aquatic vegetation (marine), and offshore salmon	Habitat Conservation Division Anchorage 907-271-5195
University of Alaska	Rare and endangered plants	Alaska Natural Heritage Program Anchorage 907-257-2785
University of Alaska – Fairbanks Northwest Campus Marine Advisory Program	Marine ecology, marine mammals, subsistence harvest of marine resources, foraging ecology and diet	Marine Advisory Agent Nome 907-443-2397
CULTURAL AND ARCHAEOLOGICAL SITES		
Alaska Department of Natural Resources	Historic sites, archaeological sites, National Register sites	Alaska Office of History and Archaeology Anchorage State Historic Preservation Officer - 907-269-8721 State Archeologist - 907-269-8728
U.S. Department of the Interior	Archaeological/historical sites in parks, wildlife refuge system units, and public lands; National Register of Historic Places; National Historic Landmarks; Native allotments/trust lands; sunken vessels	Office of Environmental Policy & Compliance Anchorage 907-271-5011

Agency	Resources	Point of Contact
SHORELINE TYPES		
U.S. Department of Commerce, National Oceanic & Atmospheric Administration	Shoreline types, environmental sensitivity index maps	Office of Response and Restoration Scientific Support Coordinator Anchorage 907-428-4143
U.S. Department of Commerce, National Marine Fisheries Service Alaska Regional Office	Shoreline types (Alaska ShoreZone categories), biophysical habitat data, high-resolution digital video and photographs	NOAA Fisheries Analytical Team 907-586-7858 https://alaskafisheries.noaa.gov/habitat/shorezone
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 Fairbanks 907-451-3014
Alaska Department of Fish and Game	State game refuges, state critical habitats	Division of Habitat Fairbanks 907-459-7289
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: – Northwest Arctic Borough – NANA Regional Corporation – Maniilaq Association – Bering Straits Native Corporation – Kawerak, Inc. – City of Nome	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

Agency	Resources	Point of Contact
COMMERCIAL HARVEST		
Alaska Department of Fish and Game	Fishing permits, seasons	Division of Commercial Fisheries Nome 907- 443-5167
Alaska Department of Natural Resources	Tideland leases	Division of Mining, Land, and Water Fairbanks 907-451-3014
Alaska Department of Environmental Conservation	Seafood processing	Division of Environmental Health Juneau 907-269-7644
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	Division of Sport Fish Fairbanks 907-459-7268
U.S. Department of the Interior	Subsistence uses on federal lands and reserved waters; subsistence uses of polar bears, walruses, 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 Nome offshore mining	Division of Parks and Outdoor Recreation Fairbanks 907-451-2695 Division of Mining, Land, & Water Fairbanks 907-451-2705

Agency	Resources	Point of Contact
Alaska Department of Fish and Game	Sport hunting and fishing	Division of Sport Fish Fairbanks 907-459-7268 Division of Wildlife Conservation Nome 907-443-5167
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 national 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 and source water protection, 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 907-459-7289
Alaska Department of Natural Resources	Tidelands leases, aquaculture sites, private logging camps and log transfer facilities	Division of Mining, Land, and Water Fairbanks 907-451-3014
U.S. Coast Guard	Marinas and docks, mooring buoys	Sector Anchorage Anchorage 907-271-6700
U.S. Environmental Protection Agency	Source water protection	Office of Water and Watersheds 206-553-1152

iii. 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 OSCs for protecting cultural resources is contained in Annex M of the *Unified Plan*.

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

CRITERIA FOR RELATIVE PRIORITY RATING

- human economic disruption -- economic/social value
- seafood safety/contamination, health/safety
- subsistence food safety and food security
- 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
- sub-lethal effects, including sensitivity to physical or toxic effects of oil and 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
- cultural, historic, or archaeological resources

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
- Lake and River Habitat Types:
  - Connected lakes
  - Freshwater springs

- Upland Habitat Types:
  - Riparian willow
- Ice Habitat Types:
  - Leads and polynyas
  - Pack and shore-fast ice edge
  - Lagoon ice area (Ikpek Lagoon, Arctic Lagoon, etc.)
- Threatened or Endangered Species Habitat:
  - Spectacled eider critical habitat
  - Polar bear critical habitat
  - Steller sea lion critical habitat
- Spotted Seal Haulout Areas (> 10 seals) and Feeding Areas
- Bearded Seal Haulout Areas and Feeding Areas
- Pacific Walrus Haulout Areas
- Polar Bear Denning and Feeding Areas
- Beluga Whale Concentration Areas and Feeding Areas
- Bowhead Whale Nearshore and Offshore Migration Routes
- Bowhead Whale General Distribution
- Other Whale Species (Gray, Minke, etc.) Habitat Concentration and Foraging Areas
- Caribou Calving and Insect Relief Areas
- Large Seabird Colonies (> 100 birds)
- Waterfowl and Shorebird Spring and Fall Concentration Areas
- Waterfowl and Shorebird Nesting or Molting Concentration Areas
- Important Bird Areas (Audubon)
- Anadromous Fish Spawning and Rearing Streams (i.e., salmon, Dolly Varden, whitefish)
- Herring Spawning Areas
- Land Management Designations:
  - Tribe
    - Native corporation land
  - Federal
    - Wilderness
    - Wild and scenic rivers
    - National natural landmarks
    - National parks and preserves
    - National monuments
    - National wildlife refuges
      Public lands
    - Native allotments and town sites
  - State
    - Refuges
    - Sanctuaries
    - Critical habitat areas
- Cultural Resources/Archaeological Sites:
  - National historic landmarks
  - Burial sites
  - National Register eligible village sites
  - Intertidal sites

- Subsistence Use Areas
- High Commercial Use Areas
- High Recreational Use Areas

C. AREAS OF MODERATE CONCERN

- Spotted Seal Haulout Areas (< 10 seals)
- Ringed Seal Shorefast Ice Concentration Areas
- Bearded Seal General Distribution
- Seabird Colonies (10 - 100 birds)
- Anadromous Fish Streams (rearing only)
- Grizzly Bear Concentration Areas (marine mammal/carcasses; salmon)
- Pacific Walrus Feeding Areas
- Polar Bear General Distribution
- Caribou Migration Routes
- Muskox Riparian Habitat
- Commercial Harvest Areas
- Recreational Use Areas
- Land Management Designations
  - State
    - State parks
- Cultural Resources/Archaeological Sites:
  - National Register eligible sites (Other than village sites)
  - Sites adjacent to shorelines
  - Essential Fish Habitat (EFH)

D. AREAS OF LESSER CONCERN

- Upland Habitat Types:
  - Mesic/dry tussock tundra
  - Alpine tundra
- Gray Whale Nearshore Migration and Feeding Areas
- Walrus General Distribution
- Seabird Colonies (< 10 birds)
- Waterfowl and Shorebird General Distribution
- General Freshwater Fish Habitat
- Land Management Designations:
  - State
    - General public lands

E. AREAS OF LOCAL CONCERN

Some areas within the subarea warrant special attention due to the presence of highly productive wildlife habitat, ability to sustain a large part of a community's subsistence needs, occurrence of unusual historical sites or large mineral deposits, recreation, energy development, hazardous areas, or presence of important fisheries. These have been identified as Areas Meriting Special Attention, Important Use Areas, Special Use Areas, Sensitive Areas, or Subsistence Use Areas through the Bering Straits Coastal Resource Service Area, Northwest Arctic Borough, and City of Nome Coastal District Management Plans. Additional information was provided by the Alaska Maritime National Wildlife Refuge (NWR). Also, see Figures D-2 and D-3. On July 1, 2011, the federally-approved Alaska Coastal Management Program expired, resulting in a withdrawal from participation in the Coastal Zone Management Act's National

Coastal Management Program. However, several of these plans were developed while the program was in effect, and habitat areas that warrant special attention were identified; they are summarized in the table below. **This information is presented without modification, except updates to Figures D-2 and D-3 for legibility reasons.**

Designated area	Reasons for designation	Land ownership/ villages to contact
1. St. Lawrence island, adjacent islands, and rocks	The area is habitat for 2.7 million seabirds and 100,000 walrus. Subsistence uses are: birds, bird eggs, walrus, polar bear, reindeer, arctic fox, bowhead and other whales, seals, crab, fish, and plants. Sites identify early siberian yuit life. Steller sea lion haulouts are present.	Gambell and savoonga
2. Little diomede island	Least and crested auklets are most of the 1.2 million birds here. Also habitat black-legged kittiwakes, thick-billed murres, walrus. Birds, bird eggs, native plants, walrus, seals, whales, fish, king crab are subsistence resources.	Native corp. Of little diomede (surface), and bering straits native corp. (subsurface)
3. Stebbins wetlands	134,000 shorebirds and waterfowl on non-aquatic areas, undetermined amount in ponds. Subsistence uses are for waterfowl and eggs. Remains of five circa 1900 marine vessels are in st. Michael channel.	Native corp. For the villages of st. Michael and stebbins
4. Kwiniuk, tubutulik, and kwik river drainages	Fish (salmon, arctic char, whitefish, grayling), mammals (moose, bear, and beaver), and berries occur here. This is one of the important pink and silver salmon spawning rivers.	Native corp. For the village of elim (surface and subsurface estate) and federal
5. St. Michael bay	The area is habitat for herring, and eelgrass beds provide food for birds, a nursery area for fish and crab, and a spawning area for herring. Subsistence uses: herring fishery, seals, salmon, and waterfowl. Commercial fishing occurs for herring and salmon. In 1833 st. Michael became the first european settlement in the region (historic cemeteries and buildings).	Native corp. For the village of st. Michael (surface), the bering straits native corp. (subsurface)
6. Unalakleet river drainage	The area provides subsistence uses for: fish (salmon, grayling, whitefish, arctic char, smelt, and tomcod), mammals (moose, bear, caribou, and beaver), waterfowl, berries, plants, and timber. Commercial fishing occurs for the region's largest pink salmon run, king, silver and chum salmon. Historic sites include: house pits at old unalakleet village, a prehistoric village site, and sites in the river drainage. Recreation occurs at unalakleet river lodge. Besboro island near unalakleet is an important gull egg harvesting area and walrus haulout.	Native corp. For the city of unalakleet (surface), and bering straits native corp. (subsurface)
7. Koyuk river drainage	The koyuk river provides habitat for one of the region's largest moose population. Caribou winter here, and one of the region's few sheefish populations are located on the lower river. Wetlands south of the river are important for shorebird nesting, and support one of the greatest densities of waterfowl. The river from kuzitrin lake to norton bay is essential for harvest of fish (salmon, whitefish, smelt, grayling, arctic char, and tomcod), mammals (moose, caribou, bear, and beaver) and waterfowl.	Native corp. For the village of kuyuk (surface), and bering straits native corp. (subsurface)
8. Lost river	Potential mining area for tin, tungsten, fluorite, and beryllium	Mining claims or native corp.

Designated area	Reasons for designation	Land ownership/ villages to contact
9. Island point to beeson slough, including cape denbigh	Cape denbigh has the largest seabird colony in eastern norton sound (common murres, pelagic cormorants, horned puffins). Subsistence uses include: fish (salmon and herring), shellfish (crab and clam), waterfowl, eggs, and berries. Cape denbigh is an important archaeological site, and the oldest known settlement in the region, lyatayet is located here. Commercial fishing for herring is from may 15 to june 15, and salmon from june 8 to august 31. Murre eggs are harvested at cape denbigh.	Native corp. For the village of shaktoolik (surface), and the bering straits native corp. (subsurface)
10. Golovin bay/ lagoon and the niukluk river drainages	The golovin bay/lagoon are important for herring, boreal and pond smelt; sand lance; humpback, broad, and round whitefish; bering and least cisco; arctic char; saffron cod; starry and arctic flounder; and tubenose, bering, and sturgeon poachers. The entire north shore of the lagoon consists of oil-sensitive delta marsh with stands of sea grass. The niukluk river drainages support moose, and birds. Villagers harvest fish (salmon and herring), shellfish (crab and clams), marine mammals (seals and beluga), kelp, and waterfowl. Several offshore mining permits were issued and are being examined to see if documented deposits exist. The fish and niukluk rivers are moderately important salmon streams for commercial fishing. The niukluk river has road access from council and is one of the most important sport fishing areas for grayling, arctic char, as well as pink, chum, and silver salmon. Also important moose hunting area for hunters from outside the state. Gull eggs are harvested in several areas of golovin bay, including carolyn island near its eastern entrance.	Native corp. For the villages of golovin, white mountain, and council (surface), the bering straits native corp. (subsurface), and the state
11. Rocky point to topkok head	Marine waters are among the most productive in the world. There are large concentrations of sand lance, vital for fish-eating seabirds. The area contains the largest mainland seabird colonies in the region. Peregrine falcons, gyrfalcons, and rough-legged hawks nest on the cliffs. Herring spawn along rocky shores, and salmon, capelin, king crab, and several species of bottom fish are located along the coast. Historic sites include: remaining house mounds and artifacts of several villages.	Native corp. For the villages of golovin and white mountain (surface), bering straits native corp. (subsurface), and federal
12. Safety sound	The shore is composed of extensive marshes; tideflats; and seagrasss beds, and supports large flocks of nesting and feeding waterfowl and shorebirds. A channel from safety sound to bonanza river hosts geese, cranes, and ducks (especially in august and september). Subsistence uses are: seals, moose, waterfowl, bird eggs, and fish. Mining occurs in the upper eldorado river drainage and along the salmon river drainage. There are numerous unexcavated archaeological sites in the area.	Native corp. For the village of solomon and the city of nome (surface), bering straits native corp. (subsurface), and the state
13. Nome river drainage	Biologists have documented 17 species of fish in the river. The lower 30 miles of the river provide spawning for four salmon species, and the best spawning beds are located below “13 mile bridge”, waterfowl, moose, rabbit, ptarmigan, and three seal species (bearded, ringed, and spotted) also frequent here. From fort davis bridge to the mouth of the river is important for sport fishing. Moose and bear along the river are also hunted.	Native corp. For the city of nome (surface), bering straits native corp. (subsurface), private, and holders of mining claims

Designated area	Reasons for designation	Land ownership/ villages to contact
14. Mccarthy's marsh	The area is waterfowl and shorebird habitat. Subsistence uses include: waterfowl, moose, bear, and caribou.	Federal (bureau of land management)
15. Cape woolley	Waterfowl and shorebirds use woolley lagoon. Subsistence uses include: fishing at the mouth of the feather river, hunting waterfowl along lagoon and in surrounding wetlands, and hunting of walrus and seals along the coast.	Native corp. For the community of king island (surface), and bering straits native corp. (subsurface)
16. Kuzitrin river drainage and associated wetlands	Wetlands in southwest corner of bering land bridge national preserve are important for waterfowl and shorebirds, and the drainage is considered one of the region's most important moose habitats.	Native corp. For the community of mary's igloo (surface), bering straits native corp. (subsurface), and federal
17. Brevig lagoon	Subsistence harvest includes waterfowl, herring, salmon, and gull eggs. Extensive sheltered marshes and tide flats are important molting areas for oldsquaws.	Native corp. For the village of brevig mission (surface), and bering straits native corp. (subsurface)
18. Agiapuk river drainage	Moose, waterfowl, salmon, and grayling are harvested for subsistence uses.	Native corp. For the villages of brevig mission and teller (surface), bering straits native corp. (subsurface), and federal and state
19. Grantley harbor, imuruk basin, and tuksuk channel	One of the region's most productive marine fish habitats. Imuruk basin supports large numbers of nesting waterfowl. Extensive sea grass lines grantley harbor providing feeding and rearing for fish and diving ducks. Herring, salmon, arctic char, smelt, whitefish, tomcod, marine mammals, and waterfowl eggs are harvested for subsistence use.	Native corp. For the villages of brevig mission, teller, and mary's igloo (surface), bering straits native corp. (subsurface), federal and state
20. Pilgrim river and salmon lake	The region's only known sockeye (red) salmon and the northernmost run in the state occurs here. This is an important moose hunting area due to easy access along the kougarok-nome road and high populations. 800 acres of land are proposed for disposal for seasonal and recreational home sites. Geothermal development and recreation: pilgrim hot springs has geothermal and recreational development potential.	Native corp. For the village of mary's igloo (surface), bering straits native corp. (surface and subsurface), and state and federal
21. Lopp lagoon/ cape prince of wales	Cape prince of wales coast consists of rocky, mostly barren, steep terrain. Lopp lagoon is one of the primary waterfowl and shorebird nesting areas in the region. Wales residents harvest crab, salmon, beluga whale, bowhead whale, walrus, seal, and polar bear in offshore areas. They harvest shellfish from the beach; and salmon, waterfowl, moose, muskox, and berries in the lagoon area.	Native corp. For the village of wales (surface), bering straits native corp. (subsurface), and state and federal
22. Ikpek lagoon and nukluk, pinguk, kaguerak, and kugrupaga drainages	The drainages are important for migratory shorebird and waterfowl resting and feeding. Subsistence uses include hunting for waterfowl and moose, and fishing for salmon.	State and federal

Designated area	Reasons for designation	Land ownership/ villages to contact
23. Arctic river drainage	Important waterfowl and salmon harvest area. Wetlands in the lower part of the drainage are important waterfowl and shorebird habitat. Ten placer mining sites and one lode mine are located in the upper reaches of the watershed. Ear mountain may contain major mineral deposits.	Native corp. For the village of shishmaref (surface), bering straits native corp. (subsurface), and state and federal
24. Serpentine river drainage	One of the most important moose habitats in the region. The river supports salmon, arctic char, and grayling, and wetlands provide habitat for waterfowl and shorebirds. Serpentine hot springs is a traditional historic site and a contemporary spiritual site.	Native corp. For the village of shishmaref (surface), bering straits native corp. (subsurface), and federal
25. Moonlight springs watershed	Principal water supply for the city of nome.	Sitnasuak native corp.
26. Sisoalik spit	Important feeding and staging for waterfowl in spring and shorebirds in summer. The lagoon is a rearing place for sheefish. Whitefish and herring also rear near the spit. Whales and seals are found near here. The area is a fall caribou migration route. Traditional subsistence camps are here during summer.	Maniilaq association Nana regional corporation
27. Cape krusenstern	The area is used by waterfowl during fall migration. Gulls and terns nest here and shorebirds use the coastal lagoons during the summer. Whitefish and herring are found in the lagoon. Seals use the barrier island beach and whales migrate in nearshore waters. The area hosts subsistence use of seals and belukha whales.	National park service
28. Kobuk/selawik lakes	Gulls and waterfowl are found in the area. It is important fish rearing habitat for salmon, sheefish, whitefish, char and pike. Herring also spawn here. Subsistence use is year-round.	Nana regional corporation Northwest arctic borough U.s. fish and wildlife service
29. Cape espenberg and goodhope river	Seal haulouts and nesting gulls and waterfowl are present in this area. Seals, birds, and bird eggs are also harvested in this area for subsistence use.	Nana regional corporation
30. Kobuk river delta	The sloughs and ponds of the delta are important habitat for waterfowl. This is a major staging area. Sheefish, salmon and char also inhabit the delta. Burbot and grayling are also abundant. Subsistence use area.	Nana regional corporation
31. Selawik river delta	This is a major waterfowl use area, and is used heavily for fall migration staging. Sheefish, whitefish, char, grayling and burbot inhabit the waters of the delta. Caribou migrate through here in the fall. Subsistence use area.	Nana regional corporation U.s. fish and wildlife service
32. Salmon river	The lower reaches of the river are used by waterfowl for nesting. Chum salmon and arctic char spawn in the river. Caribou migrate through the area in the fall and spring. Lower reaches provide winter habitat for moose.	
33. Upper selawik, hunt, redstone rivers	Nesting waterfowl are found in the area. Arctic char and grayling are present. Chum salmon spawn in the lower hunt and ambler rivers. The hunt and redstone river valleys are a major caribou spring and fall migration corridor. The upper selawik is also a caribou migration area.	Nana regional corporation U.s. fish and wildlife service

Designated area	Reasons for designation	Land ownership/ villages to contact
34. Maniilaq river and ambler lowlands	A subsistence use area for caribou, moose, waterfowl, and furbearers. A caribou migration area and black and grizzly bear habitat.	Nana regional corporation Northwest arctic borough
35. Inmachuk river	Subsistence uses include: fishing moose, and trapping. The wetlands support waterfowl. There are historic sites here. The area also has musk ox and bear.	Nana regional corporation Northwest arctic borough State of alaska
36. Lower buckland river	The area supports waterfowl and seal hunting, and berry picking. Moose and waterfowl are hunted here. Salmon and other fish are in the river. Historic sites are present. Subsistence use area.	Nana regional corporation
37. North fork squirrel river/omar river	Waterfowl hunting, winter trapping and fishing occur here. Caribou migrate through, moose overwinter, and salmon spawn here. Historic sites are present. Subsistence use area.	Northwest arctic borough State of alaska Bureau of land management
38. North kivalina coast	Subsistence uses are: hunting for seals, walrus, belukha and bowhead whales; berry picking; fishing; and moose hunting. Waterfowl stage here, arctic terns nest, and fish spawn and overwinter here. Historic sites are present.	Nana regional corporation Northwest arctic borough
39. Onion portage	An important waterfowl use and fish spawning area. Moose overwinter here. Grizzly bears and migrating caribou use the area. Because it is a focal point for migrating caribou, this is a high use subsistence area.	Nana regional corporation National park service
40. Eschscholtz bay	Migrating waterfowl use the area in the spring. The bay provides calving and feeding habitat for belukha whales. The area contains herring, cod and salmon. Seals haulout at chamisso island, and are common in the summer and fall. Subsistence use area.	Nana regional corporation
41. Elephant point, choris peninsula	There is an arctic tern colony here. Thousands of seabirds use the area for nesting. Spotted seals haul-out here. Belukha whales are subsistence hunted in the area during the spring and early summer. Subsistence use area.	Nana regional corporation
42. Kobuk river	The river supports a large number of sheefish, who spawn between the ambler and selby rivers in the fall. Arctic char and whitefish also spawn in the river, as do a large number of chum salmon. Subsistence use area.	Nana regional corporation Northwest arctic borough
43. Selawik river	The 10 miles below ingraksuksuk creek is a major area for spawning sheefish. Whitefish also spawn here.	Nana regional corporation U.s. fish and wildlife service
44. Wulik river	Arctic char spawn and overwinter here. Small populations of salmon are also present. Subsistence use area.	Nana regional corporation Northwest arctic borough State of alaska
45. Noatak river	This river supports the nana region's largest salmon run. Chum salmon spawn in the lower 200 miles of the river, especially concentrated between the eli and kelly rivers. In addition, pink salmon, arctic char, and sheefish are present. A large number of gulls nest in this area and their eggs are harvested for subsistence use by the people of noatak and kotzebue.	Nana regional corporation Northwest arctic borough Maniilaq association

Designated area	Reasons for designation	Land ownership/ villages to contact
46. Upper kivalina river	A spawning area for chum and pink salmon and dolly varden. Overwintering for fish. Winter habitat for moose and caribou. Subsistence uses: fish, caribou and moose. Subsistence use area.	Nana regional corporation

An August 2000 federal/state joint survey of Native Tribes in the subarea yielded additional information about sensitive areas near villages, as viewed from the local perspective. The Tribes responding to the survey and the top five sites of concern (and the reason for their importance) are presented below.

Native Village of Brevig Mission

Grantley Harbor	Natural resources
Imurak Basin	Natural resources
Shelman Creek	Drinking water source
Port Clarence	Salmon migration
Bering Sea	Marine mammal migration

Native Village of Diomede

The beach	Boat dock and meat storage
Tank farm	Fuel source
Village site	People live there
Surrounding waters	Where they hunt and fish

Native Village of Koyuk

Koyuk River	Fish and mammals
Norton Bay	
Homes	Where people live

Native Village of Noatak

Noatak River	Subsistence
Noatak school	Education
Noatak clinic	Health
Noatak store	Groceries
Noatak airport	Transportation

Noorvik Native Community

Elementary and High Schools and other public/residential areas where children are

Native Village of Shungnak

The river and tributaries	Drinking water source

Stebbins Community Association

Stuart Island	Traditional fishing and wildlife gathering
Romanof to Cape Stevens coast	Traditional fishing and wildlife gathering
Romanof to Cape Stevens tundra	Traditional fishing and wildlife gathering
St. Michael Island system	Traditional fishing and wildlife gathering
Village of Stebbins	Where people live

Native Village of Wales

Village Creek	Traditional water source
Bering Strait	subsistence hunting and fishing
School grounds	Students, children, employees
New clinic grounds	Health aides, patients
Village store grounds	Groceries, fuels

Native Village of White Mountain

White Mountain River	Subsistence food and transportation
School	Children/education
Clinic	Health
Store	Food, etc.
City office	Provides electricity and running water

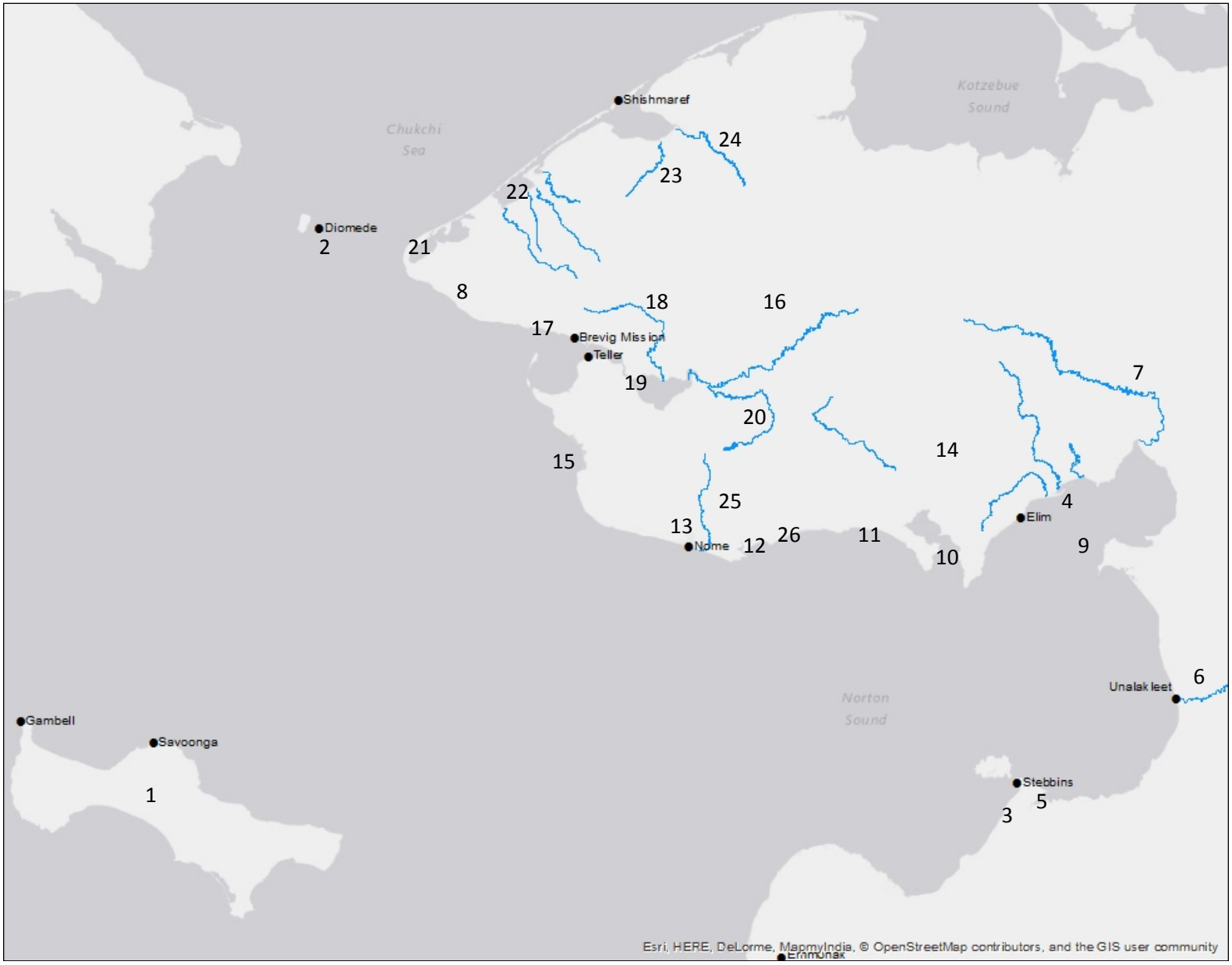


Figure D-2. Areas of local concern (numbers correspond to descriptions on pages D-11 through D-16).

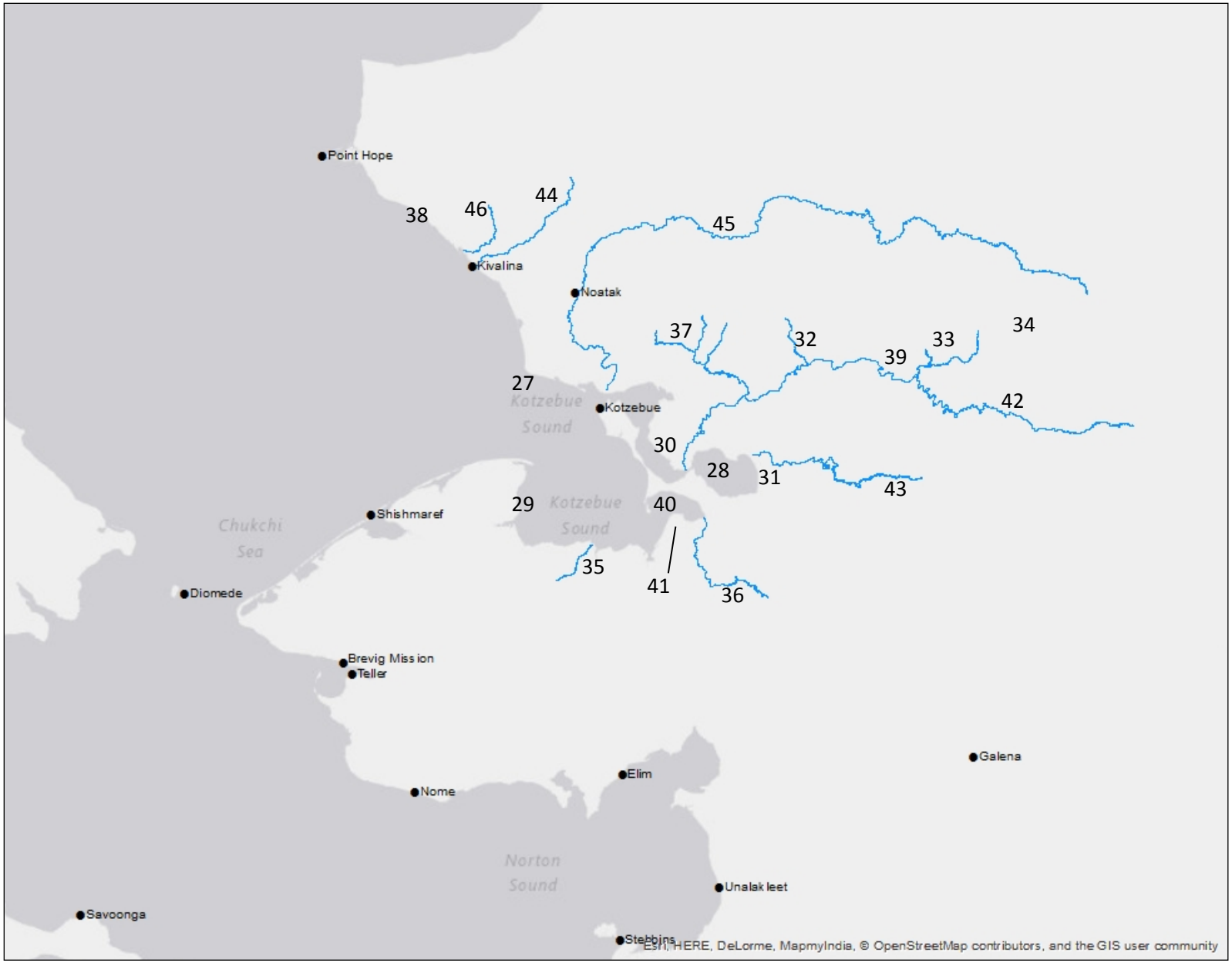


Figure D-3. Areas of local concern continued (numbers correspond to descriptions on pages D-11 through D-16).

iv. 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: NMFS, USFWS, National Park Service (NPS), Bureau of Land Management (BLM), Alaska Department of Fish and Game (ADF&G), and Alaska Department of Natural Resources (ADNR). 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. Within the tables, Kotzebue Sound or Chukchi Sea refers to those areas and communities north of Little Diomede Island and Wales. Little Diomede Island, Wales, and all points south (excluding St. Lawrence Island) are included in the Norton Sound category.

SHORELINE GEOMORPHOLOGY

CATEGORY	LOW	MEDIUM	HIGH
COASTAL HABITAT TYPES	Fine-grained sand beaches Exposed wave-cut platforms Exposed rocky shores	Gravel beaches Mixed sand & gravel beaches Exposed tidal flats Coarse grained sand beaches Riprap structures	Marshes Sheltered tidal flats Sheltered rocky flats Peat shorelines Inundated low lying tundra Scrub-shrub wetlands Sheltered vegetated low banks
LAKE AND RIVER HABITAT TYPES	Exposed rocky cliffs & banks Bedrock shores & ledges, rocky shoals Eroding scarps/bank in unconsolidated sediment Exposed man-made structures	Sand beaches & bars Mixed sand & gravel beaches/bars Gravel beaches/bars Gently sloping banks Exposed flats Riprap	Sheltered scarps in bedrock Vegetated steep sloping bluffs Sheltered man-made structures Vegetated low banks Sheltered sand & mud & muddy substrates Marshes
UPLAND HABITAT TYPES	Alpine tundra Mesic/dry tussock Tundra	Low shrub vegetation Dwarf shrub mat and cushion tundra	Riparian willow

THREATENED OR ENDANGERED SPECIES1

CATEGORY	LOW	MEDIUM	HIGH
ENDANGERED SPECIES			**Cetaceans**: Western North Pacific DPS humpback, bowhead, fin, North Pacific right, **Pinnipeds**: Western DPS Steller sea lion **Birds**: Short-tailed albatross
THREATENED SPECIES			**Cetaceans**: Mexico DPS humpback whale **Pinnipeds**[2]: bearded seal **Birds**: Spectacled eider, Steller's eider **Mammals**: Polar bear
SPECIES OF GREATEST CONSERVATION NEED[3]			

[1] The Pacific Walrus is currently listed as a candidate species under the ESA. The USFWS is under a court-ordered deadline of September 30, 2017 to make a decision whether or not to list the Pacific Walrus (as threatened or endangered) under the ESA. Information about this decision will be available at https://www.fws.gov/alaska/fisheries/mmm/walrus/esa.htm.

[2] Ringed seals were ESA-listed as threatened in 2012. On March 11, 2016, the U.S. District Court for the District of Alaska issued a memorandum decision in a lawsuit challenging the listing of ringed seals under the ESA (Alaska Oil and Gas Association, et al. v. National Marine Fisheries Service, et al., Case No. 4:14-cv-00029-RRB). The decision vacated NMFS's listing of the Arctic subspecies of ringed seals as a threatened species. NMFS is appealing that decision. Information about this decision can be found at https://alaskafisheries.noaa.gov/pr/ice-seals.

[3] ADF&G's 2015 Alaska Wildlife Action Plan is for managing fish and wildlife species and their habitats to help prevent listings under the ESA. Appendix B of this plan includes a list of the Distribution of Species of Greatest Conservation Need in Alaska by Bioregion (http://www.adfg.alaska.gov/index.cfm?adfg=species.wapview).

RINGED SEALS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE		pack ice	shorefast ice
SUSCEPTIBILITY		year-round	
HUMAN HARVEST	Jun 15 - Oct 1 (St. Lawrence Is.)	Nov 1 - Dec 10 Jul 1 - Sept 1 (Chukchi Sea) Jun 1 - Sept 1 (Norton Sound)	Oct 1 - Jun 15 (St. Lawrence Is.) Sept 1 - Nov 1 Dec 10 - June 30 (Chukchi Sea) Sept 1 - Jun 1 (Norton Sound)

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			ice-edge
SUSCEPTIBILITY		year-round	
HUMAN HARVEST	May 1 - Sept 1 (Chukchi Sea) (Norton Sound)	Dec 1 - Dec 31 (Norton Sound)	Sept 1 - Jul 1 (Chukchi Sea) Sept 1 - Dec 1 Jan 1 - Jul 1 (Norton Sound) year-round (St. Lawrence Is.)

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

SPOTTED SEALS

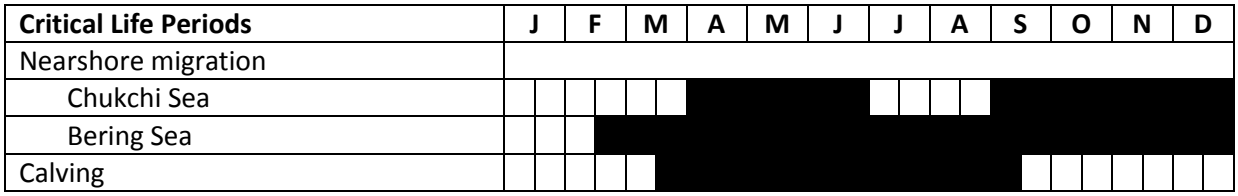
CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE (ON HAULOUTS)[1]	**< 10**	**10 – 100**	**> 100**
SUSCEPTIBILITY		**year-round**	
HUMAN HARVEST			**May 1 – Nov 30 (Chukchi Sea)** **Apr 1 – Dec 1 (Norton Sound)** **Jun 1 – Dec 30 (St. Lawrence Is.)**

[1] Large known concentrations of spotted seals haulout along the south side of St. Lawrence Island from April to December, and at Cape Woolley, Port Clarence, and Cape Espenberg from June to November.

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Coastal haulouts/concentration areas												
Chukchi Sea												
Bering Sea												
St. Lawrence Island												
Pupping												
Molting												

BOWHEAD WHALES

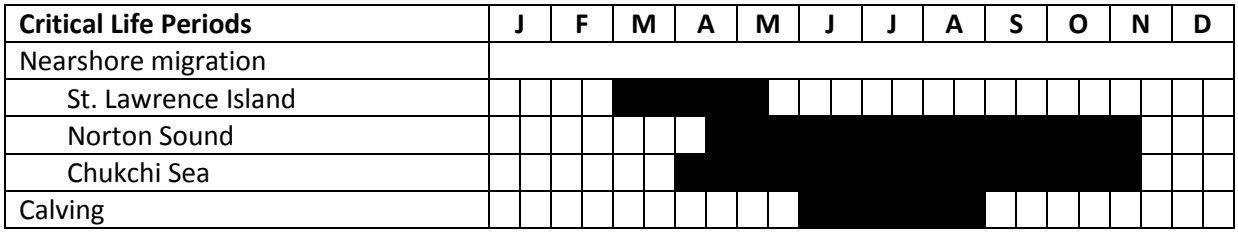
CATEGORY	LOW	MEDIUM	HIGH
SUSCEPTIBILITY	Dec 1 - Mar 20 (Chukchi Sea) Dec 1 - Mar 1	Sept 1 - Nov 30 (Chukchi Sea) Sept 1 - Nov 30 (Bering Sea)	Mar 20 - June 30 (Chukchi Sea) Mar 1 - May 30 (Bering Sea)
HUMAN HARVEST	June 20 - Mar 15 (Chukchi Sea) June 15 - Jan 15 (Bering Sea)	Mar 15 - Apr 15; June 10 - 20 (Chukchi Sea)	Apr 15 - Jun 10 (Chukchi Sea) Jan 15 - Jun 15 (Bering Sea) Apr 1 - May 30 (St. Lawrence Is.)



BELUGA WHALES

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE[2]	< 10	10 - 50	> 50
SUSCEPTIBILITY	Nov 15 – Mar 31		Apr 1 - Nov 15
HUMAN HARVEST		Apr 1 - May 30; Aug 1 - Aug 30 (Chukchi Sea)	Jun 1 - Jul 30 (Chukchi Sea) Apr 15 - Nov 15 (Norton Sound) Apr 1 - May 30 (St. Lawrence Is.)

[2] Concentrations of beluga whales occur in Kotzebue Sound (Sisualik Spit and Eschscholtz Bay) from mid-June to mid-August. Golovin Bay (June to November) and Norton Bay (May and June) are areas where beluga whales are particularly abundant.



GRAY WHALES

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Jun 1 - Jul 31; Oct 1 - Oct 31 (Chukchi Sea) Dec 1 - Apr 30 (Bering Sea)	Aug 1 - Sept 30 (Chukchi Sea) May 1 - Nov 30 (Bering Sea)	
SUSCEPTIBILITY		When Present	
HUMAN HARVEST			Apr 15 - Nov 10 (St. Lawrence Is.)

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Nearshore migration and feeding												
Chukchi Sea												
Bering Sea												

PACIFIC WALRUS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	open water (no ice present)	Near-shore waters	Pack ice edge, leads and polynyas; haulouts
SUSCEPTIBILITY	year-round	year-round	year-round
HUMAN HARVEST	Dec – Apr (Chukchi Sea) Nov (Norton Sound) July - Oct (St. Lawrence Is.)	May, Oct –Nov (Chukchi Sea) Aug (Norton Sound) Nov – Mar (St. Lawrence Is.)	June – Sept (Chukchi Sea) May - June, Sept – Oct (Norton Sound) Mar – June (St. Lawrence Is.)

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Present on haulouts or in nearshore waters												
St. Lawrence Island												
Norton Sound												

BROWN BEARS/BLACK BEARS

CATEGORY	LOW	MEDIUM	HIGH
SUSCEPTIBILITY	Nov 1 – Oct 1	Oct 30 – Jun 30	Jul 1 – Sept 30
HUMAN HARVEST		Aug 1 – Oct 31 Apr 15 – May 31	

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Denning												
Concentration associated with:												
Mammalian food sources												
Salmon streams												

POLAR BEARS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Open water (with no ice present), inland areas	Shoreline and shore-fast ice	Pack ice edge, shear zone, leads and polynyas, barrier islands
SUSCEPTIBILITY	year-round	fall, winter, spring	year-round
HUMAN HARVEST	July - Oct (Chukchi Sea) Aug - Sept (Norton Sound) Aug - Oct (St. Lawrence Is.)	June (Chukchi Sea) July, Oct (Norton Sound) June - July, Nov (St. Lawrence Is.)	Nov - May (Chukchi Sea) Nov - Jun (Norton Sound) Dec - May (St. Lawrence Is.)

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

CARIBOU

CATEGORY	LOW	MEDIUM	HIGH
SUSCEPTIBILITY	Nov 1 - May 15		May 15 - Oct 31
HUMAN HARVEST		Year round	Aug 15 - Sep 30

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
ABUNDANCE	One population is found northwest of the Kobuk River drainage and the second larger population has expanded over much of the Seward Peninsula.		
SUSCEPTIBILITY	Year-round		
HUMAN HARVEST	Aug 1 - Mar 15		

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

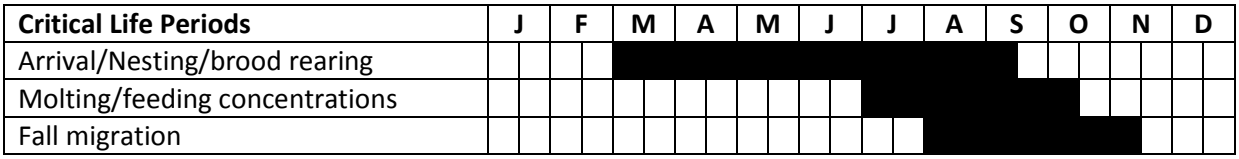
WATERFOWL (including SEADUCKS) AND SHOREBIRDS

CATEGORY	LOW	MEDIUM	HIGH
SUSCEPTIBILITY[4]	Nov 1 - Apr 1	Apr 1 - May 1	May 15 – Nov 1 (Chukchi Sea) (Norton Sound) Jan 1 – Dec 31 (St. Lawrence Is.)
HUMAN HARVEST[5]		Nov 1 – Apr 1	Apr 15 – June 14; July 16 – Aug 31 (Stebbins/St. Michael Area) Apr 2 – June 14; July 16 – Aug 31 (Bering Strait/Norton Sound Region) Apr 2 – June 14; July 16 – Aug 31 (Northwest Arctic Region - Kotzebue Sound/Buckland[5,6])

[4] Wintering concentrations of waterfowl occur along the south shores of St. Lawrence Island and some sea ducks may winter in leads in the ice.

[5] Waterfowl eggs are harvested from May 20 through June 14.

[6] Molting and non-nesting waterfowl may be harvested in the Northwest Arctic Region from July 1 through July 15.

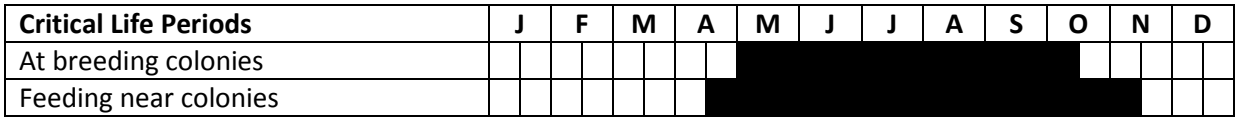


SEABIRDS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 10	10 - 100	> 100
SUSCEPTIBILITY[7]	Nov 1 - Jan 31	Feb 1 – Mar 31	Apr 1 - Nov 1
SPECIES DIVERSITY	1 – 3	4 - 6	> 6
HUMAN HARVEST[8]		Nov 1 – Apr 1	Apr 15 – June 14; July 16 –Aug 31 (Stebbins/St. Michael Area) Apr 2 – July 19; Aug 21 – Aug 31 (Bering Strait/Norton Sound Region) Apr 2 – June 14; July 16 – Aug 31 (Northwest Arctic Region - Kotzebue Sound/Buckland)

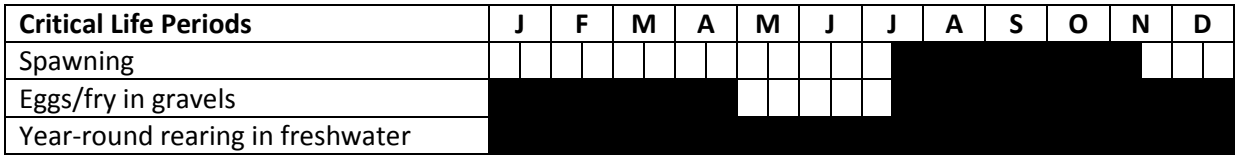
[7] Some seabirds may winter in leads in the ice.

[8] Seabird eggs are harvested from May 20 through July 12.



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

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	All anadromous fish streams are important, thus of high priority.		
SUSCEPTIBILITY	Jun 15 – Jul 15		Jul 15 - Jun 15
HUMAN HARVEST			Jun 15 - Oct 30 (Kotzebue Sound) Jun 1 - Oct 30 (Norton Sound)

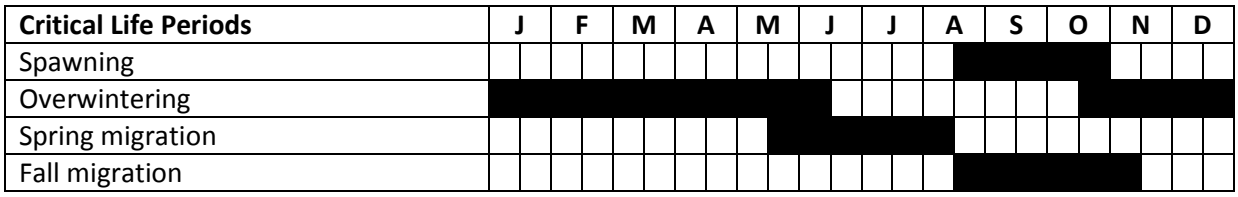


DOLLY VARDEN

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	All anadromous fish streams are important, thus of high priority.		
SUSCEPTIBILITY		Jun 1 - Sept 15	Sept 15 - Jun 1
HUMAN HARVEST	Nov 15 - Feb 1		Feb 1 - Nov 15

ANADROMOUS WHITEFISH

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Limited data is currently available on fish populations within northwest area streams.		
SUSCEPTIBILITY		June 1 - Sept 15	Sept 15 - June 1
HUMAN HARVEST			Aug 1 - Nov 15



HERRING

CATEGORY	LOW	MEDIUM	HIGH
SUSCEPTIBILITY		Oct 15 - May 20[9]	May 20 - Aug 30 (Chukchi Sea) May 1 - Aug 30 (Norton Sound)
HUMAN HARVEST		July 1 - Sept 30	May 1 - June 30

[9] Overwintering by some herring occurs in brackish lagoons, estuaries and bays of the Northwest area.

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 is currently available on fish populations in northwest area streams.		
SUSCEPTIBILITY		Jun 1 - Oct 1	Oct 1 - Jun 1
HUMAN HARVEST	Dec 1 - May 30	June 1 - Dec 1	

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 National Monuments Wildlife Refuges	Wild & Scenic Rivers Wilderness Areas National Natural Landmarks
STATE LANDS	Public Land10	State Parks	Critical Habitats & Refuges

[10] 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 village sites) Sites adjacent to shorelines	National Historical Landmarks National Natural Landmarks Burial sites National Register eligible village sites Intertidal sites

HUMAN USE AREAS

CATEGORY	LOW	MEDIUM	HIGH
NON-CONSUMPTIVE USES	Chicago Creek, Sinuk River,	Lost River Area, Salmon Lake	Pilgrim Hot Springs, Serpentine Hot Springs, Golovnin Bay/Lagoon, Nome River, Sinuk River
UNIQUE FISHING SITES	Lakes and rivers not directly connected to shoreline	Agiagpuk River, Imuruk Basin, Nuluk River, Pignuk River	St.Michael Bay, Unalakleet River Drainage, Island Point to Beeson Slough, Kwiniuk, Golovnin Bay, Stebbins Pass, mouth of the Nome and Snake Rivers
SEABIRD EGG HARVESTING SITES			Bluff, cliff sites along St. Lawrence Island, Stobie Rocks, Stuart Island, Besboro Island, Cape Denbigh, Carolyn Island, Bluff, Sledge Island, Safety Sound, Sinuk River Delta, Big and Little Diomede Islands,King Island, and the Cape Riley – Port Clarence and Brevig Mission vicinity, Cape Espenberg and Buckland wetlands, and Cape Deceit, Puffin Island, and the Noatak River Delta in Kotzebue Sound

SUBSISTENCE HARVEST AREAS

Refer to Part 4: Section D.4 for information regarding current subsistence harvest areas.

v. SENSITIVE AREAS: PART FOUR – BIOLOGICAL 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. Non-government-generated references that have had agency input and review are incorporated by reference.

In January 2010, Audubon Alaska, in cooperation with Oceana, published the *Arctic Marine Synthesis Atlas of the Chukchi and Beaufort Seas*. The atlas has a discussion of the synthesis of various data sources in to summary Geographic Information System (GIS) maps, and discusses data gaps. Below is a list of maps in the atlas. The atlas may be found at http://ak.audubon.org/arctic-marine-synthesis-atlas-chukchi-and-beaufort-seas.

PHYSICAL OCEANOGRAPHY
1. Project Area
2. Bathymetry
3. Ecoregions
4. Ocean Circulation
5. Sea Ice Dynamics
6. Sea Floor Substrate
7. Sea Surface Temperature
8. Observed Climate Change

WATER COLUMN AND BENTHIC LIFE
9. Chlorophyll-a
10. Net Primary Productivity
11. Zooplankton
12. Benthic Biomass
13. Opilio Crab

FISH
Oceanodromous
14. Capelin
15. Pacific Herring
16. Saffron Cod
Anadromous
17. Pink Salmon
18. Chum Salmon

BIRDS
Audubon Alaska WatchList
19. Yellow-billed Loon
20. Red-throated Loon
21. Spectacled Eider
22. Steller's Eider
23. King Eider
24. Common Eider
25. Long-tailed Duck
26. Ivory Gull
27. Kittlitz's Murrelet
Other Species
28. Northern Fulmar
29. Short-tailed Shearwater
Concentration Areas
30. Seabird Colonies
31. Important Bird Areas

MAMMALS
Terrestrial/Marine
32. Polar Bear
33. Arctic Fox
Pinnepeds
34. Pacific Walrus
35. Ribbon Seal
36. Spotted Seal
37. Ringed Seal
38. Bearded Seal
Cetaceans
39. Bowhead Whale
40. Beluga Whale
41. Gray Whale

PEOPLE
42. Energy Development and Protected Areas
43. Human Impact
44. Predicted Climate Change

In September 2011, Audubon Alaska published the *Place-based Summary of the Arctic Marine Synthesis Atlas of the Chukchi and Beaufort Seas*. This document provides two-page fact sheets summarizing synthesis information for the following places within the subarea and may be located at http://ak.audubon.org/sites/default/files/documents/place-based_summary_of_the_arctic_marine_synthesis_final.pdf.

- St. Lawrence Island--Bering Sea US, Russia
- Chirikov Basin--Bering Sea US, Russia
- Norton Sound--Bering Sea US
- Southeastern Chukotka Peninsula--Bering Sea Russia*
- Bering Strait--Bering Sea, Chukchi Sea US, Russia
- Diomede Islands--Bering Sea, Chukchi Sea US, Russia
- Seward Peninsula--Bering Sea, Chukchi Sea US
- Kotzebue Sound--Chukchi Sea US
- Hope Basin--Chukchi Sea US, Russia
- Northern Chukotka Peninsula--Chukchi Sea Russia*
- Wrangel & Herald Islands--Chukchi Sea Russia*
- Herald Shoal--Chukchi Sea Russia, US*
- Cape Thompson & Cape Lisburne Chukchi Sea US

* pending

Several interactive mappers or reports are available with information on biological and human use resources that can be accessed for information during a spill response:

- Arctic ERMA – developed by NOAA and the University of New Hampshire with the EPA, U.S. Coast Guard, and DOI
  - http://response.restoration.noaa.gov/maps-and-spatial-data/environmental-response-management-application-erma/arctic-erma.html
- Prevention and Emergency Response – created by the Alaska Department of Environmental Conservation's (ADEC) Prevention, Preparedness, and Response Program
  - http://www.arcgis.com/home/item.html?id=ed7027b903bc4c79a4e35461cdf1d6b2
- Exchange for Local Observations and Knowledge of the Arctic (ELOKA) – a considerable amount of information that has been compiled in one place, including topics such as wildlife, habitat use, environmental changes, sea ice, and subsistence use
  - https://eloka-arctic.org/dataproducts
- Northwest Arctic Borough – interactive mappers for Subsistence and Important Ecological Areas
  - https://www.nwabor.org/subsistence-mapping-program/
- Bering Strait Response Teaching Tool – A web mapping portal developed by Defenders of Wildlife and Axiom Data Science that aggregates data from ocean waters in Norton Sound, the Bering Strait, and Kotzebue Sound
  - http://bsrtt.defenders.org/

B. HABITAT TYPES

Shoreline habitats have been defined and ranked according to Environmental Sensitivity Index (ESI) standards produced by the NOAA in *Environmental Sensitivity Index Guidelines* (October 1997).

Seasonal ESI maps in poster and atlas formats have been produced for the subarea. These maps are available on the internet at: http://www.asgdc.state.ak.us/maps/cplans/subareas.html. Updated ESI information can also be found on the internet at http://response.restoration.noaa.gov/maps-and-spatial-data/environmental-sensitivity-index-esi-maps.html.

1. *Benthic Habitats*

Oil vulnerability is lower in benthic areas than in the intertidal zone since contamination by floating slicks is less likely. However, the fate of spilled oil has been found to directly affect the water column and benthos. The vertical transport of marine oil snow (flocculation, sedimentation, accumulation) of surface spills could affect the benthos through contamination of benthic habitats. Benthic habitats include submerged aquatic vegetation beds, large beds of kelp, worm reefs, coral reefs, etc. 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.

2. *Shoreline Habitats*

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

ESI #1 – 1A. Exposed Rocky Shores. 1B. Exposed, Solid Man-Made Structures. Exposed impermeable vertical substrates: steep intertidal zone; exposure to high wave energy or tidal currents with strong wave reflection patterns; attached organisms are hardy and accustomed to strong hydraulic impacts.

ESI #2 – 2A. Exposed Wave-Cut Platforms in Bedrock, Mud, or Clay. Intertidal zone with flat rock bench; platform may consist of flat lying bedrock or eroding muddy marsh substrate. Regular exposure to high wave energy, with strong wave reflection. Attached organisms are hardy and used to strong hydraulic impacts. May be backed by steep scarps or low bluffs with sand- to boulder-sized sediments at the base. Substrate is impermeable with no potential for subsurface penetration, except in ephemeral beach sediments.

2B. Exposed Scarps and Steep Slopes in Clay. Regular exposure to high wave energy, with moderate to weak wave reflection. Scarp heights vary from 1 to 3 feet and usually consist of heavily rooted, loamy soil with a highly irregular, moderately permeable surface; may be accompanied by a narrow beach of fine to medium-grained sand.

ESI #3 – 3A. Fine- to Medium-Grained Sand Beaches. 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.

3B. Scarps and Steep Slopes in Sand. Associated with beaches where erosion is episodic; tops of scarps and slopes may be vegetated with grasses, scrub-shrub or trees which are undercut by the retreating shoreline. Typically associated with undeveloped, seasonally open inlets and cut banks of meandering rivers and tidal creeks.

3C. Tundra cliffs. Erosional features with tundra vegetation overlying peat and exposed ground ice or permafrost. Commonly a narrow beach of fine sand is at the base of 1 to 10 meter high cliffs. Fragmented and irregular blocks of peat and tundra vegetation accumulate at the base as it erodes. Large numbers of migratory birds can use these shorelines during summer months.

ESI #4 – Coarse-Grained Sand Beaches. Highly permeable 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. Beach fauna can vary in type and density; mobile surface, burrowing, and interstitial forms are typical.

ESI #5 – Mixed Sand and Gravel Beaches. Moderately sloping beach (8-15 degrees) composed of a mixture of sand and at least 20 percent gravel. Soft sediments with low trafficability. Sediment mobility is very high during storms, but considerably less than sand beaches during normal conditions. Substrate has medium-to-high permeability with special variation in the distribution of grain sizes from pure sand, pebbles, or cobbles, in addition to mixed zones. Beach fauna can vary in type and density; mobile surface, burrowing, and interstitial forms are typical.

ESI #6 – 6A. Gravel Beaches. Most permeable of all beach sediment types; sediments larger than 2 mm (granules, pebbles, cobbles, and boulders). Lowest trafficability of all beach types. Rapid erosion and/or burial of shallow oil possible during storms; sediment replenishment rates are the lowest of all beach types. Slope is intermediate to steep (10-20 degrees), with multiple, wave-built berms forming the upper beach. Attached animals and plants are usually restricted to the lowest parts of the beach, where sediments are less mobile.
6B. Riprap. Cobble- to boulder-sized rock; used for shoreline protection and inlet stabilization. Attached mid- and low-intertidal zone biota may be plentiful and varied.

ESI #7 – Exposed Tidal Flats. Flat intertidal areas, composed primarily of sand and mud; sand indicates strong tidal or wind driven currents and waves. Sediments usually remain water-saturated and are generally too soft for vehicular traffic. Usually associated with other shoreline types on the landward side of the flat. Biological utilization can be very high, with large numbers of infauna, and heavy use by birds for roosting and foraging.

ESI #8 – 8A. Sheltered Rocky Shores and Sheltered Scarps in Mud and Clay. Bedrock shores of variable slope (from vertical cliffs to wide, rocky ledges) that are sheltered from exposure to most wave and tidal energy or sheltered scarps in densely rooted and organic muds. Biota may be plentiful and varied.

8B. Sheltered, Solid Man-Made Structures. Revetments, seawalls, piers, and docks constructed of impermeable materials such as concrete and wood; inside harbors and bays sheltered from direct exposure to waves. Biota may be plentiful and varied.

8C. Sheltered Riprap. Cobble-to boulder-sized rock fragments; sheltered from wave energy. Biota may be plentiful and varied.

8E. Peat Shorelines. Exposed, peat scarps, eroded peat, and slurries of rafted peats; scarps occur only where the peat is frozen. Typically erosional coastlines, resulting from wave action, ice scour, and melting of the frozen peat. Intertidal zone is very complex, with slumped peat blocks, fine- to medium-grained sands, and peat slurries intermixed. Peat slurries are found at the base or eroding peat scarps and in depositional areas; relatively permanent features which may move and vary in thickness due to shoreline transport. Not particularly important as biological habitat.

ESI #9 – 9A. Sheltered Tidal Flats. Primarily mud with minor amounts of sand and shell; sediments are very soft and cannot support even light foot traffic. Present in calm-water habitats, sheltered from major wave activity. There can be large concentrations of invertebrates on and in the sediments.
9B. Sheltered, Vegetated Low Banks. Banks of stream channels, canals, and other waterways; wave energy is very low, although there may be some tidal and/or riverine currents. Calm-water habitats that are typically muddy, soft and highly vegetated; usually found on the shores of lagoons and coastal ponds, sometimes in association with peat shorelines.

ESI #10 – 10A. Salt- and Brackish-Water Marshes. Intertidal wetlands of emergent, herbaceous vegetation. Substrate sediments range from fine sands to silts and organically rich muds.

10D. Scrub-shrub wetlands. Roots and trunks of woody vegetation may be supratidal, occasionally inundated during storm surge, spring tides, and freshwater flooding. Substrate may be sand, mud, or peat. Wrack accumulations tend to be heavy.

10E. Inundated low-lying tundra. Very low-lying arctic shorelines recently flooded by the sea due to subsidence; also areas not normally in the intertidal zone but can be inundated by salt water during spring tides or wind-induced surges. Complex, convoluted shorelines of tundra, vegetated flats, peat mats, brackish lagoons, and small streams. May have high ice content; mostly peat with little mineral or clastic sediments. Living plant community; provides important feeding areas for migrating birds in summer.

ESI HABITAT RANKING

ESI NO.	ESTUARINE	LACUSTRINE	RIVERINE (large rivers)
1A	Exposed rocky cliffs	Exposed rocky cliffs	Exposed rocky banks
1B	Exposed sea walls	Exposed sea walls	Exposed sea walls
2A	Exposed wave-cut platforms in bedrock, mud or clay	Shelving bedrock shores	Rocky shoals; bedrock ledges
2B	Exposed scarps and steep slopes in clay		
3A	Fine- to medium-grained sand beaches	Eroding scarps in unconsolidated sediments	Exposed, eroding banks in unconsolidated sediments
3B	Scarps and steep slopes in sand		
3C	Tundra cliffs		
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
6A	Gravel beaches	Gravel beaches	Gravel bars and gently sloping banks
6B	Riprap	Riprap	Riprap
7	Exposed tidal flats	Exposed flats	Not present

ESI NO.	ESTUARINE	LACUSTRINE	RIVERINE (large rivers)
8A	Sheltered rocky shores and sheltered scarps in mud and clay	Sheltered scarps in bedrock	Vegetated, steeply sloping bluffs
8B	Sheltered sea walls	Sheltered sea walls	Sheltered sea walls
8C	Sheltered riprap		
8E	Peat shorelines		
9A	Sheltered tidal flats		
9B	Sheltered, vegetated low banks	Sheltered vegetated low banks	Vegetated low banks
10A	Salt- and brackish-water marshes		
10B		Freshwater marshes	Freshwater marshes
10D	Scrub-shrub wetlands		
10E	Inundated low-lying tundra		

Source: Sensitivity of Coastal Environments and Wildlife to Spilled Oil: Northwest Arctic, Alaska: HYDRO (Hydrography Lines and Polygons). August 2002. National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division, Seattle, Washington.

Alaska ShoreZone Coastal Habitat Mapping. ShoreZone is a mapping and classification system that specializes in the collection and interpretation of low-altitude aerial imagery of the coastal environment. Imagery is collected during summer low tides and is georeferenced. The ShoreZone data is set in an integrated, searchable inventory of geomorphic and biological features of the intertidal and shallow subtidal areas, which can be used as a tool for science, education, management, and environmental hazard planning and response.

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 (Alaska base, Oceans, topographic, nautical, and aerial). Also, habitat maps can be generated online for attributes, such as Oil Residency Index, ESI, and sensitive biota (e.g., eelgrass). The shoreline classifications are described in the Alaska ShoreZone Protocols, and they also incorporate ESI categories. Habitat classifications for ShoreZone are based on survey data and imagery taken during the lowest tides of the year and only from zero-tide level and lower; the mapped data includes supratidal, intertidal, and shallow subtidal.

The NOAA NMFS, Alaska Regional Office hosts the Alaska ShoreZone web portal at:

http://alaskafisheries.noaa.gov/habitat/shorezone (all ShoreZone information and tutorials)
http://alaskafisheries.noaa.gov/mapping/szflex/ (access to imagery and mapping data).

3. *Upland Habitats*

At this time, no uplands or wetlands classifications directly related to sensitivity to oil spills have been identified; however, several mappers with uplands or wetlands information are available that may be useful during a spill response:

- A general wetlands classification has been developed by the USFWS National Wetlands Inventory in Anchorage. Considerable mapping of wetlands has been completed. A Wetlands Mapper and additional information is available at http://www.fws.gov/wetlands.
- The Alaska Natural Heritage Program houses a multitude of maps, including a Rare Plant Occurrences Mapper, Vegetation Maps, Rare Ecosystems and Plant Associations, and many others. Several maps also contain links to downloadable GIS shapefiles. Maps and additional information can be accessed at http://aknhp.uaa.alaska.edu/.
- The Alaska Vegetation Classification is a U.S. Forest Service General Technical Report (PNW-GTR-286) widely used for classifying Alaskan vegetation. It is available at http://www.fs.fed.us/pnw/publications/gtrs-prior-1997.shtml.
- The Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes and its associated Atlas specifies waterbodies which support anadromous species to the extent known. It is updated annually and an interactive mapper is available at https://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=main.interactive.

C. BIOLOGICAL RESOURCES

1. *Threatened and Endangered Species*

Federally-listed threatened and endangered species are protected under the Endangered Species Act of 1973 (ESA) (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 OSC will need to immediately consult with the USFWS and/or the NMFS (as appropriate) regarding the proposed strategies, in accordance with the ESA Memorandum of Understanding (see the *Unified Plan*, Annex K). The following species[e] and critical habitat occur in this subarea:

Endangered Species Act of 1973 Protected Species and Critical Habitat			
Protected Species			
Listed species	**Stock**	**Latin Name**	**Status**
Bowhead whale[1]	Western Arctic	*Balaena mysticetus*	Endangered
Fin whale[1]		*Balaenoptera physalus*	Endangered
Blue whale[1]		*Balaenoptera musculus*	Endangered
Humpback whale[1]	Western North Pacific DPS	*Megaptera novaeangliae*	Endangered
Humpback whale[1]	Mexico DPS	*Megaptera novaeangliae*	Threatened
North Pacific right whale[1]		*Eubalaena glacialis*	Endangered
Steller sea lion[1]	Western DPS	*Eumetopias jubatus*	Endangered
Bearded seal	Beringia and Okhotsk DPS	*Erignathus barbatus*	Threatened
Polar bear[2]		*Ursus maritimus*	Threatened
Spectacled eider[2]		*Somateria fischeri*	Threatened
Steller's eider[2]	Alaska breeding	*Polysticta stelleri*	Threatened
Short-tailed albatross[2]		*Diomedea albatrus*	Endangered
Eskimo curlew[2]		*Numenius borealis*	Endangered
Pacific walrus[2]		*Odobenus rosmarus divergens*	Candidate
Designated Critical Habitat			
Species Group	**General Reference Area**		
Spectacled eider[2]	Part of Norton Sound and south of St. Lawrence island are designated as critical habitat (see Figures D-4 and D-5)		
Polar bear[2]	Selected coastal areas are designated as critical habitat (see Figures D-6 and D-7)		
Steller sea lion[1]	Two haulouts are present on St. Lawrence Island and are designated as critical habitat (see Figure D-8)		

[1] Managed by the NMFS
[2] Managed by the USFWS

The Pacific walrus is currently listed as a candidate species under the ESA. Candidates are generally species for which there is enough information on their biological status and threats to propose them as endangered or threatened, but for which development of a proposed listing regulation is precluded by

[e] 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."

other higher priority listing activities. The USFWS is under a court-ordered deadline of September 30, 2017, to make a decision whether or not to list the Pacific walrus (as threatened or endangered) under the ESA. Information about this decision will be available at https://www.fws.gov/alaska/fisheries/mmm/walrus/esa.htm.

Maps of critical habitat for ESA-listed species in this subarea are found in Figures D-4 to D-7.

Marine Mammal Protection Act

All marine mammals, whether or not they are listed under the Endangered Species Act, are protected by the Marine Mammal Protection Act of 1972 (MMPA), as amended. Authority under the MMPA is shared between the NMFS, which has management authority for all cetaceans and most pinnipeds, and the USFWS, which manages sea otters, Pacific walruses, and polar bears in Alaskan waters. The taking (including harassment) of all marine mammals is generally prohibited in the United States under the MMPA, although the MMPA provides for certain exceptions. While each agency has permitting programs and structures to authorize ongoing or predictable activities, response to an emergency such as an oil spill may require an authorization framework that necessitates response actions, often jointly, in an expedited manner. Thus, any spill response activities that could affect marine mammals should be coordinated with the appropriate Service to ensure compliance with the MMPA.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to federal regulations. Most avian species in Alaska are protected under the MBTA. Spill response activities that could affect birds should be coordinated with the USFWS to ensure compliance with the MBTA.

Bald and Golden Eagle Protection Act

Although Alaskan bald and golden eagles are not on the endangered species list, they are fully protected (including their nests and nest trees) under the Bald and Golden Eagle Protection Act of 1940 (BGEPA) and the MBTA. Under BGEPA, prohibited take is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." Thus, spill response activities that could affect eagles, their nests, or nest trees should be coordinated with the USFWS to ensure compliance with both the BGEPA and MBTA.

For updated information on the internet:

USFWS Regional Threatened and Endangered Species website:
http://alaska.fws.gov/fisheries/endangered/index.htm

NOAA Fisheries Endangered and Threatened Marine Species under NMFS' Jurisdiction website:
https://alaskafisheries.noaa.gov/pr/esa-species-list

For additional detailed information about marine mammals under NMFS's jurisdiction and NMFS's oil spill response strategy for this region, please see the NMFS Arctic Marine Mammal Disaster Response Guidelines. This document is available at the NMFS Alaska Marine Mammal Stranding Network website: https://alaskafisheries.noaa.gov/pr/strandings.

ADF&G Threatened and Endangered Species website:
http://www.wildlife.alaska.gov/index.cfm?adfg=endangered.main

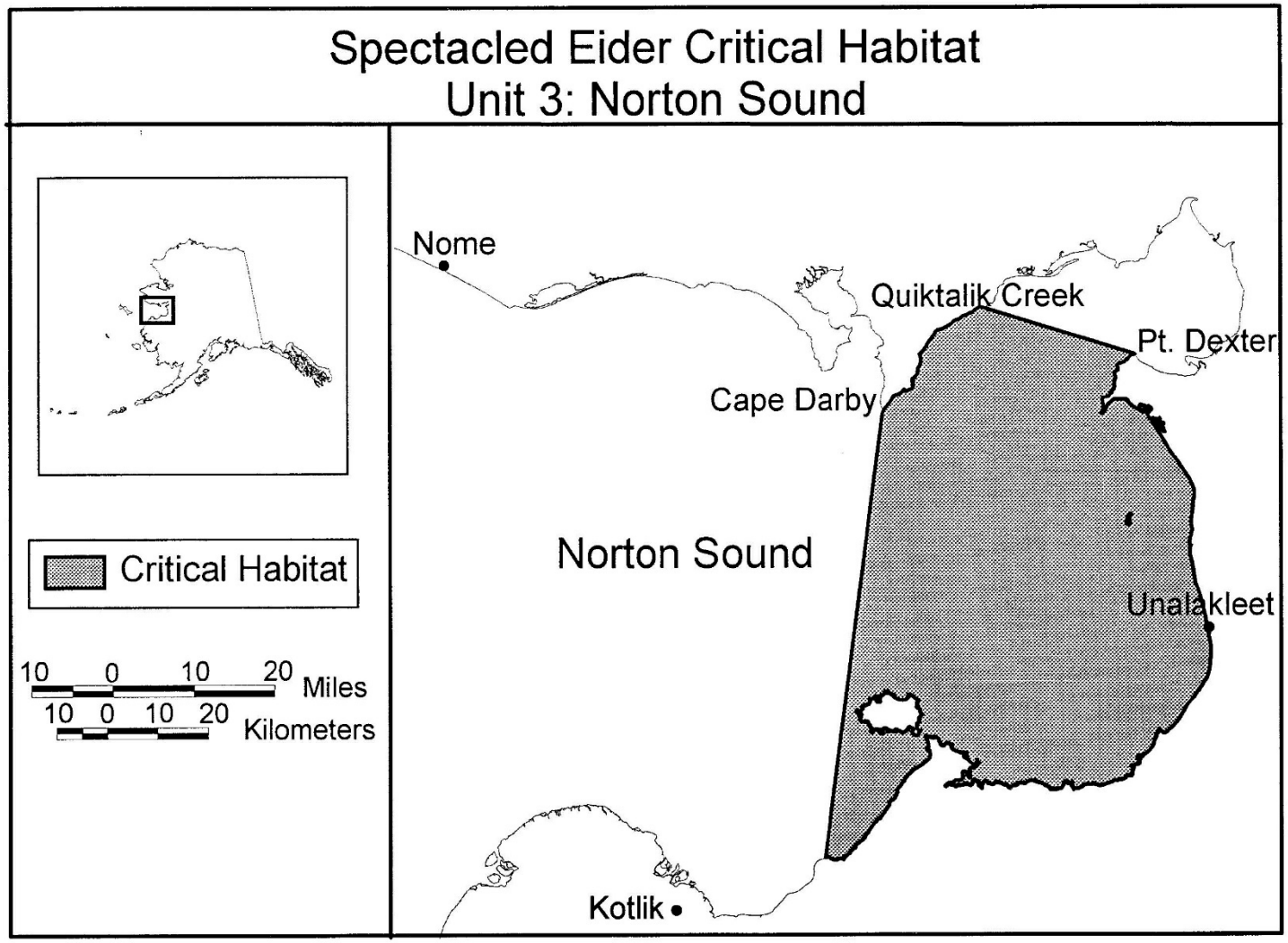


Figure D-4. Spectacled eider critical habitat, Unit 3 Norton Sound.

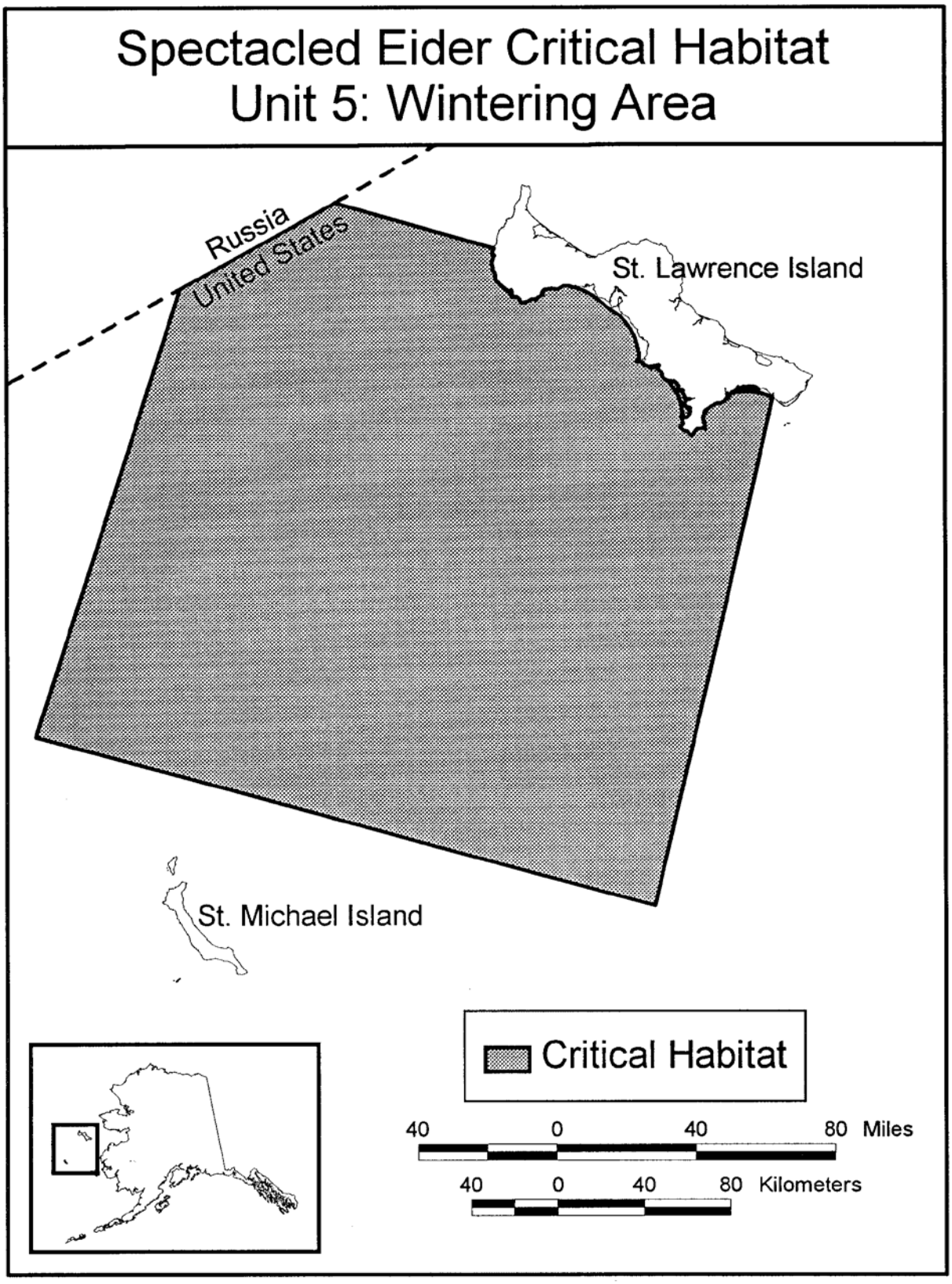


Figure D-5. Spectacled eider critical habitat, Unit 5 wintering area.

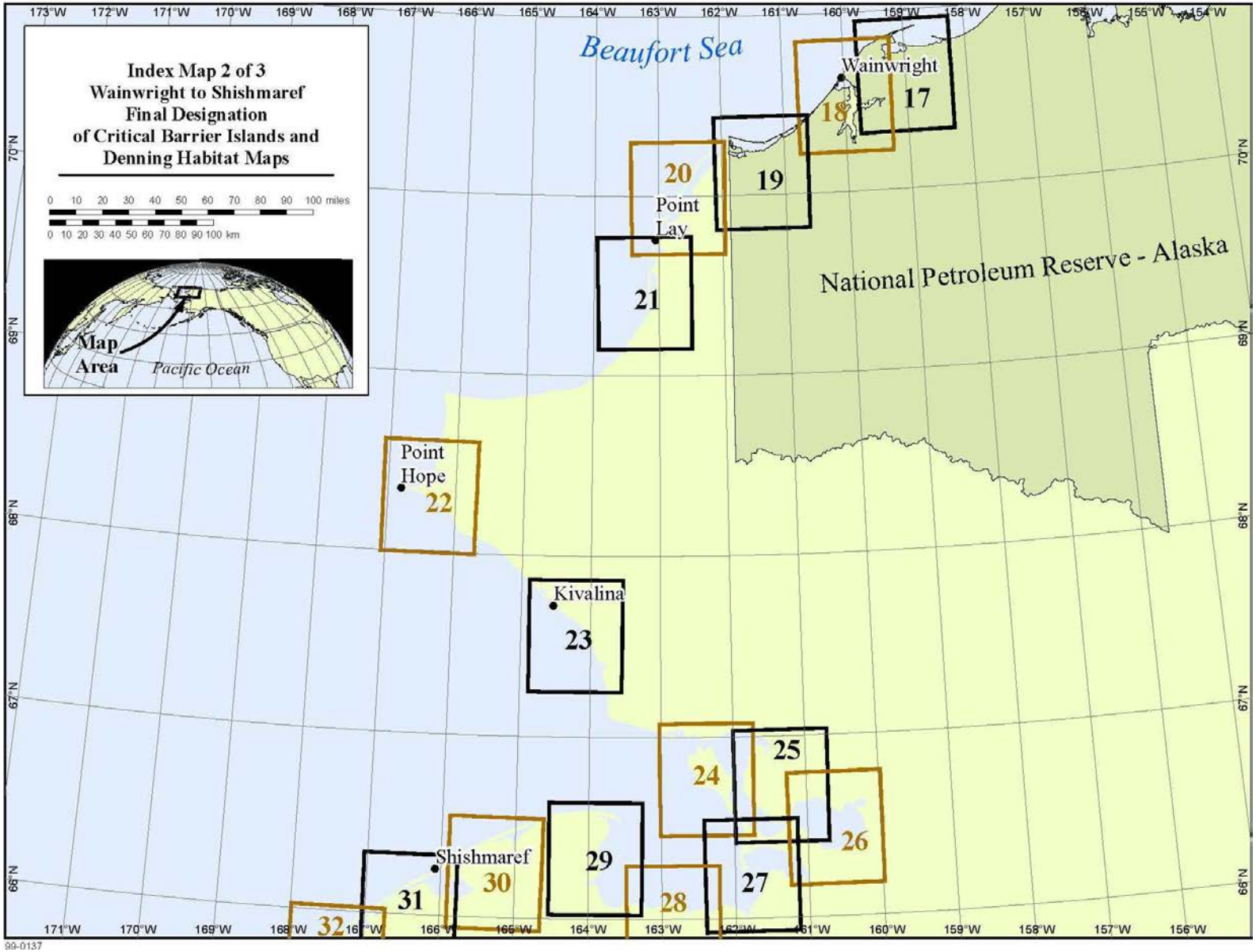


Figure D-6. Polar bear critical habitat index map 2 of 3. Detailed maps of the above designated critical habitat for polar bears can be found at http://alaska.fws.gov/fisheries/mmm/polarbear/maps_final/index_2of3.pdf.

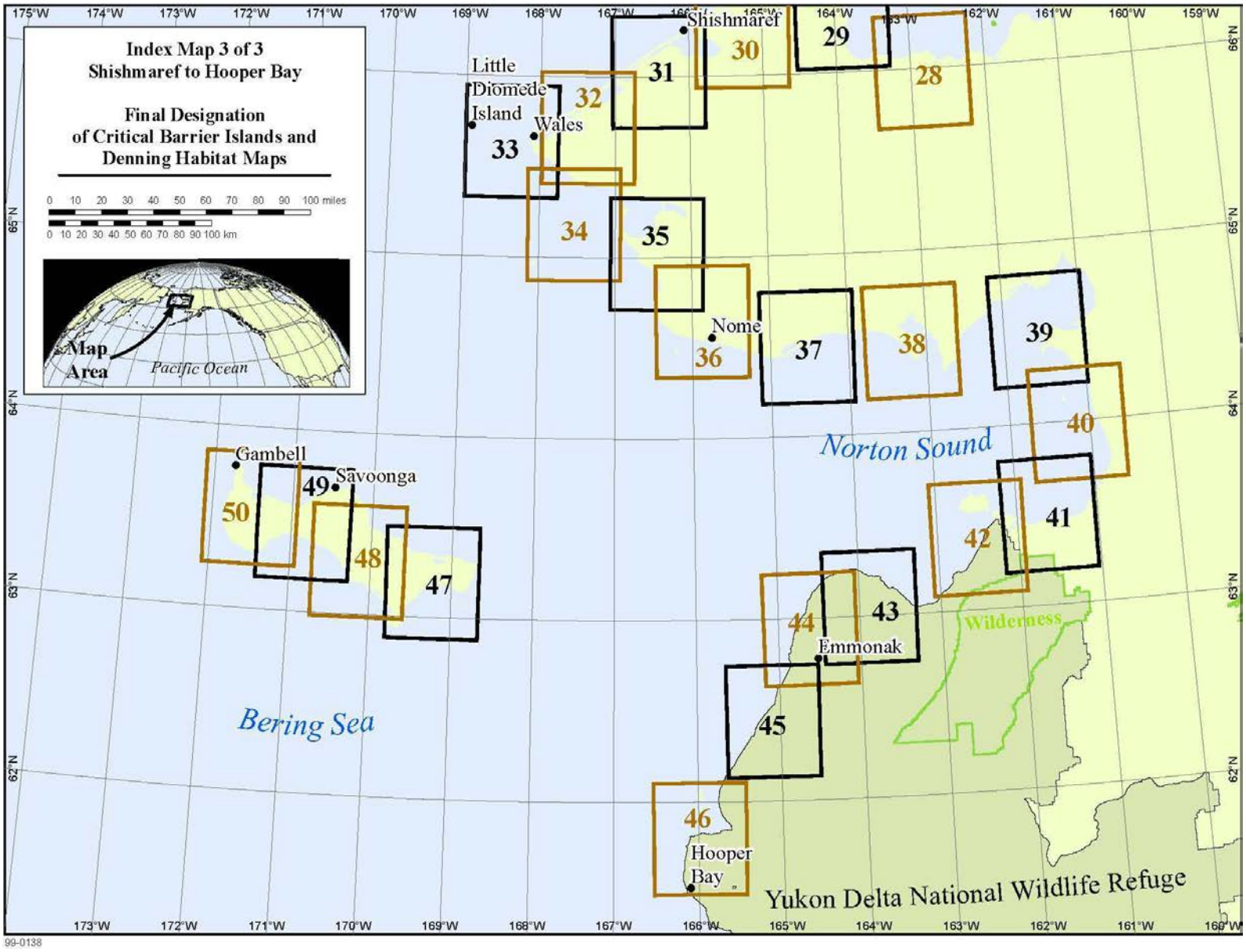


Figure D-7. Polar bear critical habitat index map 3 of 3. Detailed maps of the above designated critical habitat for polar bears can be found at http://alaska.fws.gov/fisheries/mmm/polarbear/maps_final/index_3of3.pdf**.**

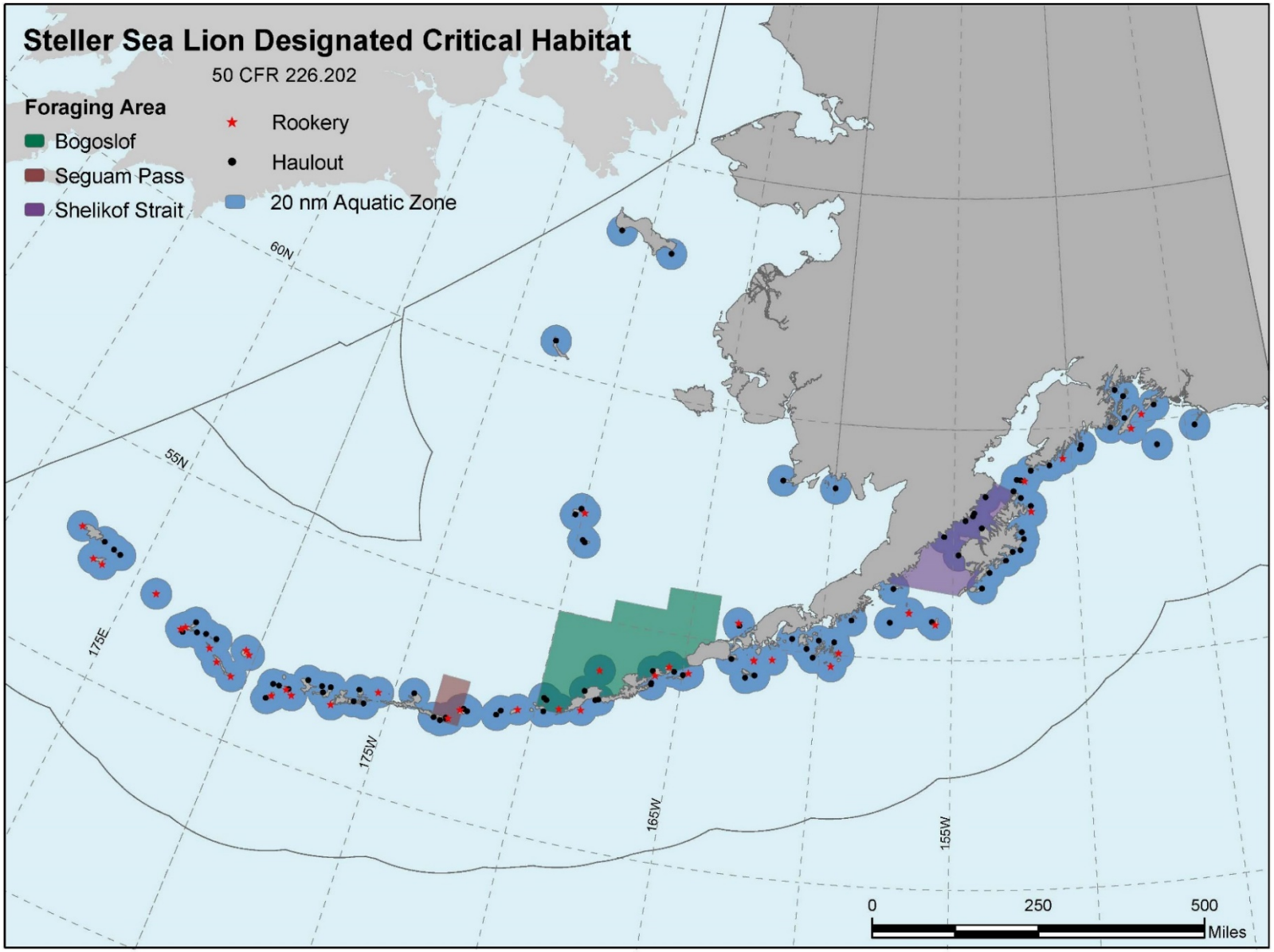


Figure D-8. Steller sea lion designated critical habitat map for Western and Southcentral Alaska.

2. *Fish and Wildlife*

(a) ESSENTIAL FISH HABITAT (EFH)

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSA) introduced new provisions concerning the identification and conservation of Essential Fish Habitat (EFH). The MSA, as amended through January 17, 2007, defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The NMFS and regional Fishery Management Councils (Councils) have described and identified EFH in fishery management plans (FMPs), and, to the extent practicable, minimized the adverse effects of fishing and non-fishing activities to encourage the conservation and enhancement of EFH.

Federal agencies that authorize, fund, or undertake actions that may adversely affect EFH must consult with NMFS, and NMFS must provide conservation recommendations to federal and state agencies regarding actions that would adversely affect EFH. Most of the uncertainty surrounding the level of protection needed for EFH concerns the effects of fishing activities and non-fishing activities on sea floor habitats. Substantial differences of opinion exist as to the extent and significance of habitat contamination in EFH, outside of well-studied areas like surface waters and coastal zones, as described in Part 4b of this document. However, EFH includes the entire water column and the substrate of the benthos.

The fate of spilled oil has been found to directly affect the water column and benthos; thus, the acute and chronic toxic effects to EFH are a real concern. In short, the vertical transport of marine oil snow (flocculation, sedimentation, accumulation) of surface spills and well head spills could significantly affect EFH through the long-term contamination of benthic habitats. The protracted exposure of eggs, embryos, and larvae to, and metabolism of, toxic and carcinogenic petroleum hydrocarbons can adversely affect ecologically and economically important benthic fishes, even down to the single part-per-billion of polycyclic aromatic hydrocarbon.

NMFS can designate specific subsets of EFH as Habitat Areas of Particular Concern (HAPCs). HAPCs highlight specific habitat areas with extremely important ecological functions and/or areas that are especially vulnerable to human-induced degradation. There are no HAPCs located within the Northwest Arctic Subarea.

Interactive mapping of EFH is provided by the NMFS and can be accessed at http://www.habitat.noaa.gov/protection/efh/efhmapper.

For further information on EFH and HAPC, contact the NOAA Fisheries Habitat Division http://alaskafisheries.noaa.gov/habitat/efh.htm

(b) FISH

The Northwest Arctic Subarea is drained by a number of major rivers, including the Kobuk, Selawik, Noatak, Wulik, Inmachuk, Kugruk, and Buckland Rivers in Kotzebue Sound, and the Unalakleet, Ungalik, Shaktoolik, Koyuk, Fish, Solomon, Nome, Snake, Sinuk, Feather, and Kuzitrin Rivers in Norton Sound. 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 three or four meters (as ice depth may approach two meters by late winter), 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 in the Northwest region.

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.

RESIDENT FISH

The most common resident fish found in rivers and lakes in the Northwest Arctic Subarea include arctic grayling, northern pike, burbot, and whitefishes. Whitefish species include humpback, round, and broad whitefish, as well as least and Bering cisco. Other species that occur in the region include lake trout, slimy sculpin, Dolly Varden, longnose sucker, Alaska blackfish, and arctic lamprey.

Arctic grayling. Arctic grayling are distributed widely in most clear water 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, interconnected lakes (e.g., Selawik Flats), the lower reaches of large rivers, and nearshore marine waters such as Port Clarence and Golovin Bay. Round whitefish are found more commonly in streams or lakes. Bering cisco are found in Port Clarence and Grantley Harbor. 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 such as Hotham Inlet and Grantley Harbor.

Northern pike. Northern pike are found commonly in summer in slow-moving waters of sloughs and interconnected lakes (e.g., Selawik Flats), larger rivers, and some of the large lakes. They 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 at isolated locations in small mountain streams within Kotzebue and Norton Sound drainages. Stream-resident Dolly Varden spawn in late September or October.

Burbot. Burbot are found in portions of the Northwest Arctic Subarea, in both rivers and in deep lakes. They also are found in summer in interconnected lakes and sloughs in lowland areas such as the Selawik

Flats. Burbot overwinter in deep, large rivers or lakes, or in smaller tributary streams if adequate water quality and flow exists.

Arctic Char. Arctic char are found in deep lakes of the Brooks Range and of the Seward Peninsula. Arctic char spawn in September and October.

Lake trout. Lake trout are found in the large deep lakes of the Brooks Range. Lake trout spawn in September.

ANADROMOUS FISH

Information for the ADF&G Anadromous Waters Catalog, including an interactive mapper, may be found at http://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=maps.selectMap&Region=ARC.

Sheefish. The Kobuk and Selawik Rivers support populations of anadromous sheefish that spawn in the upper reaches of these rivers. These anadromous sheefish overwinter in the lower rivers, Selawik Lake, Hotham Inlet, and Kotzebue Sound. Immature fish use Kotzebue Sound, Hotham Inlet, Selawik Lake, 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 in August and early September and spawn in late September and early October. A small population of sheefish occurs in Koyuk River and winters in Norton Bay.

Whitefishes. Anadromous whitefish (broad and humpback whitefish, least and Bering cisco) migrate from overwintering areas to estuarine and nearshore brackish marine waters at breakup in 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 in 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 region's drainages, including those on St. Lawrence Island. Significant numbers of Dolly Varden are found in the Noatak, Kivalina, and Wulik River drainages.

Salmon. Chinook, coho, sockeye, pink, and chum salmon occur within the Northwest Arctic Subarea. Pink and chum salmon are the most widely distributed and most abundant salmon in the region. Sockeye salmon are least abundant. Salmon are present in estuaries and bays three to four weeks before spawning (see below). Small populations of the least abundant sockeye salmon occur in the Sinuk and Pilgrim Rivers on the Seward Peninsula and in the Chukchi Sea drainages of the Noatak and Kivalina Rivers.

Salmon eggs incubate in the stream gravels over the winter. Chum and pink salmon fry hatch in mid or late winter and migrate to sea following breakup in early May to late June; Chinook, sockeye, and coho

fry will remain in fresh water from one to four years before migrating to sea. Salmon are present in bays and estuaries from June through August and move into spawning grounds from July through September.

MARINE FISH

Herring. Major herring spawning areas occur in the following areas: the coast of St. Michael Island, the mainland coast from St. Michael to Tolstoi Point, much of the coastline from Unalakleet to Norton Bay, portions of Norton Bay, most of the coastline from Elim to Topkok Head, Golovin Bay, Port Clarence and the Imuruk Basin, around Shishmaref, the Deering-Kiwalik area in Kotzebue Sound, Elephant Point, northern Hotham Inlet, the Baldwin Peninsula, Krusenstern and Kivalina lagoons, and near Sisualik Spit. Herring spawn in shallow bays, inlets, lagoons, rocky shorelines, and on rocky headlands throughout most of Norton Sound from late May through June, in the Port Clarence area from late June through early July, and from mid to late July along the northern Seward Peninsula. Herring spawning in Kotzebue Sound may occur from late May until August, depending on ice conditions. Herring overwintering occurs in Shishmaref Inlet, Imuruk Basin, Safety Sound, Golovin Bay, and some may overwinter in brackish lagoons and estuaries of the Kotzebue Sound area. Large schools of spawned-out herring move northward along the Chukchi coast into the Cape Thompson area during mid-June to mid-July, just as the sea ice is breaking up. The fish typically hug the shoreline and usually show up at Cape Thompson during the last few days of June or first few days of July (the origin of these fish is unknown).

Capelin. These spawn along gravel beaches along the shoreline of northern Norton Sound from Rocky Point to Cape Rodney over a four-week period beginning in late May. Capelin also spawn from Cape Rodney to Port Clarence, and in Shishmaref Inlet.

Rainbow smelt. Adult rainbow smelt are distributed in epibenthic waters along the nearshore throughout Arctic waters in areas mainly consisting of sandy gravel and cobbles. Adults spawn in coastal freshwater streams. Egg and larval distribution is unknown.

Arctic cod. Insufficient information is available to determine EFH for eggs, larvae, and early juveniles. The general distribution areas for Arctic cod late juveniles and adults are located in pelagic and epipelagic waters from the nearshore to offshore areas along the entire shelf (0 to 200 m) and upper slope (200 to 500 m) throughout Arctic waters and often associated with ice floes which may occur in deeper waters. EFH is defined for this species: http://www.habitat.noaa.gov/protection/efh/efhmapper/.

Saffron cod. Insufficient information is available to determine EFH for eggs, larvae, and early juveniles. The general distribution areas for saffron cod late juveniles and adults are located in pelagic and epipelagic waters along the coastline, within nearshore bays, and under ice along the inner (0 to 50 m) shelf throughout the Arctic waters and wherever there are substrates consisting of sand and gravel. EFH is defined for this species: http://www.habitat.noaa.gov/protection/efh/efhmapper/.

Pacific cod. This transoceanic species, occurring at depths from shoreline to 500 m. The southern limit of the species' distribution is about 34° N latitude, with a northern limit of about 63° N latitude. Adults are demersal and form aggregations during the peak spawning season, which extends approximately from January through May. Pacific cod eggs are demersal and adhesive. Eggs hatch in about 15-20 days. Little is known about the distribution of Pacific cod larvae. EFH is defined for this species: http://www.habitat.noaa.gov/protection/efh/efhmapper/.

Walleye Pollock. Eggs and spawning are pelagic on outer continental shelf generally over 100-200 m depth in Bering Sea. Larvae are in pelagic outer to mid-shelf region in Bering Sea. Juveniles age 0 appears to be pelagic, as is age 2 and 3. Age 1 are pelagic and demersal with a widespread distribution and no known benthic habitat preference. Adults occur both pelagically and demersally on the outer and mid-continental shelf of the Gulf of Alaska, eastern Bering Sea, and Aleutian Islands. In the eastern Bering Sea, few adult pollock occur in waters shallower than 70 m. Adult pollock range throughout the Bering Sea in both the U.S. and Russian waters. EFH is defined for this species: http://www.habitat.noaa.gov/protection/efh/efhmapper/.

Alaska Plaice. Adult Alaska plaice are distributed in waters of the Chukchi Sea to 70° N latitude, mainly in areas south of Point Barrow, and are located in the lower portion of the water column (demersal) within nearshore bays and along the entire shelf (0 to 200 m). Adults are found in areas consisting of sand, mud, and gravel. Adults are known to migrate in association with seasonal ice movements and from the shelf to shallower areas (< 100 m) for spring spawning. Larvae are planktonic and inhabit shallow areas. Both larvae and eggs have been found in the late spring and early summer throughout the entire shelf (0 to 200m). Egg and larval distribution extents are unknown. EFH is defined for this species: http://www.habitat.noaa.gov/protection/efh/efhmapper/.

Yellowfin Sole. Adult and late juvenile yellowfin sole are distributed in waters of the Chukchi Sea to 70° N latitude, mainly in areas south of Point Barrow, and are located in the lower portion of the water column (demersal) within nearshore bays and along the entire shelf (0 to 200 m). Adults are found in areas consisting of sand, mud, and gravel. Adults are known to migrate between outer shelf (100 to 200 m) and inner shelf (0 to 50 m) to feed and spawn. Juvenile yellowfin sole (< 15 cm) separate from adults and associate with softer substrates (sand) to feed on meiofaunal prey and bury for protection. Larvae are planktonic and inhabit shallow areas. Yellowfin sole eggs have not been found north of Nunivak Island. Egg and larval distribution extents are unknown. EFH is defined for this species: http://www.habitat.noaa.gov/protection/efh/efhmapper/.

Rock sole. Insufficient information is available to determine EFH for eggs and early juveniles. EFH for larval rock sole is the general distribution area for this life stage, located in pelagic waters along the entire shelf (0 to 200 m) and upper slope (200 to 1,000 m) throughout the Bering Sea Aleutian Islands (BSAI). EFH for late juvenile and adult rock sole is the general distribution area for this life stage, located in the lower portion of the water column along the inner (0 to 50 m), middle (50 to100 m), and outer (100 to 200 m) shelf throughout the BSAI wherever there are softer substrates consisting of sand, gravel, and cobble.

Flatehead sole/ Bering flounder. Adult Flathead sole/Bering flounder are distributed in waters of the Chukchi Sea to 70° N latitude, mainly in areas south of Point Barrow, and are located in the lower portion of the water column (demersal) within nearshore bays and along the inner (0 to 50 m) and middle shelf (50 to 100 m). Adults are found in areas consisting of sand and mud. Adults are known to migrate between outer shelf (100 to 200 m) spawning areas and inner shelf (0 to 50 m) feeding areas. Juveniles (< 2 yrs) inhabit shallow areas separate from adults. Egg and larval distribution extents are unknown. Generally, flathead sole are located south of Bering Strait, while Bering flounder range throughout the northern Bering Sea and Chukchi Sea to Point Barrow. EFH is defined for this species: http://www.habitat.noaa.gov/protection/efh/efhmapper/.

Starry flounder. Adult Starry flounder are distributed in waters of the Chukchi Sea to 70° N latitude, mainly in areas south of Point Barrow, and are located in the lower portion of the water column (demersal) within nearshore bays, estuaries, river mouths, and along the entire shelf (0 to 200 m). Adults are found in areas consisting of sand, mud, and gravel. Adults are known to seasonally migrate between outer shelf (100 to 200 m) summer areas and inner shelf (0 to 50 m).

Halibut. Commercial and subsistence halibut fisheries take place in the relevant nearshore areas. However, information is not available on the amounts of harvest or on juvenile Pacific halibut in these nearshore areas.

(c) SHELLFISH

Opilio crab. Insufficient information is available to determine EFH for larvae and early juveniles. The general distribution areas for late juveniles and adults are located in bottom habitats along the inner (0 to 50 m) and middle (50 to 100 m) shelf in Arctic waters south of Cape Lisburne, wherever there are substrates consisting mainly of mud. EFH is defined for this species: http://www.habitat.noaa.gov/protection/efh/efhmapper/.

Blue King Crab. Adult, egg-laden adults, and late juvenile blue king crab have a discontinuous distribution throughout a large range (Hokkaido, Japan to Southeast Alaska) and are located on bottom habitats along the nearshore (possible spawning aggregations) and the inner (0 to 50 m) and middle (50 to100 m) shelf in Arctic waters. Local distributions exist near St. Lawrence Island, and their distribution extends northward into Bering Strait. Blue king crab are commonly found associated with rockier substrates, sponges, barnacles, and shell hash. Adult male blue king crabs occur at an average depth of 70 m and an average temperature of 0.6° C. Larvae are pelagic and occur in depths between 40 and 60 m. EFH is defined for this species: http://www.habitat.noaa.gov/protection/efh/efhmapper/.

Red King Crab. Red King Crab larvae generally exhibit a diel movement, being most abundant in the upper water column during the day and deeper at night. Young of the year crab occur at depth of 50 m or less. They are solitary and need high relief habitat or coarse substrate such as boulders, cobble, shell hash, and living substrates such as bryozoans and stalked ascidians. Between the ages of two and four years, there is a decreasing reliance on habitat and a tendency for the crab to form pods consisting of thousands of crabs. Podding generally continues until four years of age (about 6.5 cm), when the crab move to deeper water and join adults in the spring migration to shallow water for spawning. Adult red king crab occur to a depth of 365 m; preferred habitat for reproduction is water less than 90 m. Red king crab are widely distributed south of the Alaska Peninsula. They move into waters of less than 10 fathoms from about mid-February through June 1 to mate and molt. Red king crab also occur north of the peninsula; however, no notable concentrations have been reported.

The species listed above for habitat descriptions are either: species commercially harvested in the Bering Sea and that also occur in the Arctic Management Area; or are species that may play an important role in the Arctic marine ecosystem as forage species. EFH is defined for this species: http://www.habitat.noaa.gov/protection/efh/efhmapper/.

(d) BIRDS

Important Bird Areas (IBA): Audubon, as the U.S. Partner for BirdLife International, has identified IBA worldwide, several of which are located in the Northwest Arctic Subarea (see Figure D-9). Many of the

IBA that have been designated in the Northwest Arctic Subarea are of global importance. An interactive map and more information on IBA can be found at http://ak.audubon.org/important-bird-areas-4.

Audubon Alaska also maintains an Alaska WatchList to highlight declining and vulnerable bird populations. More information and the most recent list can be found at http://ak.audubon.org/conservation/alaska-watchlist.

The Northwest Arctic 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 or westerly 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: coastal lagoons from Kivalina to Cape Krusenstern, Sisualik Spit, Noatak River Delta, lower Noatak River valley, Kobuk River Delta, Hotham Inlet, Selawik Flats and Delta, portions of the coastlines of Eschscholtz and Spafarief Bays, the coastline from Spafarief Bay to Cape Espenberg, the barrier islands, coastal lagoons, wetlands from Cape Espenberg to Wales, Brevig Lagoon, Port Clarence, Grantley Harbor, the Imuruk Basin, the Kuzitrin River flats, the coast from Cape Douglas to Cape Rodney, Safety Sound, Fish River Delta/upper Golovin Bay, Moses Point, Koyuk River flats/upper Norton Bay, the Shaktoolik area, wetlands southwest of Stebbins, and the southern coast of St. Lawrence Island.

Ducks. Ducks begin arriving in late April and continue to arrive through the end of May, although most ducks arrive 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 late August. Large numbers of scoters and eiders molt in lagoons and sheltered bays. Eastern Norton Sound serves as a primary molting area for female spectacled eiders nesting on the Yukon-Kuskokwim Delta. 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 mid-August through late September. Some ducks remain until late October before leaving at freeze-up. Large numbers of long-tails and eiders spend the winter in open water areas around St. Lawrence Island.

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

Swans. Tundra swans (and a few trumpeter swans) occur within the subarea. Concentration areas used by swans include the Kobuk and Selawik River Deltas. Swans begin nesting around mid-May, and eggs hatch from mid-to-late June. Molting occurs in July and August. Young swans are unable to fly until mid or late September. Important fall coastal staging areas include the Kobuk, Noatak, and Selawik River Deltas, as well as the eastern side of the Baldwin Peninsula. Swans leave the subarea from late September to mid-October.

For more information on waterfowl in Alaska, see the USFWS web site at http://alaska.fws.gov/mbsp/mbm/waterfowl/waterfowl.htm.

Seabirds. Seabirds (primarily murres, puffins, auklets, and kittiwakes) are most abundant at St. Lawrence, King, and Little Diomede Islands and at Cape Thompson (auklets are not present at the latter location). St. Lawrence Island has 19 colonies containing 1.8 million seabirds, Little Diomede contains 1.25 million birds, the 5 Cape Thompson colonies support over 400,000 birds, and King Island supports about 246,000 seabirds. Smaller colonies are found scattered along and near the region's coastline, including the Chamisso-Puffin Islands in Kotzebue Sound and Sledge Island, Bluff, and Cape Denbigh in Norton Sound. These seabirds begin arriving in mid-April and occupy the colonies through September. Some birds may remain in the area until the formation of sea ice forces them to more southerly areas. Gulls and terns also nest on barrier islands and spits, as well as islets and gravel bars in river deltas throughout the region (see Figure D-10).

The North Pacific Pelagic Seabird Database (NPPSD) provides comprehensive geographic data on the pelagic distribution of seabirds in Alaska and the North Pacific. The current version of the NPPSD contains 335 unique taxa and include four-letter codes, common names, ITIS taxonomic serial number, and NODC taxonomic code for marine birds and mammals observed on surveys in the NPPSD dataset. This list is provided to further the goal of standardizing pelagic seabird data. Researchers are encouraged to use this list for marine bird and mammal surveys in the North Pacific. This dataset is managed by the U.S. Geological Survey, Alaska Science Center and can be accessed at http://alaska.usgs.gov/science/biology/nppsd/index.php.

The North Pacific Seabird Data Portal provides access to the North Pacific Seabird Colony Register, an automated database that contains the distribution of breeding seabirds and the relative size of all the colonies in Alaska. Download requests can be submitted online, and colony data can be downloaded directly to a computer. The downloaded colony data provides information on a colony's location, species composition, and estimated numbers of breeding seabirds at that colony. The North Pacific Seabird Data Portal is maintained by the USFWS Division of Migratory Bird Management in Anchorage. For updated information, visit http://www.fws.gov/alaska/mbsp/mbm/northpacificseabirds/colonies/.

Shorebirds. 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 USFWS website at http://alaska.fws.gov/mbsp/mbm/shorebirds/shorebirds.htm.

Birds of Prey. Birds of prey occurring in the subarea include golden and occasionally 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 owls commonly use woodlands, forests, and forested wetland areas for nesting. Prime feeding areas include wetlands containing waterfowl, seabirds, shorebirds, and other small birds. Except for snowy owls and gyrfalcons, which are year-round residents, all other birds of prey winter in areas outside the subarea. These birds arrive in the area in early May and depart in late August or September.

Upland Birds. In addition, many upland species, such as ptarmigan, ravens and other nesting birds use the area. For more information on landbirds and raptors, see the USFWS website at http://alaska.fws.gov/mbsp/mbm/landbirds/landbirds.htm.

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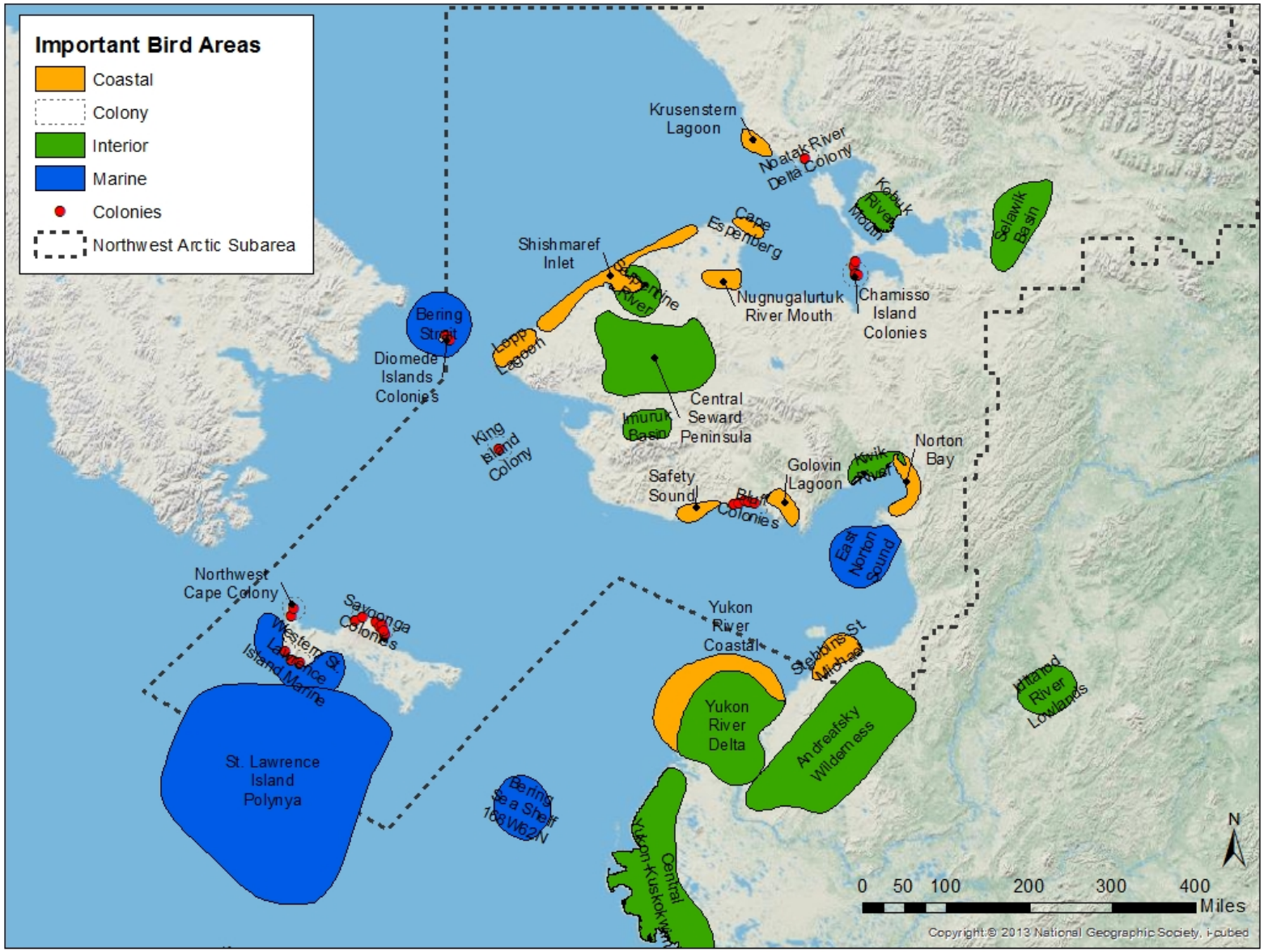


Figure D-9. Important bird areas within the Northwest Arctic Subarea (Audubon Alaska 2014).

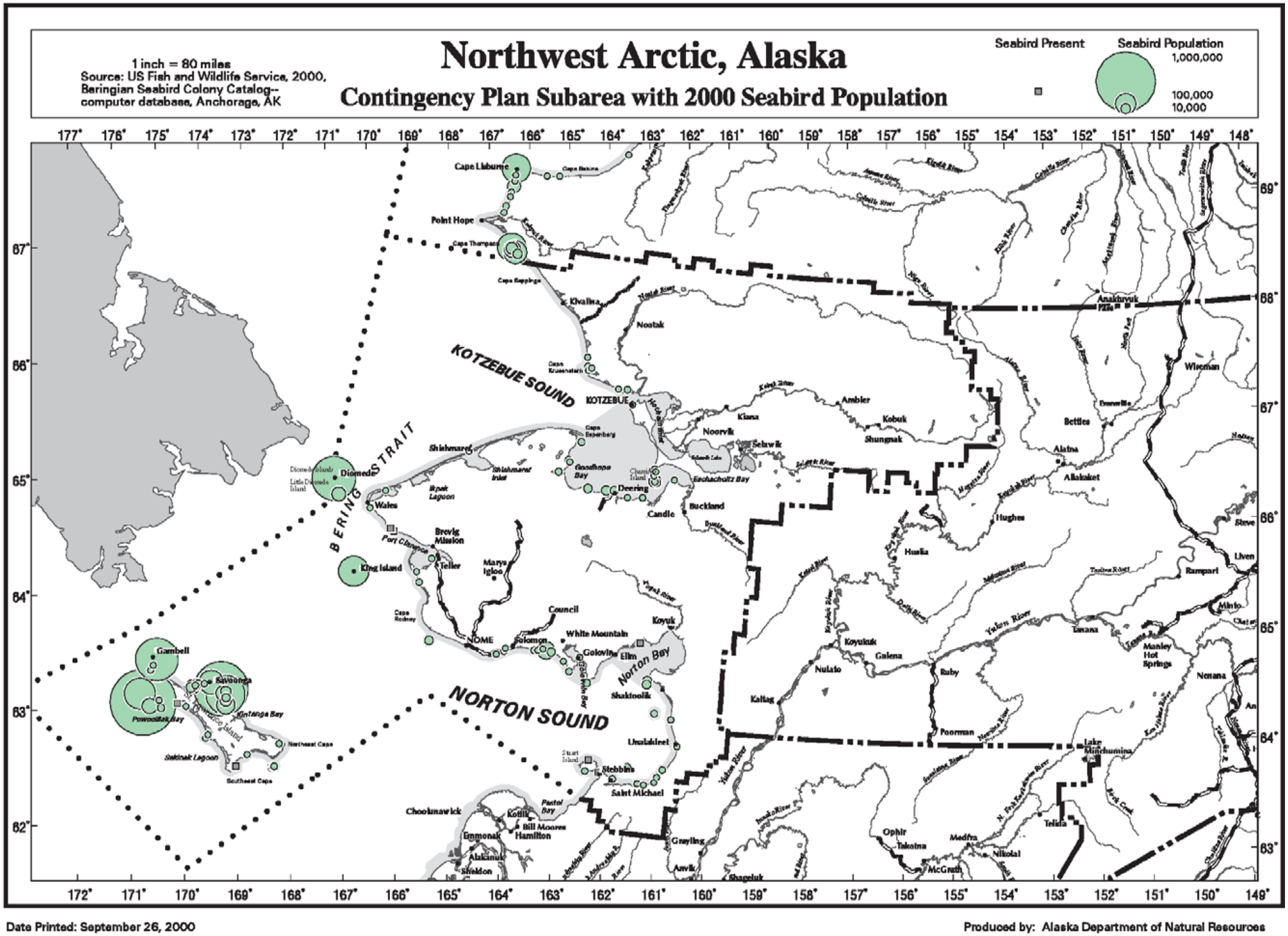


Figure D-10. Northwest Arctic Subarea seabird colonies map.

(e) MARINE MAMMALS

Polar Bears. This species is associated with sea ice of the Bering, Chukchi, and Beaufort Seas. During summer, polar bears concentrate along the southern edge of pack ice, although polar bears may be found on land when pack ice edge is near shore. Polar bears commonly travel along barrier islands and mainland beaches to search for den sites and to feed on beached marine mammal carrion. In winter, polar bears are found most commonly along areas of open water, such as the pack and shorefast ice edge, flaw zone, and leads and polynyas. In late October or November, pregnant females seek out denning areas in snowdrifts on land (generally within 50 km of the coast), on shorefast ice, or drifting sea ice. Females and cubs emerge from the maternity dens in late March or early April. Most polar bears move north with receding pack ice during summer months. For more information on polar bears, see the USFWS website at http://alaska.fws.gov/fisheries/mmm/polarbear/pbmain.htm.

Seals. Three species of seal commonly occur in the nearshore waters of the Northwest Arctic Subarea: ringed seal, bearded seal, and spotted seal. All three species are food resource for many communities within the Northwest Arctic Subarea. The ringed seal is the most common species of seal found in the Chukchi Sea and in Norton Sound. For more information on seals, see the NMFS website at http://www.fakr.noaa.gov/protectedresources/seals/default.htm.

Ringed Seals. Most ringed seal pups are born in March or April in birthing lairs constructed on shorefast ice or pack 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. During summer, most ringed seals are believed to occupy the southern pack ice edge, 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. Within the Northwest Arctic Subarea, the shorefast ice in Norton Sound, Kotzebue Sound (and Hotham Inlet), and St. Lawrence Island is known to contain significant breeding and pupping habitat. More information and maps on ringed seals may be found at the Kotzebue IRA website at http://www.kotzebueira.org/.

Spotted Seals. Major population segments of spotted seals migrate through outer Norton Sound from April to June and from late November to early January. During summer, spotted seals occur throughout St. Lawrence Island, Norton Sound, Kotzebue Sound, and the Chukchi Sea coastline, particularly in nearshore areas and the lagoons of the outer Seward Peninsula, from Lopp Lagoon to Cape Espenberg. Spotted seals haul out on sandy spits and shoals from mid-July until freeze-up in late October or early November. Important haulouts are located on St. Lawrence Island, St. Michael Island, Stuart Island, Besboro Island, Cape Denbigh, Cape Darby, Safety Sound, and Port Clarence. Additional haulout and concentration areas along the Chukchi Sea coastline include Cape Espenberg, Chamisso Island, Elephant Point, Sisualik Spit, and near the mouths of rivers and other areas with an abundance of anadromous fish, herring, smelt, capelin, or cod. Spotted seal occur in the Kotzebue area (including Hotham Inlet and occasionally Selawik Lake) from June to November. The south side of St. Lawrence Island is used heavily by spotted seals from April to December. In U.S. waters, pupping occurs from April to May. Molting occurs from May to June.

Bearded Seals. This species is associated primarily with the pack ice and in association with leads, flaws, and polynyas. Consequently, though they are primarily found offshore, nearshore areas (e.g., Kotzebue Sound) can have significant concentrations depending on the season and ice conditions. Many bearded seals that winter in the Bering Sea migrate through the Bering Strait from late April through June and

spend the summer along the ice edge in the Chukchi Sea. Bearded seals occur in Kotzebue Sound from August to July and in Norton Sound from late November to late June. Juvenile bearded seals may remain in these areas through September. The northern estuary is important rearing habitat for young-of-the-year bearded seals. From December through March, bearded seals are abundant immediately north of St. Lawrence Island. Pupping occurs from mid-March to early May. Molting occurs between April and August, with a peak in May and June. More information and maps on bearded seals may be found at the Kotzebue IRA website at http://www.kotzebueira.org/.

Ribbon seals. Ribbon seals prefer offshore water and are rarely seen along the coast. From late March through mid-July, they are generally found along the Bering Sea ice front. For most of the rest of the year, they occupy the ice-free waters of the Bering Sea. A few ribbon seals migrate into the Chukchi Sea for the summer, and though rare, they are occasionally seen in the Gulf of Alaska and North Pacific Ocean.

Beluga Whales. Whales bound for the Beaufort Sea migrate past St. Lawrence Island mainly in March and April, reach the Bering Strait from late March through mid-May, and continue northward in leads along the northwestern Alaska coast. Belugas bound for Norton and Kotzebue Sounds begin moving to their wintering area to coastal areas from March through May. Belugas enter Norton Sound coastal waters in May and June and remain until October or November. Belugas occupy the coast of the northern Seward Peninsula, from June through October, and Kotzebue Sound, from mid-June to August. Summer use areas in Norton Sound include Norton Bay (May and June) and Golovin Bay (June to November). Concentrations in Kotzebue Sound include Eschscholtz Bay and Sisualik Spit. Eastern Kotzebue Sound is a high summer use area. Belugas generally return to wintering areas in the Bering Sea in October and November. Some may winter northwest of St. Lawrence Island, a few may winter in the southeastern Chukchi Sea, and a few may winter in Norton Sound when prevailing winds keep polynyas and leads open.

Bowhead Whales. These whales move northward past St. Lawrence Island in March and April, through the Bering Strait from late March through May, and northward along the Chukchi Sea coast as leads open in the sea ice. Bowhead whales rarely enter Norton Sound. Fall migration in the Chukchi Sea occurs offshore. Bowhead whales move south through the Bering Strait from September to December. Bowhead whales winter in the Bering Sea near the pack ice edge.

Humpback Whales. Both the endangered Western North Pacific Distinct Population Segment (DPS) and the Mexico DPS humpback whale can be found throughout much of the North Pacific Ocean and into the Bering and Chukchi Seas. In winter, most humpback whales occur in subtropical and tropical waters. It is uncertain as to whether individuals seen in these waters are from the Central or Western North Pacific stock. The summer feeding range of humpback whales in the North Pacific encompasses coastal and inland waters of the Bering Sea and north of the Bering Strait. Sightings in the northeastern Chukchi and Beaufort Seas remain rare. Three humpback sightings were reported in 2007 and one in 2008 during surveys of the eastern Chukchi Sea. This may be a recent phenomenon, as no humpback whales were sighted during previous surveys in the Chukchi Sea from 1982 through 1991. Additional sightings of four humpback whales occurred in 2009 south of Point Hope. It is possible humpback whales are expanding their present range due to climate changes resulting in increased prey. For more information on humpback whales, see the NOAA website at: https://alaskafisheries.noaa.gov/pr/humpback.

Other Whales. Gray whales feed in waters near the southern capes of St. Lawrence Island, from St. Lawrence Island north to the Bering Strait, and in portions of Norton Sound from mid-May through November. Gray whales enter the Chukchi Sea during the ice-free season (June to October). Killer and fin whales are seen occasionally along the Alaskan Chukchi Sea coast and are frequently seen in the vicinity of St. Lawrence Island from spring through fall. Minke whales are regularly seen in the St. Lawrence Island area during the summer. Occasional use of the St. Lawrence Island area by North Pacific right whales during the open water period may occur. For more information on whales, see the NMFS website at: http://www.fakr.noaa.gov/protectedresources/whales/default.htm.

Pacific Walrus. Primarily female and juvenile walrus begin migrating north past St. Lawrence Island in March and April. Most reach the Bering Strait by late May or early June and continue migrating northward into the Chukchi Sea. Some males remain in the Bering Sea year-round. Walruses in the Chukchi Sea begin to move south in September and early October as pack ice forms. In recent years, walruses have been hauling out in large numbers near Point Lay and Cape Lisburne, from mid-August through mid-October. Between October and December, large numbers occasionally haul out at St. Lawrence, Punuk, Diomede, and King Islands, and in Norton Sound. With continuing development of ice, most walruses move to wintering areas south of St. Lawrence Island. Walruses return to the Bering Sea in September and early October as pack ice reforms. Large numbers arrive between October and December at haulouts at St. Lawrence, Punuk, Diomede, and King Islands. See Figure D-11 for the walrus range and haulouts. A comprehensive Pacific walrus haulout database has been compiled, in part to assist with monitoring changes in haulout behavior and locations due to reductions in seasonal sea ice. This georeferenced database (http://alaska.usgs.gov/products/data.php?dataid=74) includes information on walrus haulouts from 1852 to 2016 and can be accessed to find a list of known traditional haulouts where walrus might be expected.

Steller Sea Lion. During the ice-free months, a few sea lions haul out on portions of St. Lawrence Island, the southern Punuk Islands, on Fairway Rock, and occasionally on the Diomede Islands. The highest number of Steller sea lions counted on St. Lawrence Island during repeated surveys was 262 (during a survey at the Sivuonok haulout in November 2010). Fifty to 100 sea lions were seen in the water off the north end of Sivuqaq Mountain.

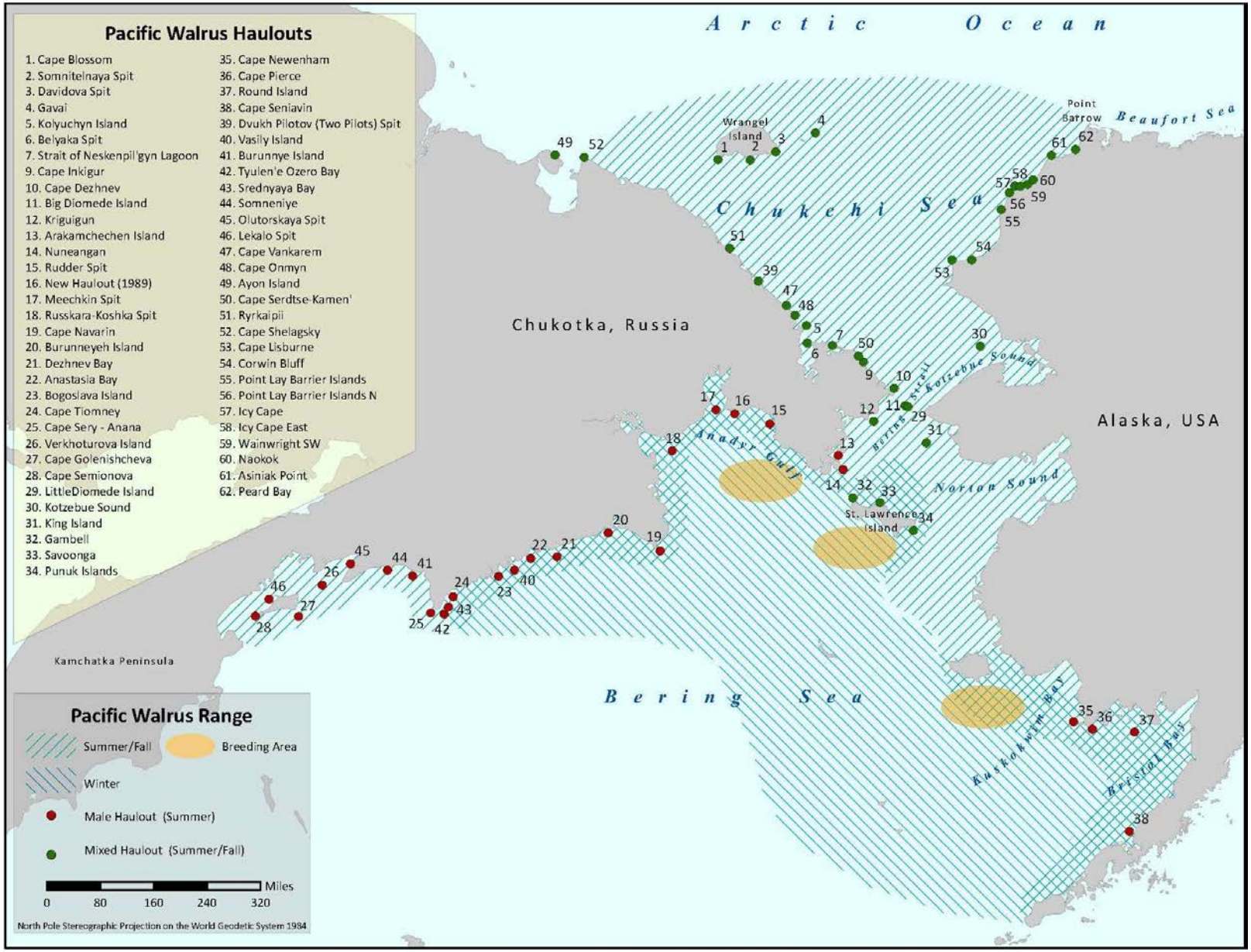


Figure D-11. Pacific walrus haulout map.

(f) TERRESTRIAL MAMMALS

Caribou. The Western Arctic Caribou Herd has declined from a peak of 490,000 in 2003 to 377,000 in 2007. As the herd approached its peak, their seasonal dispersion has expanded westward into the Seward Peninsula. Currently, portions of the herd may be found in much of the subarea, primarily in late summer through winter. Much of the herd migrates along the eastern half of the subarea, funneling through the Selawik National Wildlife Refuge to calving grounds on the eastern North Slope. Although caribou may be found in different habitats, important summer habitat for willow browsing and insect relief includes riparian and coastal areas, especially with open gravel bars and remaining snowpack. See Figure D-12 for Alaska caribou herd ranges.

Reindeer. Reindeer, some mixed with caribou, may be found throughout the Seward Peninsula and St. Lawrence Island. They are frequently found in the far western areas of the Seward Peninsula including barrier islands along the western portion of the peninsula. Reindeer may be more tolerant to human activity and usually calve in April, one month earlier than caribou. They are private property, and it would be beneficial to have the herder help haze both reindeer and caribou if needed.

Black Bear. These are most common in forested river floodplains and lowlands in the Kobuk, Selawik and Noatak River drainages, although black bears occasionally may occur in alpine areas. Black bears also occur along the Norton Sound coast between Shaktoolik and Klikitarik. Important summer habitats include sedge meadows, as well as 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 Bear (grizzly bears). These primarily occur in upland and mountainous areas of the northwest region, 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 Chukchi Sea coastline between Cape Seppings and Cape Thompson, in reindeer calving areas, 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 Noatak, Squirrel, Salmon, Nimiuktuk, lower Kougarok, Agiapuk, lower Pilgrim, lower Sinuk, lower Cripple, lower Penny, lower Flambeau and Eldorado, lower Kwiniuk, lower Tubutulik, lower Inglutalik, lower Ungalik, lower Shaktoolik, lower Egavik, lower North, and lower Unalakleet Rivers. Spring concentration areas include Cape Espenberg to Goodhope Bay coastline, Cape Rodney to Tiksuk River, coastline near Bluff, and coastline from Unalakleet to St. Michael.

Moose. This species occurs 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 forested areas and shrub-dominated alpine and riparian areas. Riparian areas along the major rivers and tributary streams are particularly important during winter. Calving occurs in late May and early June.

Dall Sheep. These are found throughout the central Brooks Range and to the Wulik Peaks area of the extreme western end of the western Brooks Range. 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.

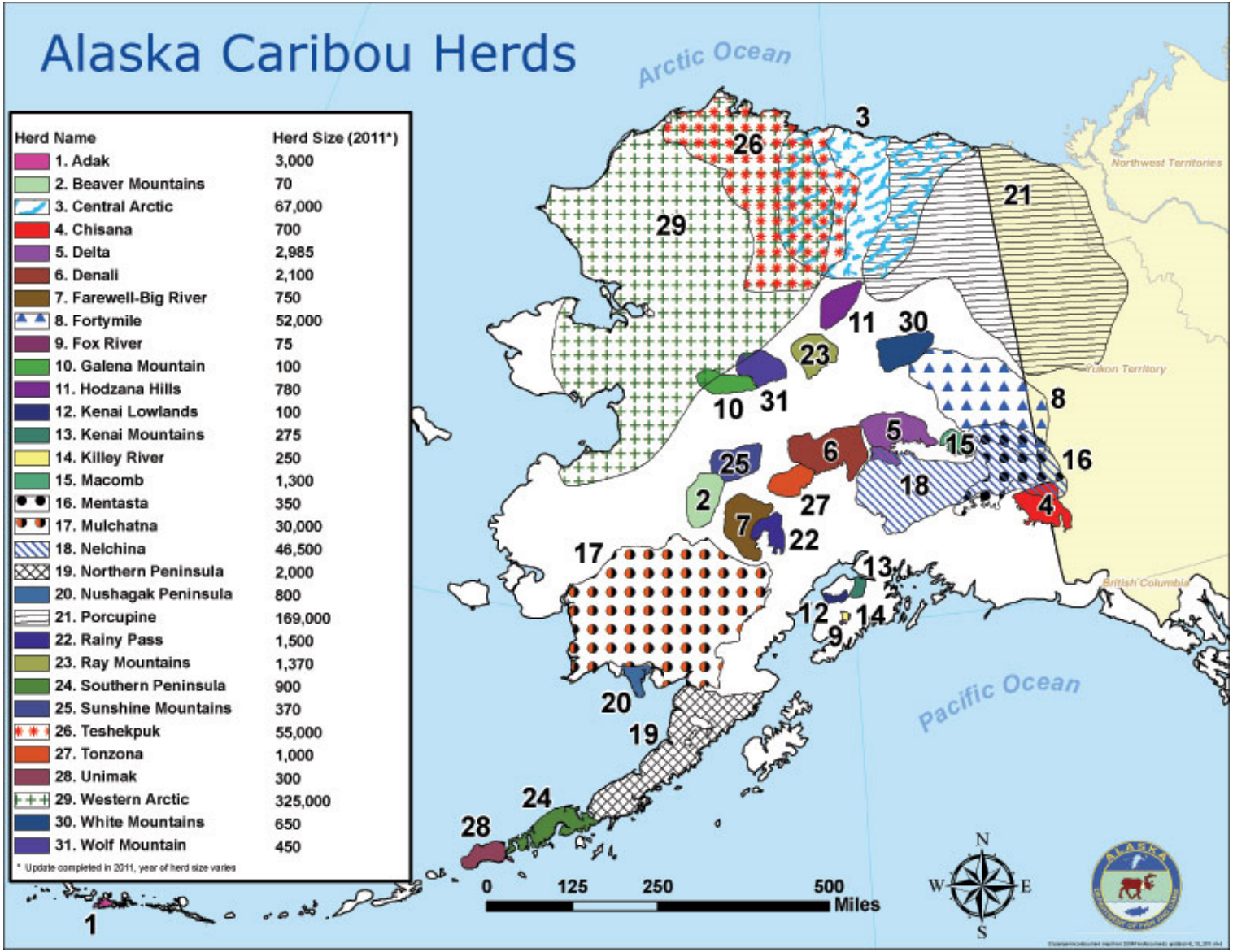


Figure D-12. Alaska caribou herds.

Muskoxen. Most muskox are found over much of the Seward Peninsula and about 400 are concentrated around Cape Thompson within 20 miles of the coast, but are expanding north and southeast; they are found in riparian habitat in summer and windswept uplands in winter through calving (late April to mid-June).

Wolves and Foxes. These are found throughout the subarea. Arctic foxes occupy St. Lawrence Island 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.

Wood Bison. In 2015, this species was reintroduced to Alaska in the lower Innoko/Yukon River area. Although their release and current core range are outside of the Northwest Arctic Subarea boundary, their current extent range may reach into this subarea southeast of Norton Sound. More information on this species and their reintroduction can be found at http://www.adfg.alaska.gov/index.cfm?adfg=woodbisonrestoration.main.

A*quatic 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.

For more information on terrestrial mammals, see the ADF&G website 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. Figure D-13 identifies the general locations of these rare plants. For more information, check the Alaska Natural Heritage Program's Rare Plant Data Portal at http://aknhp.uaa.alaska.edu/maps-js/integrated-map/rare_plants.php.

RARE PLANTS KNOWN FROM THE NORTHWEST ARCTIC SUBAREA

Global Rank[1]	State Rank[2]	Scientific Name	Common name
G1?	S1	*Saussurea triangulata*	
G2	S2S3	*Erigeron muirii*	
G2	S2	*Oxytropis kobukensis*	Kobuk Locoweed
G2	S2	*Rumex krausei*	Cape Krause sorrel
G2G3	S2S3	*Aster yukonensis*	Yukon Aster
G2G3	S2S3	*Douglasia alaskana*	Alaska Rockjasmine
G2G3Q	S2S3	*Oxytropis tananensis*	
G3	S1	*Claytonia arctica*	Arctic Springbeauty
G3	S2	*Lupinus kuschei*	
G3	S2	*Oxytropis kokrinensis*	
G3	S3	*Aphragmus eschscholtzianus*	
G3	S3	*Symphyotrichum yukonense*	
G3	S3	*Potamogeton subsibiricus*	
G3	S2S3	*Artemisia senjavinensis*	Arctic Sage
G3	S3	*Stellaria alaskana*	
G3	S3	*Stellaria dicranoides*	
G3	S3	*Thlaspi arcticum*	
G3	S3	*Arenaria longipedunculata*	
G3	S3	*Draba exalata*	
G3	S3	*Douglasia beringensis*	
G3	S3	*Oxytropis kokrinensis*	Kokrines Oxytrope
G3	S3	*Papaver walpolei*	Walpole Poppy
G3	S2S3	*Primula tschuktschorum*	Chukch Primrose
G3G4Q	S2S3	*Saxifraga nudicaulis*	
G3?	S2S3	*Puccinellia wrightii*	Wright's Arctic Grass
G3G4	S1	*Festuca edlundiae*	
G3G4	S3S4	*Primula anvilensis*	Anvil Mountain Primrose
G3G4T?	S1	*Gentianopsis detonsa* ssp.*detonsa*	Sheared Gentian
G4	S1	*Potentilla fragiformis*	
G4	S1	*Puccinellia vaginata*	
G4	S2	*Carex heleonastes*	
G4?	S2	*Carex holostoma*	
G4	S2S3	*Cardamine microphylla* ssp. *blaisdellii*	
G4	S2S3	*Puccinellia vahliana*	
G4	S2S3	*Potentilla rubricaulis*	
G4	S3	*Campanula aurita*	
G4	S3	*Erigeron porsildii*	

-continued-

Global Rank[1]	State Rank[2]	Scientific Name	Common name
G4	S3	*Asplenium viride*	
G4	S3	*Asplenium trichomanes-ramosum*	Green Spleenwort
G4	S3	*Minuartia yukonensis*	
G4	S3	*Colpodium vahlianum*	Niokornak Arctic Grass
G4G5	S3	*Festuca lenensis*	
G4G5	S1	*Pleuropogon sabinei*	Sabine-grass
G4	S2S3	*Eleocharis kamtschatica*	
G4G5	S2S3	*Oxygraphis glacialis*	
G4G5	S2	*Carex holostoma*	
G4T1T2Q	S1S2	*Artemisia globularia* var *lutea*	
G4T2	S2	*Oxytropis arctica* var *barnebyana*	
G4T2T3Q	S2	*Phlox richardsonii* ssp. *richardsonii*	Richardson's Phlox
G4T3T4	S2	*Ranunculus glacialis* var *camissonis*	
G5	S1S2	*Ranunculus monophyllus*	
G5	S2S3	*Cryptogramma stelleri*	
G5	S2	*Schizachne purpurascens*	
G5	S2	*Glyceria striata* ssp. *stricta*	
G5	S1	*Potentilla stipularis*	Circumpolar Cinquefoil
G5	S3	*Zannichellia palustris*	Horned Pondweed
G5?	S1	*Pedicularis hirsuta*	Hairy Lousewort
G5	S3	*Viola selkirkii*	
G5	S2	*Eriophorum viridicarinatum*	
G5	S2S3	*Glyceria pulchella*	
G5	S2S3	*Smelowskia porsildii*	
G5T2?Q	S2?	*Corispermum ochotense* var *alaskanum*	
G5T4	S1	*Chenopodium glaucum* ssp. *salinum*	
G5	S1S2	*Carex deflexa*	
G5T5	S2S3	*Cypripedium parviflorum*	Small Yellow Lady's Slipper
G5	S2S3	*Stellaria umbellate*	
G5	S3S4	*Minuartia biflora*	
		X_Dupoa labradorica	

[1] 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.

[2] 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 occurrences)
S5 = Demonstrably secure in state.
S#S# = State rank of species uncertain, best described as a range between the two ranks.

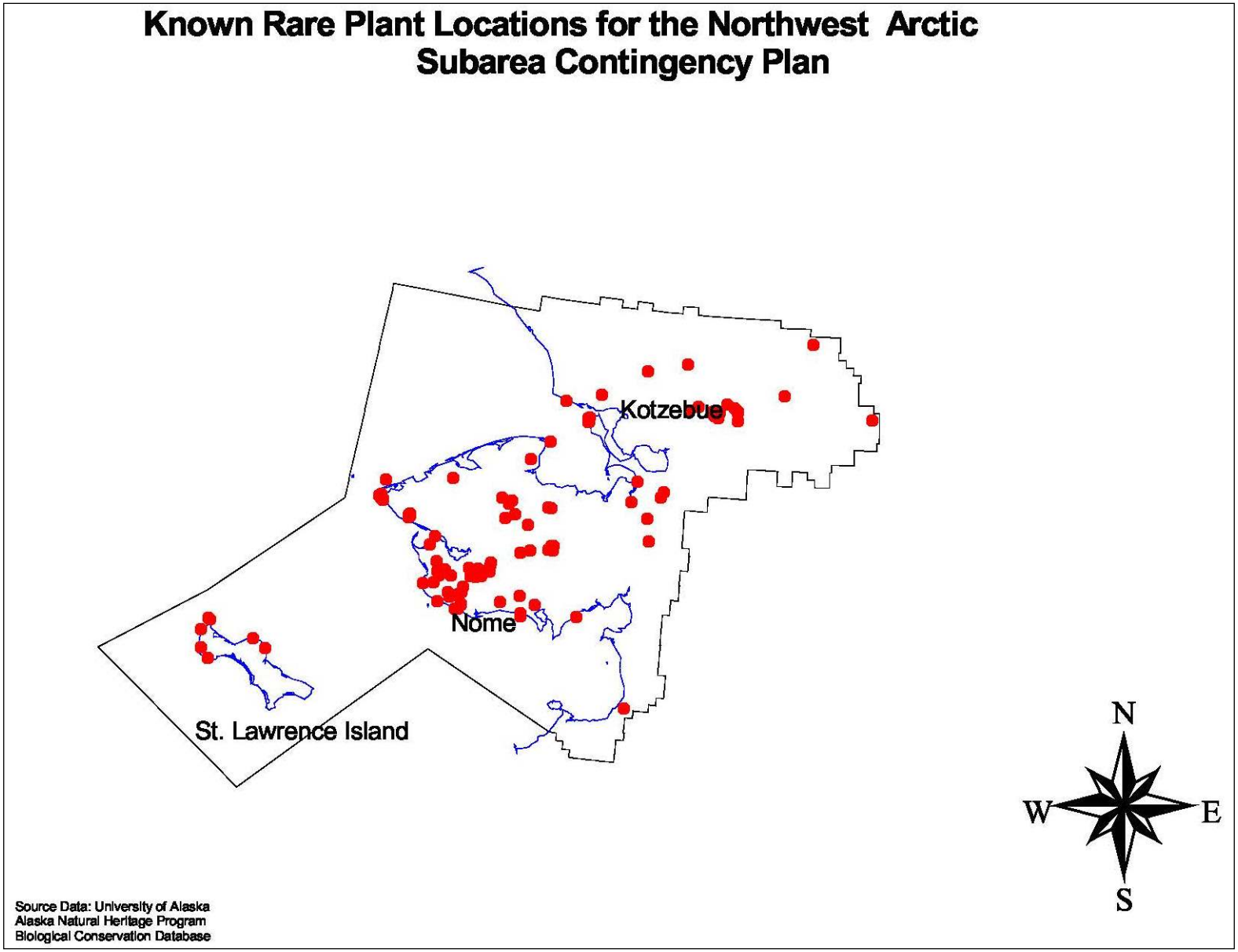


Figure D-13. Known rare plant locations in the Northwest Arctic Subarea.

D. HUMAN USE RESOURCES

1. *Fish Hatcheries and Associated Ocean Net Pens*

There are no fish hatcheries operating in the subarea.

2. *Aquaculture Sites*

There are no aquaculture sites in the subarea.

3. *Cultural Resources and Historic Properties*

The Northwest Arctic Subarea contains a multitude of known and unidentified historic properties. These may include National Historic Landmarks, burial sites, village sites, and other National Register of Historic Places eligible archaeological and historic sites in intertidal and on-shore locations. Oil spills and hazardous substance releases may result in severe impacts to these resources through both direct and indirect effects. OSCs are responsible for ensuring that response actions take the protection of historic properties into account and that the statutory requirements for protecting these resources are met. Guidance about how to ensure that preparedness and response accomplish this goal is provided in the *Alaska Implementation Guidelines for Federal On-Scene Coordinators for the Programmatic Agreement on Protection of Historic Properties During Emergency Response Under the National Oil and Hazardous Substances Pollution Contingency Plan*. This guidance is found in Annex M of the *Unified Plan* under the title *Historic Properties Protection Guidelines for Alaska Federal On-Scene Coordinators*.

Stringent federal and Alaska State protections exist that maintain confidentiality for the locations of known historic properties. For this reason, pre-incident site identification is limited. During a drill or an actual incident, the FOSC's Historic Preservation Specialist and the ADNR Office of History and Archaeology provide information to the Unified Command on an as needed basis.

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 and the Alaska Boards of Fisheries and Game made all decisions regarding the management of subsistence resources and harvest opportunities. 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 makes the regulations which are administered by various federal agencies on federal public lands. State regulations continue to apply to state and private lands. As a consequence, the number of agencies involved in managing subsistence resources and uses has increased. Therefore, in the event of a spill, extensive coordination will be required in order to address subsistence resource issues.

Regulations regarding subsistence harvest can also be expected to undergo further regular modification. Current information on harvest regulations can be obtained from the ADF&G at http://www.adfg.alaska.gov/index.cfm?adfg=subsistence.main or from the DOI Federal Subsistence Management Program at https://www.doi.gov/subsistence.

Traditional subsistence harvest areas include the Bering Strait area, the Western Seward Peninsula, and Norton Sound Coast. The communities identified within the Bering Strait area include Diomede, Gambell, Savoonga, and Wales; the Western Seward Peninsula area includes Teller, Shishmaref, Brevig Mission, Mary's Igloo, and King Islanders living in Nome; and the communities associated with the Norton Sound Coast area include Solomon, Golovin, White Mountain, Council, Elim, Koyuk, Shaktoolik, Unalakleet, St. Michael, and Stebbins. The subsistence harvest areas and species associated with these areas are identified in The Bering Straits Coastal Resource Service Area Board, Volume One-Resource Inventory, Maps 2(A), 2(B), and 2(C). The outer coast of northwest Seward Peninsula is highly utilized (From Wales to Cape Espenberg) for subsistence fishing (whitefish, anadromous fish) and hunting (caribou, moose, muskox). In addition, Cape Krustenstern National Monument is highly used for subsistence fishing (whitefish and anadromous salmonid runs) and hunting (caribou, bear, moose). There is an extensive network of hunting and fishing camps from Sesaulik (on the Noatak Delta) to Kivalina.

Traditional subsistence harvest areas for the Northwest Arctic Borough or NANA region include lands surrounding the villages of Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Kotzebue, Noatak, Noorvik, Selawik, and Shungnak. The Exchange for Local Observations and Knowledge of the Arctic (ELOKA) website contains subsistence use information and maps for Pacific walrus, seals, whales, fish, and shellfish at https://eloka-arctic.org/dataproducts. Subsistence use maps from this website are shown below, but use areas may change over time (see Figures D-14 – D-18). The Northwest Arctic Borough website also hosts an interactive Subsistence Mapping Program at https://www.nwabor.org/subsistence-mapping-program/.

More specific information, including technical reports and detailed maps, can be obtained from the ADF&G, Northwest Arctic Borough, Bering Straits Regional Corporation, Maniilaq Association, and NANA Regional Corporation. The Community Subsistence Information System contains Alaska community harvest information gathered by the ADF&G Division of Subsistence, including an Interactive Map of Geographic Survey Data available at http://www.adfg.alaska.gov/sb/CSIS/. For more information, contact the ADF&G Division of Subsistence at (907) 267-2362. 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.

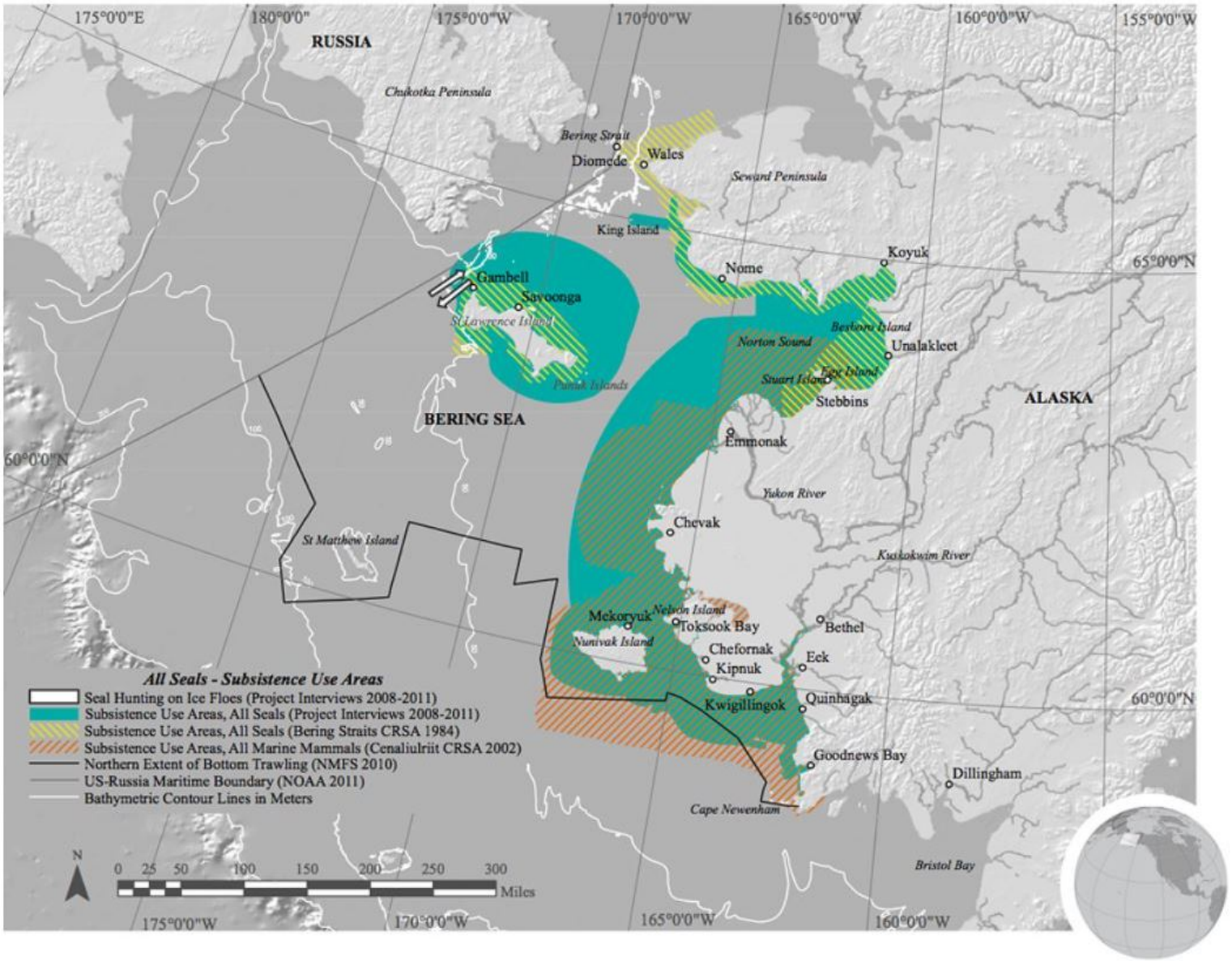


Figure D-14. Map of subsistence use areas for seals. *Source*: https://eloka-arctic.org/dataproducts**.**

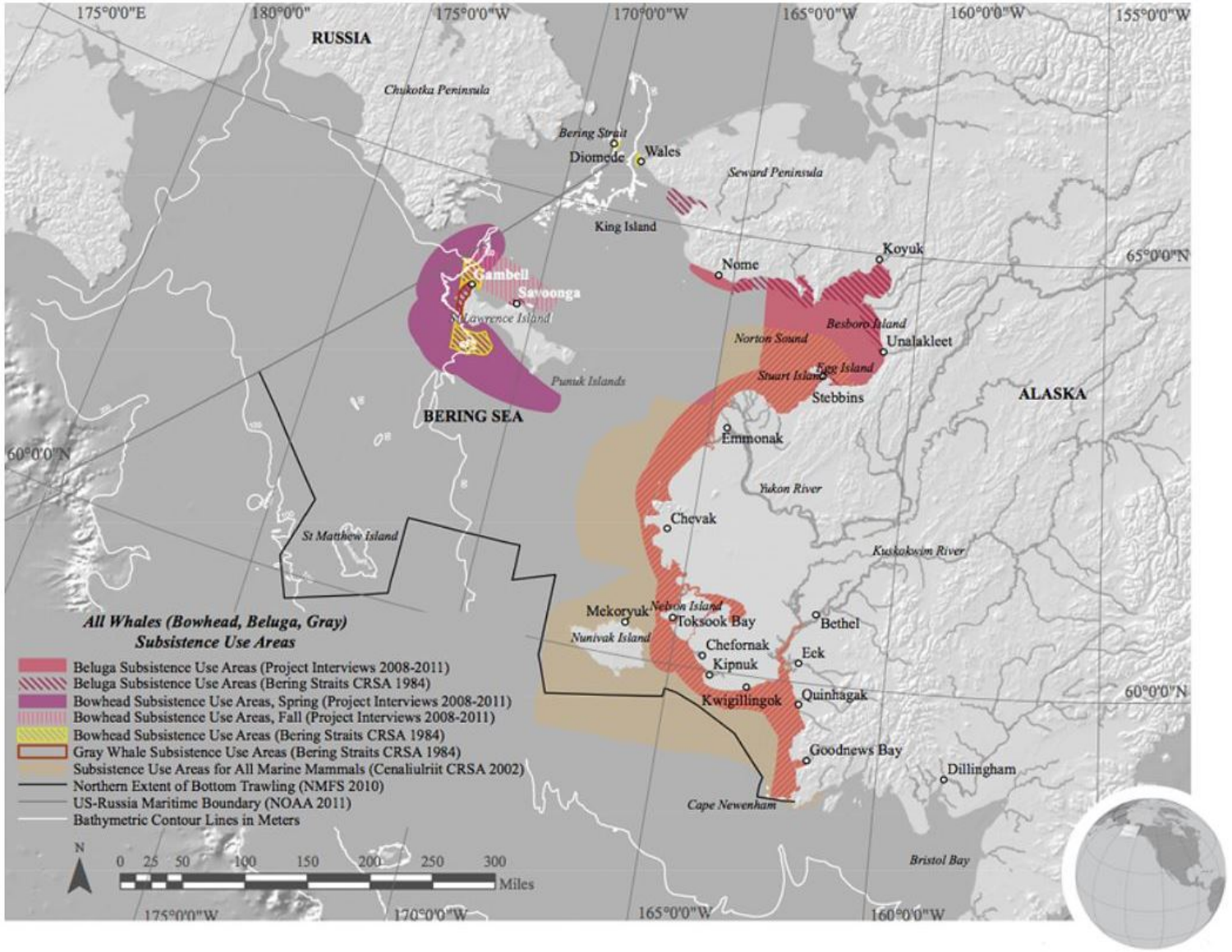


Figure D-15. Map of subsistence use areas for whales. *Source*: https://eloka-arctic.org/dataproducts**.**

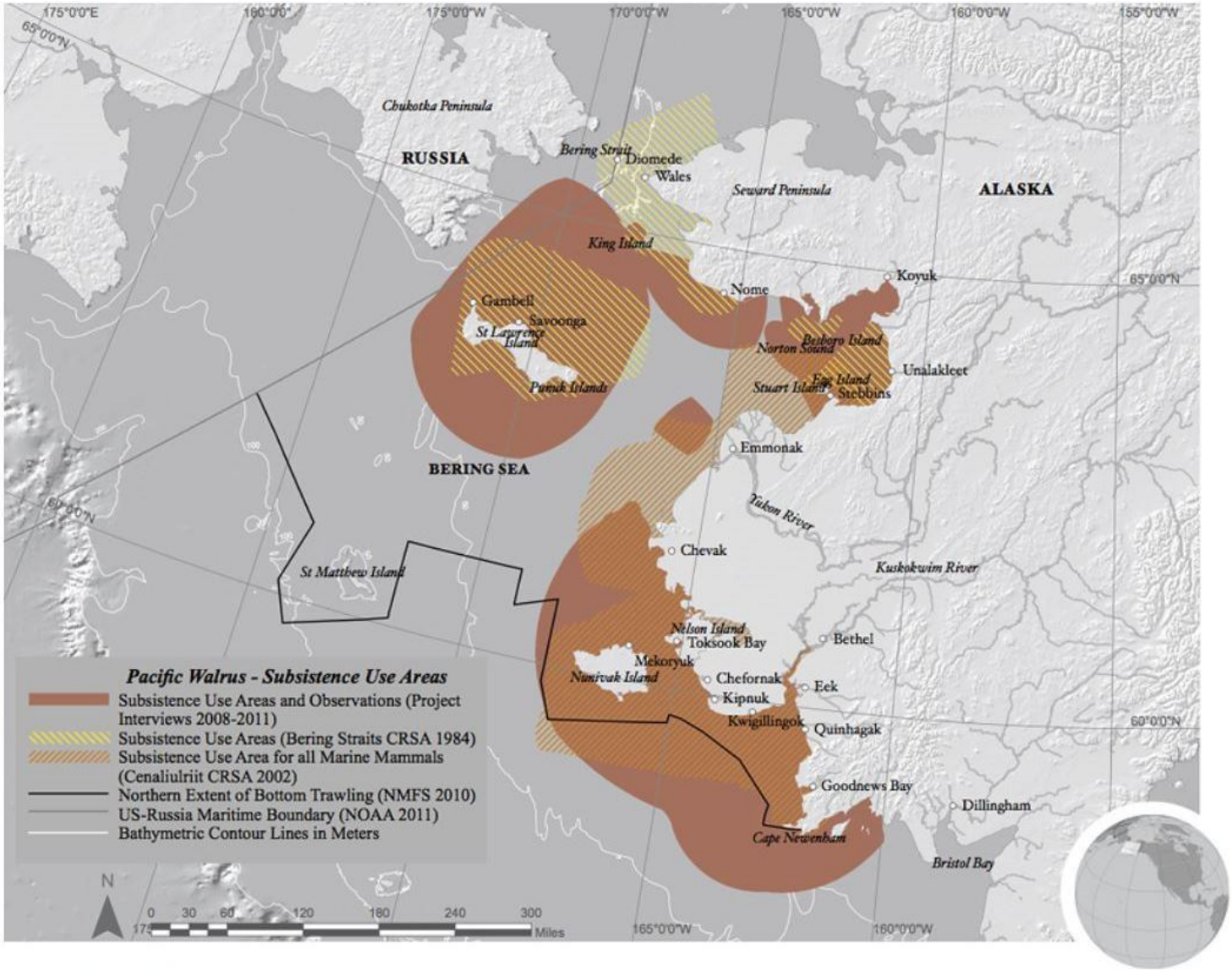


Figure D-16. Map of subsistence use areas for Pacific walrus. *Source*: https://eloka-arctic.org/dataproducts.

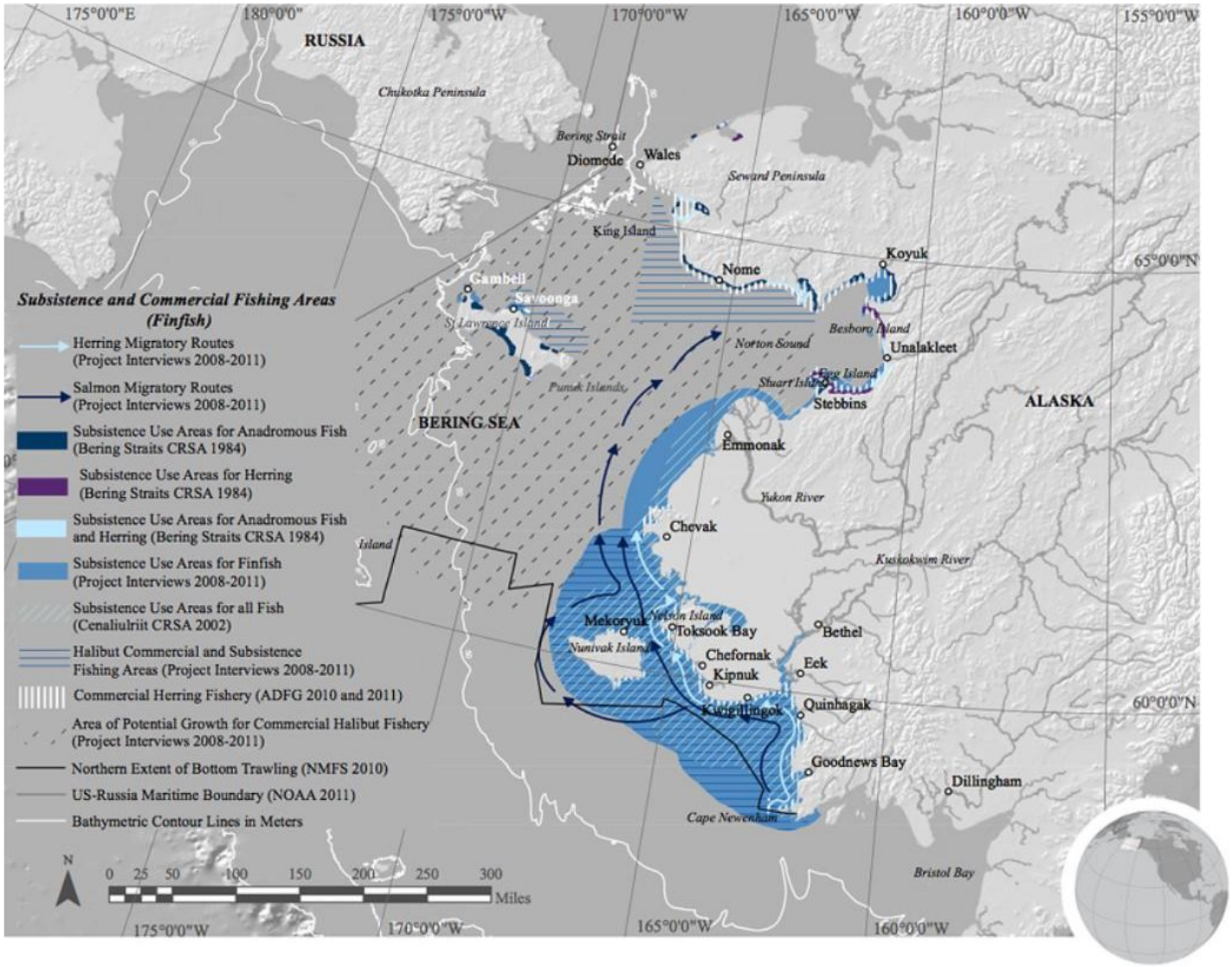


Figure D-17. Map of finfish subsistence and commercial fishing areas. *Source*: https://eloka-arctic.org/dataproducts.

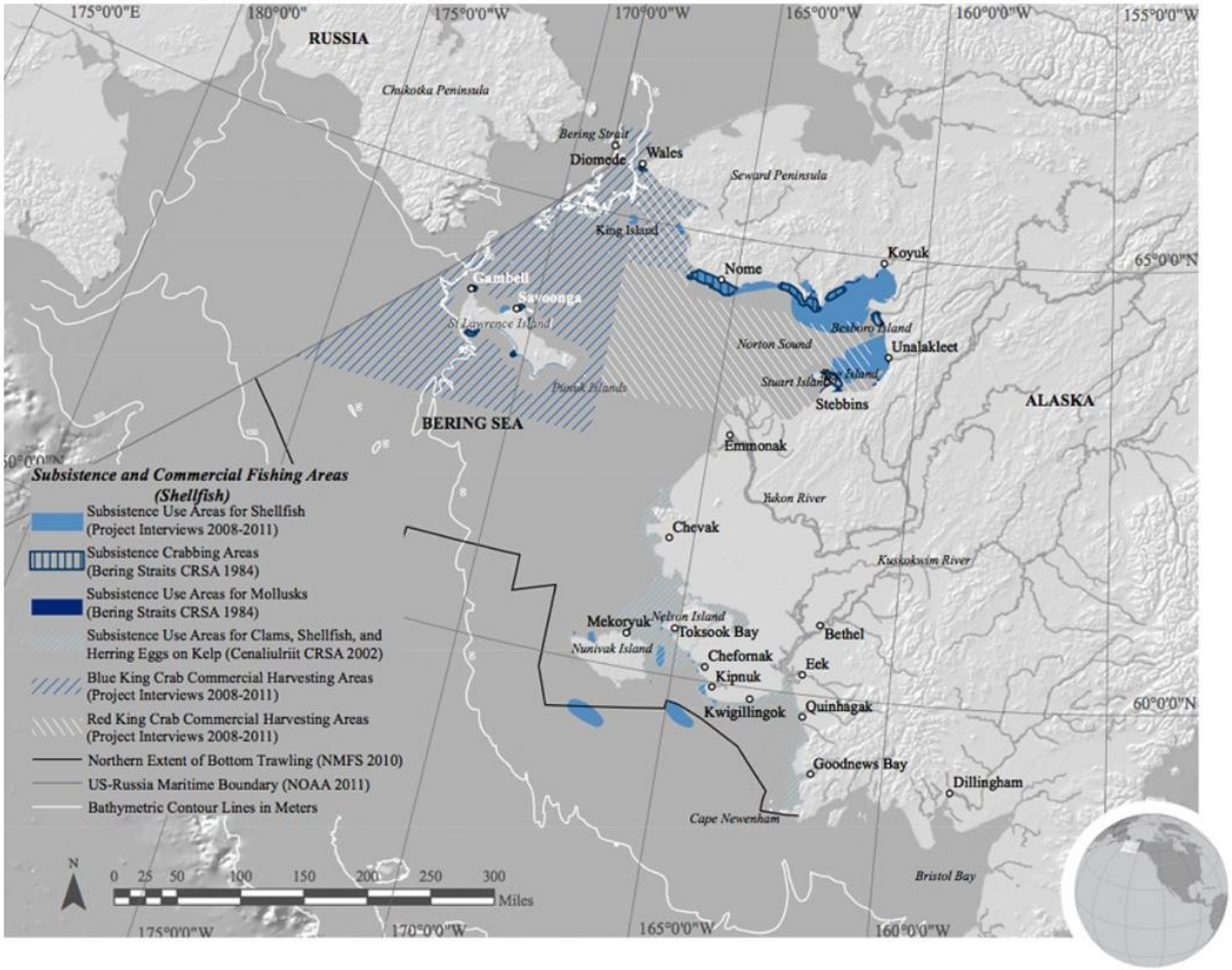


Figure D-18. Map of shellfish subsistence and commercial fishing areas. *Source*: https://eloka-arctic.org/dataproducts.

5. *Commercial Fishing*

Commercial fishing occurs in Kotzebue Sound for salmon and, to a much lesser extent, crab and sheefish, as well as in Norton Sound for salmon, herring, Pacific halibut, red king crab, and miscellaneous finfish (e.g., tom cod, whitefish, and Dolly Varden). Commercial fishing for salmon in Kotzebue Sound generally occurs from July 10 to August 31 in the Kobuk and Noatak Rivers. Salmon fishing in Norton Sound generally occurs from June 25 to September 7, depending on the location and species harvested. A limited tom cod, whitefish, and Dolly Varden commercial harvest occurs in the late fall and winter. A crab commercial harvest occurs in the summer, and a smaller crab fishery occurs through the ice from February into late March or April. A limited bait herring fishery in Norton Sound generally occurs from May 20 to June 10, with harvests occurring along coastline south of Cape Dennigh. The fishing season for crab runs from June 15 to September 3 in offshore waters south of Shishmaref and south to Cape Romanzof, but almost all crab fishing occurs in offshore waters from Nome to Unalakleet. The dates given above indicate periods when fisheries are commonly, but not always, open. As fishing periods are adjusted yearly by emergency openings and closures, contact ADF&G for current fishing periods. Updated information may be found at their Commercial Fisheries Arctic Management Area website 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 subarea throughout the year, but generally are at their highest levels from August to October in the Noatak, Kelly, and Squirrel River areas. Seasons and harvest regulations vary depending on the species and the area and may be changed from year to year. Contact the ADF&G for current seasons within the area of the spill. Updated information may be found at their Sport Fish Northwest Management Area website http://www.sf.adfg.state.ak.us/Management/areas.cfm/FA/northwestoverview.overview

7. *Commercial Tourism*

The communities of the subarea are just a quick flight away from Fairbanks and Anchorage, and many convenient tour packages are available. Commercial tourism in the Northwest Arctic Subarea tends to be relatively large compared to the rest of rural Alaska, receiving about 10,000 visitors annually. Nome, St. Lawrence Island (the villages of Gambell and Savoonga), and Kotzebue receive the majority of the areas tourism. Region-wide activities include: ABEC's Alaska Adventure (907-457-8909), Brooks Range Adventures (907-479-8203), and Kobuk River Jets (907-475-2149). Local Activities include: Gambell Village Tour (907-274-5400), Arctic Circle Adventures (Winter: 907-276-0976, Summer: 907-442-3509), NPS Kotzebue Visitor Center (907-442-3760), Tour Arctic (907-442-3301), Nome Custom Adventures (907-443-5134), Nome Tour and Marketing (907-443-2323), and Visit Russia Far East From Nome (907-443-5464). Travel to the Northwest Arctic Subarea is dictated by seasonal changes, and it should be noted that the majority of the tourism occurs in the summer months. For additional information contact:

Alaska Office of Tourism Development	(907) 465-2012
Alaska State Chamber of Commerce	(907) 586-2323
Alaska Native Tourism Council	(907) 274-5400
Alaska Wilderness Recreation & Tourism Assoc.	(907) 463-3038
Nome Convention and Visitors Bureau	(907) 443-6555

8. *Recreational Sites and Facilities*

Unalakleet River Lodge is located on the Unalakleet River about 10 miles upstream from the mouth. This lodge caters to an international sport fisherman clientele. The Unalakleet River has been designated as a wild and scenic river and attracts an increasing number of visitors each year. The Niuluk River has road access from Council and is one of the most important sport fishing areas in the Seward Peninsula for grayling and Arctic char, as well as pink, chum, and silver salmon. Access to Fish River from the Niuluk River also makes it easily accessible for sport fishing. A sport lodge located on the Fish River at White Mountain caters to an international sport fishing clientele. Golovin Bay, Golovin Lagoon, and the Fish and Niukluk Rivers also provide moose hunting for Nome residents and hunters from outside the state. A number of licensed guides have established use areas, as regulated by the State of Alaska Big Game Commercial Services Board and the ADNR Division of Land, Mining, and Water.

9. *Marinas and Ports (see B. Resources Section)*

Teck Alaska Inc. operates the DeLong Mountain Terminal for the Alaska Industrial Development and Export Authority along the Chukchi Sea, 17 miles southeast of Kivalina, for marine shipment of lead and zinc concentrate and for receiving and storing fuel. Kotzebue and Nome serve as storage and trans-shipment sites for fuel and other cargo. St. Michael also serves as a fuel storage and trans-shipment site.

10. *Fish Processing*

The ADEC Food Safety and Sanitation Program issues Seafood Processing Permits statewide. Permits expire at the end of each calendar year, and some permittees only operate seasonally. A list of current permit holders in the Northwest Arctic Subarea is available at http://ak.healthinspections.us/alaska/seafood_listing.cfm or by contacting the Food Safety and Sanitation Program at (907) 269-7501.

The ADEC Division of Water issues wastewater discharge permits under their Alaska Pollutant Discharge Elimination System authority. An interactive mapper entitled, Alaska DEC Seafood Processing, displays seafood processing facility and discharge locations, seafood processing vessels, and other related information at http://dec.alaska.gov/das/GIS/apps.htm. Information in the map is linked to the wastewater discharge permits, which can also be accessed using the Water Permit Search tool at http://dec.alaska.gov/Applications/Water/WaterPermitSearch/Search.aspx.

As of this printing, fish processing facilities are located in Nome, Unalakleet, and Savoonga. Contact numbers and facility names are listed below.

Nome facilities include:	Norton Sound Seafood Products	(907) 274-7575 (Anchorage) (907) 443-2304 (Nome)
Unalakleet facilities include:	Norton Sound Seafood Products	(907) 274-2248 (Anchorage) (907) 624-3014 (Unalakleet)
Savoonga facilities include:	Norton Sound Seafood Products	(907) 443-2304 (Nome) (907) 274-2248 (Anchorage)

11. *Logging Facilities*
There are no commercial logging operations in the subarea.

12. *Water Intake/Use*
Public water system (PWS) sources are regulated by the ADEC. An interactive web map application titled, "Alaska DEC Drinking Water Protection Areas" (found at http://dec.alaska.gov/das/gis/apps.htm), dynamically displays the Drinking Water Protection Areas for PWS sources. Some layers are scale-dependent, such that they are activated by zooming in to an area of interest. Searches can be accomplished several ways: 1) city, state; 2) longitude, latitude; 3) PWS identification number (ex. AK2######); or 4) meridian, township, range section (MTRS). Click on the Drinking Water Protection Area for more information about the associated PWS, including a hyperlink to Drinking Water Watch where additional PWS information, such as sampling results, can be found. Other ADEC layers are included in the map, and information about those can be accessed by clicking on the associated points or areas. Many of the layers in the map are also available as services and can be added individually to your local mapping application. Additional information regarding regulated PWS sources can be obtained from ADEC at (907) 451-2138 or at http://dec.alaska.gov/eh/dw/index.htm.

For private water systems, contact the ADNR at (907) 269-8645, and for additional information visit http://dnr.alaska.gov/mlw/water/.

vi. 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. *Tribal*

Native corporations may be landowners and should be contacted for access. ADNR maintains a searchable list of regional and village Corporations at http://dnr.alaska.gov/mlw/trails/17b/corpindex.cfm.

There are 229 federally-recognized tribes in Alaska (as of May 2017). Tribal governments in Alaska generally fall into two groups. About 70 tribal governments were formed under the Indian Reorganization Act (IRA), as amended, while about 150 of the tribes have traditional councils. In many communities, a municipal government may also exist.

St. Lawrence Island is unique as the lands are jointly owned and managed by Savoonga and Gambell, and permits are required for non-tribal members. Please contact the tribal IRA office for additional details.

Contact information for tribal representatives can be found at https://www.bia.gov/WhoWeAre/BIA/OIS/TribalGovernmentServices/TribalDirectory/.

3. *State*

The State of Alaska owns the majority of tidal lands from mean high tide out to three geographic miles along the coast and submerged lands below ordinary high water along navigable water bodies. There are other areas of state-owned land in the region, but there are no legislatively designated special areas requiring extra fish and wildlife habitat protection.

4. *Federal*

Gates of the Arctic National Park and Preserve. About 250 miles northwest of Fairbanks, the Gates of the Arctic National Park and Preserve was established in 1980 and encompasses approximately 7,952,000 acres. The area is managed to protect its wild and undeveloped character for mountaineering and wilderness recreation, to protect habitat and wildlife, and to protect current and continued subsistence uses. Caribou, moose, Dall sheep, grizzly bear, wolves, and raptors are in abundance. The Tinayguk/North Fork, John, upper Alatna, upper Kobuk, and Noatak Rivers are nationally designated wild and scenic rivers.

Noatak National Preserve. The 6.5 million acre preserve encompasses more than 250 miles of the Noatak River, a wild and scenic river. Noatak National Preserve protects the largest undeveloped mountain-rimmed river basin in the United States. It represents a yardstick of environmental health against which future conditions can be compared. In recognition of the value of this Arctic wilderness, UNESCO has designated the Noatak River Basin an International Biosphere Reserve. The river basin provides an outstanding resource for scientific research, environmental education, and subsistence and recreational opportunities.

Kobuk Valley National Park. Kobuk Valley National Park, a 1.75 million acre area about 75 miles east of Kotzebue, was created to maintain the environmental integrity of the natural features of the Kobuk Valley, including the Kobuk, Salmon, and other rivers; the boreal forest; and the Great Kobuk Sand Dunes, the largest active dune field in arctic latitudes. The valley remains an important area for traditional subsistence harvest of caribou, moose, bear, fish, waterfowl, and many edible and medicinal plants. The slow-moving Kobuk River is popular for fishing, canoeing, and kayaking. Backpacking and photography are educational recreational uses.

Cape Krusenstern National Monument. Cape Krusenstern National Monument is found along the Chukchi Sea coast northwest of Kotzebue. The nearly 650,000 acre monument is characterized by a coastal plain dotted with sizable lagoons and backed by gently rolling limestone hills. This area has been designated an Archeological District in the National Register of Historic Places and a National Historic Landmark (which includes the monument and extends beyond). Bluffs and a series of 114 beach ridges record the changing shorelines of the Chukchi Sea and contain a chronological record of an estimated 6,000 years of prehistoric and historic use. Portions of the monument are important use areas for subsistence activities.

Selawik National Wildlife Refuge. The Selawik NWR includes about 3.2 million acres east of Kotzebue Sound in northwestern Alaska. The area is managed to conserve fish and wildlife populations and habitat, as well as to provide for current and continued subsistence uses by local residents. The refuge includes large river deltas, alpine tundra, extensive wetland and lake complexes, meadows, mountains, glacial valleys, sand dunes, and sand, gravel, and mud beaches. The refuge is used by large numbers of anadromous and resident fish, waterfowl and other birds, terrestrial mammals, and furbearers. Seals and beluga whales occur in marine waters along the western boundary of the refuge. The upper reaches of the Selawik River are designated as “wild and scenic.”

Bering Land Bridge National Preserve. The Bering Land Bridge National Preserve encompasses approximately 2.8 million acres of the Seward Peninsula. The primary purpose of the preserve is to protect and preserve, for research and interpretation, a portion of the 1,000 mile wide land link that intermittently connected Asia and North America 14,000 to 25,000 years ago. Significant natural resources of the preserve include areas of past volcanic activity in the Arctic, dynamic coastal barrier beaches with interior lagoons, and a full representation of tundra vegetation from sea level to 3,500 feet. Some 112 migratory bird species may be seen here, along with occasional walrus, seals, and whales. Significant cultural resources include archaeological sites over 10,000 years old, former Eskimo village sites, and more recent early mining and exploration activities. Today, Eskimos from neighboring villages pursue subsistence lifestyles and manage their reindeer herds in and around the preserve.

Alaska Maritime National Wildlife Refuge. Public lands on islands, barrier islands, islets, rocks, reefs, and spires in the Chukchi Sea make up the Chukchi Sea Unit of the refuge. Similar areas along the southern Seward Peninsula and in Norton Sound are included in the Bering Sea Unit of the refuge. The Alaska Maritime NWR 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. Thousands of sea lions, seals, and walruses live in the Bering and Chukchi units of the refuge. Wildlife viewing, photography, backpacking, and harvesting of subsistence resources (e.g., seabirds and their eggs, marine mammals) are primary activities.

National Wild and Scenic Rivers. Congress established the National Wild and Scenic Rivers System to preserve, in a free-flowing condition, rivers of remarkable scenic, recreational, geologic, fish and wildlife,

historic, cultural, or other similar value. All or part of 25 such rivers in Alaska are designated wild and scenic. Those located in the Northwest Arctic Subarea include: the Noatak, Kobuk, and Salmon Rivers administered by the NPS; the Unalakleet River administered by the BLM; and the Selawik River administered by the USFWS. By classifying these rivers as such, Congress mandated that these rivers will be "managed to be free of impoundments and generally inaccessible by trail, with watersheds or shorelines primitive, and waters unpolluted...representing vestiges of primitive America."

B. LAND MANAGEMENT MAPS

The ADNR, under agreement with the ADEC, produced digital base and land management maps for each of the subareas using their ARC-INFO based GIS. 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 BLM'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.

Northwest Arctic Subarea Land Management Links:

http://www.asgdc.state.ak.us/maps/cplans/base/LegendPage.pdf

http://www.asgdc.state.ak.us/maps/cplans/nwa/NorthwestMap1of7.pdf

http://www.asgdc.state.ak.us/maps/cplans/nwa/NorthwestMap2of7.pdf

http://www.asgdc.state.ak.us/maps/cplans/nwa/NorthwestMap3of7.pdf

http://www.asgdc.state.ak.us/maps/cplans/nwa/NorthwestMap4of7.pdf

http://www.asgdc.state.ak.us/maps/cplans/nwa/NorthwestMap5of7.pdf

http://www.asgdc.state.ak.us/maps/cplans/nwa/NorthwestMap6of7.pdf

http://www.asgdc.state.ak.us/maps/cplans/nwa/NorthwestMap7of7.pdf

vii. SENSITIVE AREA ATTACHMENT 1: U.S. FISH AND WILDLIFE SERVICE – SEABIRD COLONIES

The following information was generated by the USFWS Division of Migratory Bird Management and is the best current estimate of seabird colonies located in the Northwest Arctic Subarea. This table was produced with data obtained from the North Pacific Seabird Colony Database. Additional information is available from the Division of Migratory Bird Management.

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
3-Nest	63.70546	-171.6893	Herring Gull	Breeding	6	
Agate	68.13499	-165.94913	Glaucous Gull	Breeding	104	
			Horned Puffin	Breeding		200
			Common Murre	Breeding		
			Black-legged Kittiwake	Breeding	9,500	
			Thick-billed Murre	Breeding		
			Unidentified Murre	Breeding and Roosting		44,000
			Pelagic Cormorant	Unspecified		
			Tufted Puffin	Unspecified		
Airplane Tailwing	63.65503	-171.71642	Herring Gull	Breeding	10	
Aqeftaapuk	63.60894	-170.79645	Thick-billed Murre	Breeding		14,568
			Pelagic Cormorant	Breeding	44	
			Black-legged Kittiwake	Breeding		1,850
			Parakeet Auklet	Breeding		9
			Pigeon Guillemot	Breeding		35
			Glaucous Gull	Breeding	2	
			Tufted Puffin	Breeding		23

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Common Murre	Breeding		19,403
			Horned Puffin	Breeding		92
Artigotrat	68.1144	-165.86668	Common Murre	Breeding		
			Black-legged Kittiwake	Breeding	10,400	
			Unidentified Murre	Breeding and Roosting		123,000
			Thick-billed Murre	Breeding		
			Horned Puffin	Breeding		470
			Glaucous Gull	Breeding	40	
			Pelagic Cormorant	Breeding	36	
			Black Guillemot	Breeding		2
			Pigeon Guillemot	Breeding		4
Besboro Island	64.1264	-161.30559	Common Murre	Unspecified		
			Thick-billed Murre	Unspecified		
			Horned Puffin	Unspecified		250
			Pigeon Guillemot	Unspecified		4
			Tufted Puffin	Unspecified		20
			Pelagic Cormorant	Breeding	182	
			Glaucous Gull	Unspecified		47
			Common Eider	Breeding		
Big Diomede Island (Ostrov Ratmanova)	65.79777	-168.99948	Unidentified Auklet (Tribe Aethiini)	Breeding		2,000,000

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Unidentified Murre	Breeding		12,000
			Tufted Puffin	Breeding		670
			Least Auklet	Breeding		3,500,000
			Glaucous Gull	Breeding		460
			Pelagic Cormorant	Breeding		535
			Parakeet Auklet	Breeding		60,000
			Crested Auklet	Breeding		550,000
			Common Murre	Breeding		9,700
			Thick-billed Murre	Breeding		4,000
			Pigeon Guillemot	Breeding		880
			Horned Puffin	Breeding		3,900
			Black-legged Kittiwake	Breeding		3,400
Black Cove Island	63.52863	-161.1385	Glaucous Gull	Unspecified		
			Common Eider	Breeding		
			Horned Puffin	Breeding		100
			Tufted Puffin	Breeding		2
			Arctic Tern	Unspecified		8
Black Point	63.55081	-161.11152	Glaucous Gull	Unspecified		
			Pelagic Cormorant	Unspecified		18
Bluff	64.57012	-163.72858	Unidentified Cormorant (Genus Phalacrocorax)	Breeding and Roosting		

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Pigeon Guillemot	Breeding and Roosting		
			Parakeet Auklet	Unspecified		65
			Thick-billed Murre	Breeding and Roosting		560
			Common Murre	Breeding and Roosting		56,000
			Horned Puffin	Breeding		800
			Glaucous-winged Gull	Breeding and Roosting		75
			Tufted Puffin	Breeding		98
			Unidentified Murre	Breeding and Roosting		35,527
			Black-legged Kittiwake	Breeding and Roosting		12,459
			Glaucous Gull	Breeding and Roosting		143
			Pelagic Cormorant	Breeding and Roosting		229
Bluff Triangle	63.52029	-170.04778	Unidentified Murre	Breeding and Roosting		7,000
			Tufted Puffin	Breeding		210
			Horned Puffin	Breeding		236
			Parakeet Auklet	Breeding		151
			Thick-billed Murre	Breeding		4,311
			Pigeon Guillemot	Breeding		324
			Black-legged Kittiwake	Breeding		2,537
			Pelagic Cormorant	Breeding	62	

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Common Murre	Breeding		1,435
			Herring Gull	Breeding	4	
			Least Auklet	Breeding		29,928
			Crested Auklet	Breeding		35,412
Cape Darby	64.3306	-162.78329	Horned Puffin	Unspecified		575
			Pelagic Cormorant	Breeding	448	
			Tufted Puffin	Unspecified		52
			Glaucous Gull	Breeding	290	
Cape Deceit	66.0997	-162.74279	Tufted Puffin	Breeding		
			Common Murre	Breeding		
			Glaucous Gull	Breeding		14
			Thick-billed Murre	Breeding		
			Horned Puffin	Breeding		20
			Unidentified Murre	Breeding		1,700
			Black-legged Kittiwake	Breeding		1,864
Cape Denbigh, North	64.4128	-161.52639	Unidentified Murre	Breeding		
			Glaucous-winged Gull	Breeding		
			Pelagic Cormorant	Breeding	46	
			Glaucous Gull	Unspecified		30
			Black-legged Kittiwake	Unspecified		1,200
			Tufted Puffin	Unspecified		3

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Horned Puffin	Unspecified		40
			Thick-billed Murre	Unspecified		60
			Common Murre	Unspecified		5,840
Cape Denbigh, South	64.38279	-161.52892	Glaucous-winged Gull	Breeding		
			Tufted Puffin	Breeding		
			Glaucous Gull	Breeding	50	
			Black-legged Kittiwake	Breeding		700
			Common Murre	Breeding		4,260
			Common Eider	Unspecified		3
			Thick-billed Murre	Breeding		40
			Pelagic Cormorant	Breeding	48	
			Horned Puffin	Breeding		35
Cape Douglas	64.98999	-166.64249	Glaucous Gull	Breeding	160	
Cape Dyer	68.6533	-166.22499	Tufted Puffin	Breeding	4	
			Horned Puffin	Breeding	24	
			Pelagic Cormorant	Breeding	26	
			Glaucous Gull	Unspecified		48
Cape Kitnik	63.55818	-170.0641	Unidentified Murre	Breeding and Roosting		6,000
			Pelagic Cormorant	Breeding	26	
			Herring Gull	Breeding	4	

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Crested Auklet	Breeding		10
			Black-legged Kittiwake	Breeding		4,331
			Pigeon Guillemot	Breeding		210
			Horned Puffin	Breeding		82
			Parakeet Auklet	Breeding		119
			Least Auklet	Breeding		30
			Tufted Puffin	Breeding		19
			Common Murre	Breeding		8,648
			Thick-billed Murre	Breeding		2,979
Cape Lewis	68.70885	-166.19033	Glaucous Gull	Breeding	50	
			Pelagic Cormorant	Breeding	58	
			Thick-billed Murre	Breeding and Roosting		17,500
			Black Guillemot	Breeding	28	
			Pigeon Guillemot	Unspecified		
			Black-legged Kittiwake	Unspecified		3,000
			Unidentified Murre	Breeding and Roosting		
			Horned Puffin	Breeding		300
			Common Murre	Breeding and Roosting		7,500
			Tufted Puffin	Breeding	4	
Cape Lisburne	68.8752	-166.21711	Thick-billed Murre	Breeding and Roosting		130,000

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Black-legged Kittiwake	Unspecified		15,000
			Horned Puffin	Unspecified		1,450
			Tufted Puffin	Unspecified		20
			Common Murre	Breeding and Roosting		70,000
			Glaucous Gull	Breeding	20	
			Pelagic Cormorant	Unspecified	78	
			Black Guillemot	Unspecified		170
			Pigeon Guillemot	Unspecified		
Cape Myaughee	63.6547	-170.21968	Least Auklet	Breeding		606,060
			Crested Auklet	Breeding		194,550
			Pigeon Guillemot	Breeding		723
			Tufted Puffin	Breeding		286
			Pelagic Cormorant	Breeding	18	
			Black-legged Kittiwake	Breeding		3,249
			Parakeet Auklet	Breeding		483
			Common Murre	Breeding		7,317
			Horned Puffin	Breeding		441
			Herring Gull	Breeding	10	
			Thick-billed Murre	Breeding		10,917
Cape Riley	65.22302	-166.47294	Glaucous-winged Gull	Unspecified		

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Pelagic Cormorant	Unspecified		100
			Horned Puffin	Unspecified		100
			Pigeon Guillemot	Unspecified		20
			Glaucous Gull	Breeding		
			Black-legged Kittiwake	Unspecified		
Cape Thompson	68.14456	-165.97246	Horned Puffin	Breeding		178
			Black-legged Kittiwake	Breeding	6,300	
			Thick-billed Murre	Breeding		
			Unidentified Murre	Breeding and Roosting		12,000
			Common Murre	Breeding		
			Glaucous Gull	Breeding	4	
			Tufted Puffin	Unspecified		
			Pelagic Cormorant	Breeding	2	
Chamisso Island	66.2192	-161.82219	Pelagic Cormorant	Breeding and Roosting		4
			Tufted Puffin	Breeding	10	
			Horned Puffin	Breeding	2,800	
			Thick-billed Murre	Breeding		180
			Common Eider	Breeding	16	
			Common Murre	Breeding		120
			Glaucous Gull	Breeding	20	

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Unidentified Murre	Breeding		
Channel Island	63.45638	-162.04445	Aleutian Tern	Unspecified		
Cliff	63.56999	-170.07239	Pigeon Guillemot	Breeding and Roosting		30
Corwin Creek	68.8736	-165.11778	Pelagic Cormorant	Unspecified		33
			Tufted Puffin	Unspecified		3
Crowbill Point	68.10381	-165.80704	Thick-billed Murre	Unspecified		
			Common Murre	Unspecified		
			Horned Puffin	Breeding		418
			Unidentified Murre	Breeding and Roosting		6,300
			Tufted Puffin	Breeding		6
			Pelagic Cormorant	Breeding	8	
			Glaucous Gull	Breeding	120	
E. Choris Peninsula	66.3147	-161.86669	Horned Puffin	Unspecified		30
			Glaucous Gull	Unspecified		7
E. York Mountain Cliffs	65.40329	-167.39328	Horned Puffin	Unspecified		
			Glaucous Gull	Unspecified		
			Unidentified Cormorant (Genus Phalacrocorax)	Unspecified		
			Pelagic Cormorant	Unspecified		
Egavik	64.08639	-160.94514	Pelagic Cormorant	Unspecified		12
			Glaucous Gull	Unspecified		5

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Horned Puffin	Unspecified		12
Egg Island	63.61049	-161.741	Thick-billed Murre	Unspecified		40
			Common Murre	Unspecified		1,960
			Tufted Puffin	Unspecified		25
			Horned Puffin	Unspecified		210
			Parakeet Auklet	Unspecified		23
			Pelagic Cormorant	Breeding		10
			Black-legged Kittiwake	Breeding		700
Eider Duck Island	63.47428	-161.49772	Aleutian Tern	Unspecified		
			Glaucous Gull	Unspecified		8
			Arctic Tern	Unspecified		4
			Horned Puffin	Unspecified		30
			Common Eider	Breeding		25
Fairway Rock	65.62615	-168.74475	Glaucous-winged Gull	Unspecified		
			Parakeet Auklet	Unspecified		500
			Crested Auklet	Unspecified		10,000
			Common Murre	Unspecified		5,000
			Thick-billed Murre	Unspecified		15,000
			Least Auklet	Unspecified		15,000
			Glaucous Gull	Breeding and Roosting		1,237

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Black-legged Kittiwake	Breeding	2,610	
			Tufted Puffin	Breeding and Roosting		1,237
			Horned Puffin	Breeding and Roosting		34
			Pigeon Guillemot	Breeding		2
			Pelagic Cormorant	Breeding	18	
			Unidentified Murre	Breeding and Roosting		4,470
Golovin Spit	64.55122	-163.00481	Aleutian Tern	Breeding		30
Imnakpak Cliff	68.15419	-165.97719	Unidentified Murre	Breeding and Roosting		208,000
			Common Murre	Breeding		
			Horned Puffin	Breeding		540
			Thick-billed Murre	Breeding		
			Black-legged Kittiwake	Breeding	3,400	
			Glaucous Gull	Breeding	32	
			Tufted Puffin	Unspecified		
			Pigeon Guillemot	Breeding		10
			Black Guillemot	Breeding		2
			Pelagic Cormorant	Unspecified		
Is. In Lake E. Of Safety Sound	64.5333	-164.58329	Glaucous Gull	Breeding	60	
Island S. Cape Espenberg 4 Mi.	66.49719	-163.62468	Glaucous Gull	Unspecified		800
			Common Eider	Breeding		

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Ivekan Mountain	63.35728	-171.69148	Least Auklet	Breeding		293,321
			Crested Auklet	Breeding		814,389
			Pigeon Guillemot	Breeding		482
			Pelagic Cormorant	Breeding	396	
			Glaucous Gull	Breeding	70	
			Thick-billed Murre	Breeding		25,965
			Tufted Puffin	Breeding		208
			Common Murre	Breeding		62,972
			Parakeet Auklet	Breeding		855
			Horned Puffin	Breeding		622
			Black-legged Kittiwake	Breeding	13,916	
Iviagik Mountain	68.60969	-166.22887	Unidentified Murre	Breeding and Roosting		20
Kaghkusalik	63.6131	-170.77989	Crested Auklet	Breeding and Roosting		8,000
			Least Auklet	Breeding and Roosting		14,000
			Horned Puffin	Breeding		
			Black-legged Kittiwake	Breeding		3,000
			Unidentified Murre	Breeding		65,000
			Pigeon Guillemot	Breeding		300
			Glaucous Gull	Breeding		
			Pelagic Cormorant	Breeding		

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Parakeet Auklet	Breeding		
			Black Guillemot	Breeding		
Kaghkusalik Point	63.59882	-170.82768	Pelagic Cormorant	Breeding	44	
			Thick-billed Murre	Breeding		3,958
			Common Murre	Breeding		2,920
			Pigeon Guillemot	Breeding		2
			Horned Puffin	Breeding		35
			Tufted Puffin	Breeding		5
			Black-legged Kittiwake	Breeding		2,218
Kangee Cliffs	63.59062	-170.84657	Pelagic Cormorant	Breeding	6	
			Parakeet Auklet	Breeding		162
			Tufted Puffin	Breeding		42
			Common Murre	Breeding		1,904
			Black-legged Kittiwake	Breeding		3,432
			Horned Puffin	Breeding		75
			Thick-billed Murre	Breeding		6,198
			Pigeon Guillemot	Breeding		209
Kasik Lagoon	67.1783	-163.63419	Mew Gull	Breeding	20	
			Glaucous Gull	Breeding	30	
Kilikralik Pass	68.5178	-166.29558	Black-legged Kittiwake	Unspecified		
			Pelagic Cormorant	Breeding	40	

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Horned Puffin	Breeding	60	
			Glaucous Gull	Breeding	50	
King Island	64.96876	-168.06666	Glaucous-winged Gull	Unspecified		
			Pigeon Guillemot	Breeding		700
			Parakeet Auklet	Breeding		42,000
			Black-legged Kittiwake	Breeding		4,000
			Least Auklet	Breeding		80,000
			Tufted Puffin	Breeding		2,300
			Crested Auklet	Breeding		22,000
			Pelagic Cormorant	Breeding	120	
			Thick-billed Murre	Breeding		45,000
			Glaucous Gull	Breeding	90	
			Horned Puffin	Breeding		4,700
			Common Murre	Breeding		45,000
Kiveepuk	63.65018	-170.69624	Pigeon Guillemot	Breeding		40
			Black-legged Kittiwake	Breeding		463
			Parakeet Auklet	Breeding		9
			Thick-billed Murre	Breeding		986
			Herring Gull	Breeding	2	
			Horned Puffin	Breeding		35
			Common Murre	Breeding		246

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Tufted Puffin	Breeding		8
Koomlangeelkuk Bay	63.66318	-170.57977	Pelagic Cormorant	Breeding	4	
			Horned Puffin	Breeding		3
			Herring Gull	Breeding	2	
			Tufted Puffin	Breeding		3
			Parakeet Auklet	Breeding		78
			Pigeon Guillemot	Breeding		56
Koozata Lagoon (1)	63.42829	-171.01169	Common Eider	Breeding		
			Herring Gull	Breeding		
Koozata Lagoon (2)	63.4364	-170.89138	Glaucous Gull	Breeding	44	
			Herring Gull	Breeding	44	
			Common Eider	Breeding	64	
Koozata Lagoon (3)	63.2197	-170.25529	Common Eider	Breeding	16	
			Herring Gull	Breeding		
Koozata Lagoon (4)	63.20047	-170.23372	Herring Gull	Breeding	286	
			Glaucous Gull	Breeding	154	
			Common Eider	Breeding	56	
Koozata Lagoon (5)	63.42071	-170.82651	Common Eider	Breeding	16	
Koozata Lagoon (6)	63.4237	-170.8371	Herring Gull	Breeding	70	
			Common Eider	Breeding	12	
			Glaucous Gull	Breeding	2	

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Kotzebue Airport	66.9	-162.58333	Aleutian Tern	Unspecified		50
Kowtuk Point	68.45408	-166.31525	Pelagic Cormorant	Breeding	30	
			Black-legged Kittiwake	Breeding		100
Koyuk River Mouth	64.93202	-161.14904	Aleutian Tern	Breeding		5
Krusenstern Lagoon	67.1547	-163.70077	Arctic Tern	Breeding	100	
Little Diomede Island	65.75609	-168.92638	Parakeet Auklet	Unspecified		20,000
			Black Guillemot	Unspecified		
			Dovekie	Breeding and Roosting		50
			Tufted Puffin	Breeding and Roosting		433
			Unidentified Murre	Breeding and Roosting		29,485
			Pigeon Guillemot	Breeding and Roosting		95
			Horned Puffin	Breeding and Roosting		2,393
			Glaucous Gull	Breeding and Roosting		187
			Pelagic Cormorant	Breeding	126	
			Common Murre	Breeding		
			Black-legged Kittiwake	Breeding	64,554	
			Thick-billed Murre	Breeding		
			Crested Auklet	Breeding and Roosting		219,000
			Least Auklet	Breeding and Roosting		207,000

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Little Rocky Point	64.4944	-163.33468	Glaucous Gull	Breeding	20	
			Horned Puffin	Unspecified		10
			Pelagic Cormorant	Breeding	12	
Lopp Lagoon	65.75	-167.75	Aleutian Tern	Breeding		3
Mid Rock	66.22555	-161.85855	Tufted Puffin	Breeding		2
			Horned Puffin	Breeding		8
			Thick-billed Murre	Breeding		
			Common Murre	Breeding		
			Unidentified Murre	Breeding		300
			Black-legged Kittiwake	Breeding	84	
			Glaucous Gull	Breeding		20
Middle Punuk Island	63.07593	-168.82154	Herring Gull	Breeding	274	
			Tufted Puffin	Breeding	942	
			Common Eider	Breeding	160	
Moses Point	64.75031	-161.76588	Aleutian Tern	Breeding		
Motherwood Point	66.06532	-162.09024	Unidentified Murre	Unspecified		
			Horned Puffin	Breeding		40
			Glaucous Gull	Breeding		54
Myaugh	63.61999	-170.15828	Crested Auklet	Breeding		10,710
			Least Auklet	Breeding		28,350
			Tufted Puffin	Breeding		43

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Herring Gull	Breeding	24	
			Parakeet Auklet	Breeding		320
			Pelagic Cormorant	Breeding	14	
			Pigeon Guillemot	Breeding		56
			Horned Puffin	Breeding		142
N. Stuart Island	63.63826	-162.53666	Arctic Tern	Unspecified		
			Pelagic Cormorant	Unspecified		
			Horned Puffin	Unspecified		
			Unidentified Cormorant (Genus Phalacrocorax)	Unspecified		
			Tufted Puffin	Unspecified		
N.E. Choris Peninsula	66.34029	-161.89579	Horned Puffin	Breeding		50
			Glaucous Gull	Unspecified		6
N.W. Choris Peninsula	66.33322	-161.93355	Glaucous Gull	Breeding		90
			Horned Puffin	Breeding		60
			Pelagic Cormorant	Unspecified		
Near Ninemile Point	66.04958	-162.42772	Black-legged Kittiwake	Unspecified		5
			Glaucous Gull	Breeding		14
			Horned Puffin	Breeding		40
Niak Creek	68.81239	-166.19499	Pelagic Cormorant	Breeding	2	
North Punuk Island	63.07983	-168.80542	Least Auklet	Breeding		

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Pelagic Cormorant	Breeding		
			Common Eider	Unspecified		
			Unidentified Murre	Breeding		
			Parakeet Auklet	Breeding		168
			Pigeon Guillemot	Breeding		66
			Horned Puffin	Breeding		22
			Common Murre	Breeding		
			Tufted Puffin	Breeding		35
Noyalik Peak	68.75571	-166.19249	Horned Puffin	Breeding		35
			Tufted Puffin	Breeding		12
			Pelagic Cormorant	Breeding	4	
			Unidentified Murre	Unspecified		20
Nugnugaluktuk River	66.1992	-164.03418	Common Eider	Unspecified		
			Arctic Tern	Unspecified		
			Mew Gull	Unspecified		
			Glaucous Gull	Breeding		1,000
Nunangeeghak Rocks	63.18425	-170.28369	Pelagic Cormorant	Breeding	42	
			Herring Gull	Breeding	22	
Omalik Spit	69.16499	-163.48999	Arctic Tern	Breeding		10
Oolahpuk Mountain	63.00059	-169.55919	Herring Gull	Breeding		
			Common Eider	Breeding		

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Owalit Mountain	63.42507	-171.79888	Common Eider	Unspecified		
			Crested Auklet	Breeding		109,900
			Least Auklet	Breeding		106,014
			Common Murre	Breeding		29,070
			Glaucous Gull	Breeding	18	
			Tufted Puffin	Breeding		948
			Black-legged Kittiwake	Breeding	5,390	
			Pelagic Cormorant	Breeding	708	
			Parakeet Auklet	Breeding		1,069
			Pigeon Guillemot	Breeding		585
			Horned Puffin	Breeding		660
			Thick-billed Murre	Breeding		6,343
Pinaapuk	63.64266	-170.71927	Thick-billed Murre	Breeding		5,182
			Pelagic Cormorant	Breeding	12	
			Tufted Puffin	Breeding		30
			Herring Gull	Breeding	6	
			Black-legged Kittiwake	Breeding		3,184
			Horned Puffin	Breeding		43
			Glaucous Gull	Breeding	4	
			Common Murre	Breeding		2,507
			Pigeon Guillemot	Breeding		26

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Parakeet Auklet	Breeding		2
Pitgnayuk	63.12936	-169.39132	Pelagic Cormorant	Breeding	40	
			Herring Gull	Breeding	2	
Point Spencer	65.0786	-166.74009	Glaucous Gull	Breeding	70	
Poowooiliak	63.34967	-171.3078	Pigeon Guillemot	Breeding		282
			Parakeet Auklet	Breeding		84
			Pelagic Cormorant	Breeding	434	
			Tufted Puffin	Breeding		58
			Black-legged Kittiwake	Breeding	2	
			Horned Puffin	Breeding		115
			Glaucous Gull	Breeding	2	
Puffin Island	66.2292	-161.85748	Tufted Puffin	Breeding	10	
			Glaucous Gull	Breeding	24	
			Common Murre	Breeding		
			Thick-billed Murre	Breeding		
			Horned Puffin	Breeding		10,000
			Unidentified Murre	Breeding		10,400
			Black-legged Kittiwake	Breeding	3,308	
Punuk Islands	63.0761	-168.81998	Pelagic Cormorant	Breeding		
			Thick-billed Murre	Breeding		
			Black-legged Kittiwake	Breeding		

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Glaucous Gull	Breeding		
			Horned Puffin	Breeding		
			Pigeon Guillemot	Breeding		
			Common Murre	Breeding		
			Common Eider	Breeding		
			Parakeet Auklet	Breeding		
			Tufted Puffin	Breeding		
Putgut Plateau Island	63.41128	-171.38795	Common Eider	Breeding	22	
			Herring Gull	Breeding	30	
Qikiqtaichaik Island, Noatak Delta	67.02809	-162.74279	Aleutian Tern	Breeding	180	
Rex Point	66.08559	-163.33078	Tufted Puffin	Unspecified		
			Glaucous Gull	Breeding	30	
			Black-legged Kittiwake	Breeding		1,000
			Thick-billed Murre	Breeding		1,400
			Horned Puffin	Breeding		70
			Common Murre	Breeding		1,600
Rocky Point	64.41029	-163.18419	Pelagic Cormorant	Breeding	416	
			Glaucous Gull	Breeding	12	
			Tufted Puffin	Unspecified		4
			Horned Puffin	Unspecified		68

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
S. Side Cape Kitnik	63.54824	-170.06481	Unidentified Murre	Breeding and Roosting		3,000
			Common Murre	Breeding and Roosting		
			Pigeon Guillemot	Breeding and Roosting		300
			Black-legged Kittiwake	Breeding and Roosting		2,000
			Horned Puffin	Breeding and Roosting		700
			Thick-billed Murre	Breeding and Roosting		
S. Stuart Island	63.53216	-162.58579	Arctic Tern	Breeding		
			Tufted Puffin	Breeding and Roosting		15
			Horned Puffin	Breeding and Roosting		185
			Glaucous Gull	Breeding		
			Pelagic Cormorant	Breeding		
			Unidentified Murre	Breeding		
S.W. Choris Peninsula	66.27757	-161.89601	Horned Puffin	Breeding		70
			Tufted Puffin	Breeding		4
			Pelagic Cormorant	Unspecified		
			Glaucous Gull	Breeding		14
Safety Lagoon	64.50658	-164.60585	Arctic Tern	Breeding		19
			Aleutian Tern	Breeding		480
			Glaucous Gull	Unspecified		9

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Unidentified Tern	Unspecified		50
			Aleutian Tern	Unspecified		2
			Common Eider	Breeding		30
			Arctic Tern	Unspecified		5
Sandbar W Of Lagoon Entrance	64.46773	-164.75776	Arctic Tern	Breeding		10
			Aleutian Tern	Breeding		
Sapumik Ridge	68.85559	-165.42419	Glaucous Gull	Unspecified		40
			Black Guillemot	Unspecified		9
Sarichef Island	66.24835	-166.09784	Aleutian Tern	Breeding	6	
Savoonga	63.69139	-170.44968	Unidentified Murre	Breeding		5,000
			Least Auklet	Breeding		17,814
			Crested Auklet	Breeding		128,208
			Pigeon Guillemot	Breeding		402
			Pelagic Cormorant	Breeding	8	
			Tufted Puffin	Breeding		104
			Thick-billed Murre	Breeding		733
			Parakeet Auklet	Breeding		151
			Common Murre	Breeding		168
			Horned Puffin	Breeding		155
			Glaucous Gull	Breeding	4	

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Black-legged Kittiwake	Breeding		387
			Herring Gull	Breeding	2	
Seevookhan Mountain	63.29109	-168.80859	Glaucous Gull	Breeding		61
			Herring Gull	Breeding		59
Sevuokuk Mountain	63.76579	-171.65028	Parakeet Auklet	Breeding		
			Pigeon Guillemot	Breeding		795
			Crested Auklet	Breeding		127,500
			Least Auklet	Breeding		382,600
			Horned Puffin	Breeding		830
			Tufted Puffin	Breeding		251
			Dovekie	Breeding		9
Shiekuk Creek	63.62744	-170.74885	Pelagic Cormorant	Breeding	16	
			Herring Gull	Breeding	2	
			Pigeon Guillemot	Breeding		22
			Thick-billed Murre	Breeding		162
			Horned Puffin	Breeding		81
			Tufted Puffin	Breeding		20
Singikpo Cape	63.58639	-170.08919	Least Auklet	Breeding and Roosting		128,000
Singikpo Cape	63.58639	-170.08919	Crested Auklet	Breeding and Roosting		14,000
			Black-legged Kittiwake	Breeding		2,000

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Common Eider	Breeding		
			Pelagic Cormorant	Breeding		80
			Unidentified Murre	Breeding		5,000
Singikpo Cape	63.61174	-170.10278	Unidentified Murre	Breeding and Roosting		60,000
			Dovekie	Breeding	2	
			Least Auklet	Breeding		335,868
			Crested Auklet	Breeding		85,542
			Black-legged Kittiwake	Breeding		123
			Parakeet Auklet	Breeding		64
			Common Murre	Breeding		33
			Thick-billed Murre	Breeding		287
			Horned Puffin	Breeding		28
			Pigeon Guillemot	Breeding		79
			Pelagic Cormorant	Breeding	24	
			Tufted Puffin	Breeding		70
Skalik	63.58758	-170.07644	Crested Auklet	Breeding		234
			Least Auklet	Breeding		3,108
			Parakeet Auklet	Breeding		46
			Horned Puffin	Breeding		17
			Pigeon Guillemot	Breeding		64

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Tufted Puffin	Breeding		6
Sledge Island	64.48749	-166.20669	Glaucous-winged Gull	Unspecified		
			Crested Auklet	Unspecified		
			Least Auklet	Unspecified		
			Horned Puffin	Breeding		160
			Black-legged Kittiwake	Unspecified		1,300
			Pigeon Guillemot	Unspecified		4
			Glaucous Gull	Breeding	12	
			Common Murre	Unspecified		2,540
			Tufted Puffin	Breeding		13
			Parakeet Auklet	Unspecified		85
			Pelagic Cormorant	Breeding	300	
			Thick-billed Murre	Unspecified		360
			Common Eider	Unspecified		4
South Punuk Island	63.06921	-168.83518	Least Auklet	Breeding		
			Common Eider	Breeding		
			Black-legged Kittiwake	Breeding	52	
			Tufted Puffin	Breeding		4,450
			Pelagic Cormorant	Breeding	504	
			Glaucous Gull	Breeding	2	
			Horned Puffin	Breeding		

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Pigeon Guillemot	Breeding		350
			Parakeet Auklet	Breeding		30
South Rock	66.22346	-161.86202	Thick-billed Murre	Breeding		
			Horned Puffin	Breeding	10	
			Black-legged Kittiwake	Breeding	106	
			Glaucous Gull	Breeding	30	
			Unidentified Murre	Breeding		80
			Common Murre	Breeding		
Southwest Cape	63.34037	-171.54425	Herring Gull	Breeding	2	
			Black Guillemot	Breeding		
			Common Eider	Breeding		
			Unidentified Murre	Breeding		200,000
			Black-legged Kittiwake	Breeding	5,634	
			Parakeet Auklet	Breeding		248
			Horned Puffin	Breeding		1,299
			Pelagic Cormorant	Breeding	1,314	
			Pigeon Guillemot	Breeding		313
			Thick-billed Murre	Breeding		18,696
			Common Murre	Breeding		16,758
			Glaucous Gull	Breeding	290	
			Tufted Puffin	Breeding		486

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
Square Rock	64.56439	-163.61529	Horned Puffin	Breeding and Roosting		125
			Black-legged Kittiwake	Unspecified		550
			Common Murre	Unspecified		3,200
			Tufted Puffin	Unspecified		1
			Glaucous Gull	Breeding	30	
			Pelagic Cormorant	Breeding	4	
St. Michael Island	63.53985	-162.30287	Black-legged Kittiwake	Unspecified		
			Glaucous Gull	Unspecified		
			Unidentified Murre	Unspecified		
			Pigeon Guillemot	Unspecified		
Stolbi Rocks	63.64079	-170.11559	Thick-billed Murre	Breeding		2,433
			Pelagic Cormorant	Breeding	20	
			Black-legged Kittiwake	Breeding		168
			Common Murre	Breeding		8,564
			Glaucous Gull	Breeding		
Tasaychek Lagoon	67.2719	-163.7667	Arctic Tern	Breeding	30	
			Aleutian Tern	Breeding	76	
Tekiyeauk Island	63.22708	-170.23244	Arctic Tern	Breeding	194	
			Aleutian Tern	Breeding	2	
Tin City	65.56389	-168.00968	Horned Puffin	Breeding		

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Black-legged Kittiwake	Breeding		
			Pelagic Cormorant	Unspecified		20
Toawlevic Point	66.09009	-162.91963	Tufted Puffin	Unspecified		
			Black-legged Kittiwake	Breeding		702
			Thick-billed Murre	Breeding		3,250
			Pelagic Cormorant	Breeding	6	
			Common Murre	Breeding		3,250
			Horned Puffin	Breeding		400
			Glaucous Gull	Breeding		50
Tolstoi Point	63.62329	-161.01252	Pelagic Cormorant	Breeding		65
			Glaucous Gull	Breeding		55
			Horned Puffin	Breeding		14
Tolukowuk Bluffs	63.47006	-161.36373	Pelagic Cormorant	Unspecified		8
Tonok	64.57869	-163.79883	Glaucous Gull	Unspecified		2
			Horned Puffin	Unspecified		5
			Pelagic Cormorant	Unspecified		2
Topkok East	64.56193	-163.90148	Pelagic Cormorant	Breeding	16	
			Glaucous Gull	Breeding	4	
			Horned Puffin	Breeding		31
Topkok Head	64.55584	-163.9791	Unidentified Cormorant (Genus Phalacrocorax)	Unspecified		

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Unidentified Murre	Unspecified		
			Thick-billed Murre	Breeding		
			Common Murre	Breeding		
			Pigeon Guillemot	Unspecified		20
			Horned Puffin	Unspecified		50
			Pelagic Cormorant	Breeding	294	
			Glaucous Gull	Unspecified		40
			Tufted Puffin	Unspecified		30
			Glaucous Gull	Breeding		269
			Pigeon Guillemot	Unspecified		18
			Horned Puffin	Breeding		178
			Tufted Puffin	Unspecified		74
			Pelagic Cormorant	Breeding	340	336
Uhl-Williams Camp	67.0233	-162.95188	Arctic Tern	Breeding	30	
			Aleutian Tern	Breeding	20	
Unalakleet River Island	63.84965	-160.76378	Aleutian Tern	Breeding		35
Unnamed Colony	63.50159	-161.15777	Pelagic Cormorant	Unspecified		8
Unnamed Island	66.30059	-163.81859	Arctic Tern	Unspecified		
Unnamed Island	66.31829	-163.85778	Common Eider	Breeding		150
			Glaucous Gull	Breeding		250

Name	Latitude	Longitude	Species Common Name	Site Use	No. Breeding Individuals	Total No. Individuals
			Arctic Tern	Unspecified		20
Unnamed Island	66.30059	-163.81859	Glaucous Gull	Unspecified		100
			Common Eider	Unspecified		
Unnamed Lake	67.19139	-163.72888	Arctic Tern	Breeding	40	
			Glaucous Gull	Breeding	40	
			Aleutian Tern	Breeding	58	
W. Of Elephant Point	66.25889	-161.42779	Arctic Tern	Breeding		20
W. York Mountain Cliffs	65.42091	-167.47777	Unidentified Cormorant (Genus Phalacrocorax)	Unspecified		
			Glaucous Gull	Unspecified		
			Pelagic Cormorant	Unspecified		
Whale & Beulah Island	63.4922	-162.00748	Pigeon Guillemot	Unspecified		
			Black-legged Kittiwake	Unspecified		100
			Horned Puffin	Unspecified		140
			Tufted Puffin	Unspecified		10

PRINCE WILLIAM SOUND SUBAREA CONTINGENCY PLAN
SENSITIVE AREAS
SECTION

i. SENSITIVE AREAS: INTRODUCTION

This section is intended for use by the On-Scene Coordinators (OSCs) 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 information 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. Residents from the local community are often knowledgeable sources for information related to local oceanographic or weather conditions that may be beneficial during a response.

The Alaska Regional Response Team (ARRT) has adopted several documents (see the *Alaska Federal/State Contingency 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 locations) include:

- ARRT 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 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's 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 cleanup 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 the subarea contingency plan.

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.

The Prince William Sound Environmental Sensitivity Index (ESI) maps provide a concise summary of coastal resources that are at risk if an oil spill occurs. At-risk resources include biological resources (i.e., birds, fish, and marine mammals), sensitive shorelines (i.e., marshes and tidal flats), and human-use resources (i.e., mariculture facilities and parks). ESI maps can assist planners and responders in identifying vulnerable locations, establishing protection priorities, and developing cleanup strategies. The PWS ESI maps were created by NOAA working with state and federal government agencies and industry. The ESI maps are available online at:
http://response.restoration.noaa.gov/maps-and-spatial-data/download-esi-maps-and-gis-data.html#Alaska
or at: http://www.asgdc.state.ak.us/maps/cplans/subareas.html.

In addition, a substantial effort to develop and refine a sensitive areas database has been undertaken by Alyeska Pipeline Service Company (Alyeska). This information has undergone extensive federal and state agency review and is incorporated, by reference, into this section (with the permission of Alyeska). The Alyeska information is available on a data disk, termed the Graphical Resource Database, as part of the Prince William Sound Tanker Oil Discharge Prevention and Contingency Plan, Part 3, Supplemental Information Document (SID) #3, Section 2, and is not duplicated herein. An online version also exists, but is password protected. The GRD is not publically available and Alyeska permissions are required for this information.

Many of the maps presented in this section are available online at:
http://www.asgdc.state.ak.us/maps/cplans/subareas.html.

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

Scientific Support Coordinator
Emergency Response Division
510 L Street, Suite 100
Anchorage, Alaska 99501
mobile: (907) 529-9157
email: catherine.berg@noaa.gov

Alaska Department of Fish and Game NOAA
Habitat Division
333 Raspberry Road
Anchorage, Alaska 99518
(907) 267-2342
email: jeanette.alas@alaska.gov

ii. 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 Anchorage 267-2342
U.S. Department of the Interior	migratory birds, sea otters, endangered species, anadromous fish in freshwater, bald eagles, wetlands	Office of Environmental Policy & Compliance Anchorage 271-5011
U.S. Department of Commerce, National Marine Fisheries Service	species protected by the Endangered Species Act and Marine Mammal Protection Act including sea lions, seals, whales, and listed anadromous fish in marine waters	Protected Resources Division Anchorage 586-7235
U.S. Department of Commerce, National Marine Fisheries Service	essential fish habitat	Habitat Conservation Division Anchorage 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 789-6000
U.S. Department of Agriculture	national forest lands	Chugach National Forest Anchorage 743-9513
University of Alaska	rare and endangered plants	Alaska Natural Heritage Program Anchorage 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 269-8721

AGENCY	RESOURCES	POINT OF CONTACT
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 271-5011
U.S. Department of Agriculture	archaeological/historical sites on national forest lands	Chugach National Forest Anchorage 743-9513
Chugach Alaska Corporation	archaeological/historical sites on Native Corporation lands	
SHORELINE TYPES		
U.S. Department of Commerce, National Oceanic & Atmospheric Administration	shoreline types, environmental sensitivity index maps	Scientific Support Coordinator Anchorage 428-4160 or 428-4143
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 269-8565
Alaska Department of Fish and Game	state game refuges, state critical habitats	Division of Habitat Anchorage 267-2342
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 271-5011
U.S. Department of Agriculture	national forests, national monuments, wild and scenic rivers, wilderness areas, research natural areas	Chugach National Forest Anchorage 743-9513
U.S. Department of Defense	military installations and reservations	Alaska Command Anchorage 552-3944

AGENCY	RESOURCES	POINT OF CONTACT
Local Governments: –Cordova –Valdez – Whittier Chugach Alaska Corporation	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 Anchorage 267-2105
Alaska Department of Natural Resources	tideland leases	Division of Mining, Land, and Water Anchorage 269-8565
Alaska Department of Environmental Conservation	seafood processing	Division of Environmental Health Juneau 269-7644
U.S. Department of Commerce National Marine Fisheries Service	fishing permits, seasons	Sustainable Fisheries Division Juneau 586-7228
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 Anchorage 267-2218
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 271-5011
U.S. Department of Commerce	subsistence use of: whales, porpoises, seals, sea lions	Protected Resources Division Juneau 586-7235

AGENCY	RESOURCES	POINT OF CONTACT
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 Anchorage 269-8400
Alaska Department of Fish and Game	sport hunting and fishing	Division of Habitat Anchorage 267-2342
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 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 271-5011
U.S. Department of Agriculture	campgrounds, cabins, recreation areas, trails, within the national forest system	Chugach National Forest Anchorage 907-743-9513
WATER INTAKE AND USE FACILITIES		
Alaska Department of Environmental Conservation	public drinking water wells, treatment, and storage, fish processing facilities	Division of Water Anchorage 269-7601
Alaska Department of Fish and Game	hatcheries, ocean net pens and release sites, aquaculture	Division of Habitat Anchorage 267-2342
Alaska Department of Natural Resources	tidelands leases, aquaculture sites, private logging camps and log transfer facilities	Division of Mining, Land, and Water Juneau 465-3400
U.S. Coast Guard	marinas and docks, mooring buoys	Sector Anchorage Anchorage 271-6700

iii. 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 identifies priorities for resources by 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 cleanup 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.*

The following criteria were developed as a tool 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 re-colonizing potential
- relative importance to ecosystem
- potential for physical contact with spill–pathway of oil or hazardous substances
- resource sensitivity to response countermeasures

B. AREAS OF MAJOR CONCERN

- Threatened or Endangered and Protected Species Habitat
  - Steller's Eider Wintering Areas
  - Steller Sea Lion Rookeries, Haulouts, and Critical Habitat
  - Humpback and Fin Whale Foraging Areas
- Shoreline Geomorphology – Coastal Habitat Types:
  - Marshes
  - Eelgrass Beds
  - Sheltered Tidal Flats
  - Sheltered Rocky Shores
- Identified sand lance habitat
- Sea Otter Concentration Areas (> 20)
- Harbor Seal Haulout Areas (> 10)
- Large Seabird Colonies (> 5,000)
- Seabird Feeding Concentration Areas

- Pigeon Guillemot Nesting and Immediate Nearshore Feeding Areas
- Waterfowl and Shorebird Spring, Fall, or Winter Concentration Areas
- Eagle Nest Sites
- Anadromous Fish Streams:
  - > 25,000 pink or chum spawners
  - 5,000 coho salmon
  - 1,000 sockeye spawners
- Intertidal Salmon Spawning Areas
- Large Freshwater Fish Systems
- Herring Spawning Area
- Land Management Designations
  - Federal:
    - Wilderness
    - Wild and Scenic Rivers
    - National Natural Landmarks
  - State:
    - Refuges
    - Sanctuaries
    - Critical Habitat Areas
- Cultural Resources/Archaeological Sites:
  - National Historic Landmarks
  - Burial Sites
  - National Register Eligible Village Sites
  - Intertidal Sites
- High Use Subsistence Harvest Areas
- High Use Commercial Areas (including, but not limited to, setnet sites, aquaculture sites, hatcheries, etc.)
- High Use Recreational Areas

C. AREAS OF MODERATE CONCERN

- Species of Concern Habitat (Possible Threatened or Endangered)
- Shoreline Geomorphology – Coastal Habitat Types:
  - Gravel Beaches
  - Mixed Sand & Gravel Beaches
  - Exposed Tidal Flats
  - RIPRAP
- Coarse Grained Sand Beaches
- Sea Otter General Distribution Areas (< 20)
- Foraging/Transit Habitat for Minke Whales, Killer Whales, Dall's Porpoise, and Harbor Porpoise
- Harbor Seal Haulouts (5-10)
- Seabird Colonies (1,000 – 5,000)
- Waterfowl and Shorebird Nesting or Molting Concentration Areas
- Anadromous Fish Streams:
  - 500 – 25,000 pink or chum spawners
  - 1,000 – 5,000 coho spawners
  - 50 – 1,000 sockeye spawners
- Moderately Sized Freshwater Fish Systems

- Clam Beds
- Bear Spring Concentration Areas
- Sitka Deer Coastal Feeding Concentration Areas
- Caribou Migration Routes
- Other Subsistence Harvest Areas
- Other Commercial Harvest Areas
- Other Recreational Use Areas
- Land Management Designations
  - Federal:
    - National Parks
    - National Wildlife Refuges
    - Research Natural Areas
    - Native Allotments
  - State:
    - State Parks
- Cultural Resources/Archaeological Sites
  - National Register Eligible Sites (Other Than Village Sites)
  - Sites Adjacent To Shorelines

D. <u>AREAS OF LESSER CONCERN</u>

- Coastal Geomorphology – Coastal Habitat Types:
  - Fine-grained Sand Beaches
  - Exposed Wave-cut Platforms
  - Exposed Rocky Shores
- Harbor Seal Haulouts (< 5)
- Seabird Colonies (< 1,000)
- Raptor Feeding Areas
- Waterfowl and Shorebird General Distribution Areas
- Bear Fall Concentration Areas
- Anadromous Fish Streams:
  - < 1,000 coho spawners
  - < 500 pink or chum spawners
  - < 50 sockeye spawners
- General Freshwater Fish Habitat
- Land Management Designations
  - Federal:
    - Public Lands
    - National Forests
    - National Preserves
  - State:
    - General Public Lands

NOTE: Chinook salmon occur in relatively small numbers in association with sockeye salmon, therefore, prioritization is based on the number of sockeye spawners.

E. AREAS OF LOCAL CONCERN

Some areas within the Prince William Sound subarea warrant special attention due to the presence of highly productive wildlife habitat, the ability to sustain a large part of a villages' subsistence needs, the occurrence of unusual historical sites or large mineral deposits, recreation, energy development, hazardous areas, or the presence of important fisheries. These have been identified as Areas Meriting Special Attention, Important Use Areas, Special Use Areas, or Sensitive Areas through the City of Cordova, Coastal Management Program, Eyak Lake AMSA Cooperative Management Plan (Cordova), Valdez Coastal Management Program, or Whittier Coastal Management Plan. They are summarized below.

DESIGNATED AREA	REASONS FOR DESIGNATION	LAND OWNERSHIP/ VILLAGES TO CONTACT
1. Eyak Lake	Important watershed area. Concern for protection of water quality. Presence of a variety of aquatic plants. Site provides habitat and breeding grounds for wildlife, birds (proximity to major bird migration routes) and fish. Area used for commercial, sport and subsistence fishing. Area used for recreational and scenic purposes.	Eyak Corporation, State
2. Keystone Canyon	Area used for recreational, scenic and transportation purposes. Historical value.	State
3. Mineral Creek Canyon	Site is an aquifer recharge area. Presence of historic sites. Area used for recreational and scenic purposes.	State
4. Robe Lake	System supports salmon, char and Dolly Varden; provides spawning and rearing habitat. Area provides habitat for waterfowl and marsh nesting birds as well as feeding grounds for brown/grizzly bears. Robe Lake is also a high recreational use area for Valdez residents.	State
5. Shotgun Cove/Emerald Bay Subdivision	Human use (harbor). Unique and vulnerable geologic and topographic features. Offers recreational opportunities.	(Tidelands) State (Upland areas) Chugach Alaska Corporation, City of Whittier, Federal, U.S. Forest Service, State
6. Valdez Duck Flats/Mineral Creek Islands	Highly productive biological area. Provides habitat for a	City of Valdez, private, State

DESIGNATED AREA	REASONS FOR DESIGNATION	LAND OWNERSHIP/ VILLAGES TO CONTACT
	variety of waterfowl, small mammals and marine mammals. Site is an important feeding area for migrating waterbirds during spring and fall.	
7. Whittier Port and Harbor	Port development. Offers recreational opportunities.	State (Public lands) Alaska Department of Natural Resources, Alaska Railroad, City of Whittier, U.S. Department of the Army Chugach Alaska Corporation (Native corporate lands)

iv. 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. Susceptibility for each group of animals is year-round unless otherwise noted in the Seasonal Sensitivity row that is added for the appropriate animal groups.

SHORELINE GEOMORPHOLOGY

CATEGORY	LOW	MEDIUM	HIGH
COASTAL HABITAT TYPES	Fine-grained sand beaches Exposed wave-cut platforms Exposed rocky shores	Gravel beaches Mixed sand & gravel beaches Exposed tidal flats Coarse grained sand beaches Rip rap structures	Marshes Eelgrass beds Sheltered tidal flats Sheltered rocky shores
LAKE AND RIVER HABITAT TYPES	Exposed rocky cliffs & banks Bedrock shores & ledges, rocky shoals Eroding scarps/banks in unconsolidated sediment Exposed man-made structures	Sand beaches & bars Mixed sand & gravel beaches/bars Gravel beaches/bars Gently sloping banks Exposed flats Riprap	Sheltered scarps in bedrock Vegetated steep sloping bluffs Sheltered man- made structures Vegetated low banks Sheltered sand & mud & muddy substrates Marshes
UPLAND HABITAT TYPES	To Be Developed	To Be Developed	To Be Developed

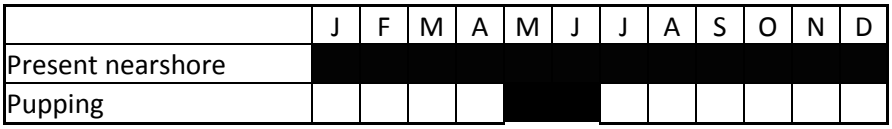
THREATENED OR ENDANGERED SPECIES

CATEGORY	LOW	MEDIUM	HIGH
ENDANGERED SPECIES			**Whales:** Blue, Bowhead, Fin, Humpback, North Pacific gray, North Pacific right, Sei, Sperm **Pinnipeds**: Steller sea lion (Western DPS) **Birds:** Short-tailed albatross **Reptiles:** Leatherback sea turtle
THREATENED SPECIES			**Birds:** Steller's eider
SPECIES OF CONCERN		**Birds:** Harlequin duck, Black scoter, Barrow's goldeneye, Yellow-billed loon, Pelagic cormorant, Northern goshawk, Marbled murrelet, Kittlitz's murrelet, peregrine falcon, Olive-sided flycatcher **Mammals:** North American lynx, Montague tundra vole, Harbor seal **Plants:** *Draba yukonensis*	

SEA OTTERS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE		< 20	> 20
HUMAN HARVEST	Year-round		

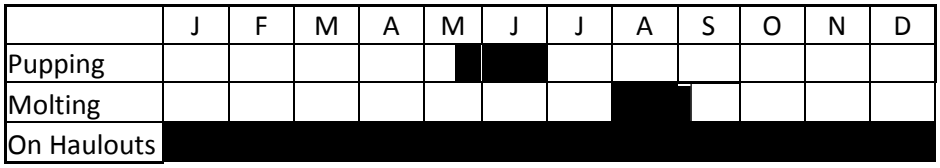
Sea Otter Critical Life Periods



HARBOR SEALS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE (ON HAULOUTS)	< 5	5 - 10	> 10
HUMAN HARVEST	June 1 – Aug 31	Sept 1 - Sept 30	Oct 1 - May 31

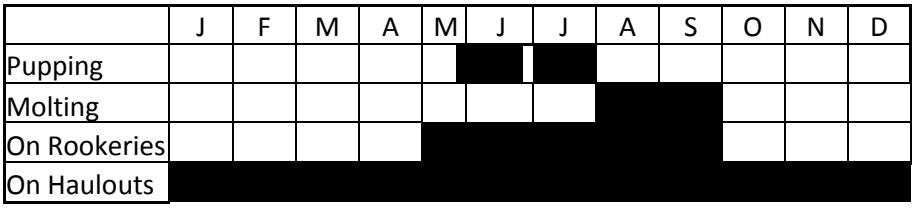
Harbor Seal Critical Life Periods



STELLER SEA LIONS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE (ON HAULOUTS)	< 15	15 - 30	> 30
HUMAN HARVEST		April 1 - May 31	Sept 1 - March 31

Stellar Sea Lion Critical Life Periods



WHALES and PORPOISES

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 10	10 - 50	> 50
SEASONAL SUSCEPTIBILITY	Oct 1 - May 1	Aug 1 - Sept 30	May 1 - July 31
HUMAN HARVEST	Sept 1 - June 1		

Whales and Porpoises Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Present near shore	■	■	■	■	■	■	■	■	■	■	■	■
Calving				?	■	■	■	?				

BEARS
(Brown and Black)

CATEGORY	LOW	MEDIUM	HIGH
SEASONAL SUSCEPTIBILITY[1,2]	Nov 1 - April 30	May 1 - June 30 Sept 1 - Oct 31	July 1 - Aug 30
COMMERCIAL VALUE	Nov 1 - May 31 July 1 - Aug 31	June 1 - June 30	Sept 1 - Oct 31
HUMAN HARVEST	Nov 1 - April 15		April 15 - Oct 31

1. Bear densities and susceptibility to oil impacts increases through spring as more individuals emerge from dens and move to coastal areas.

2. Bear densities and susceptibility to oil impacts decreases through the summer depending upon the availability of fish in lower reaches of streams.

Bear Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Denning	■	■	■							■	■	■
Feeding in coastal areas					■	■						
Feeding along salmon streams								■	■	■		

SITKA BLACK-TAILED DEER

CATEGORY	LOW	MEDIUM	HIGH
SEASONAL SUSCEPTIBILITY	May 1 - Nov 15		Nov 15 - April 30
HUMAN HARVEST	Jan 1 – July 31		Aug 1 - Dec 31

Sitka Black-Tailed Deer Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Fawning Period					■	■						
Foraging along coast	■	■	■	■								■

CARIBOU

CATEGORY	LOW	MEDIUM	HIGH
SEASONAL SUSCEPTIBILITY	Nov 1 - Feb 28 June 1 - July 31		Mar 1 - May 31 Aug 1 - Oct 31
HUMAN HARVEST	April 1 - Aug 10 Sept 20 - Dec 31		Jan 1 - Mar 31 Aug 10 - Sept 20

Caribou Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Migrations			■	■	■			■	■	■		
Calving						■						
Wintering Concentrations	■	■	■	■							■	■

LOONS AND GREBES

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 10	10-100	> 100
SEASONAL SUSCEPTIBILITY	May 16 - Aug 14	April 15 - May 15 Aug 15 - Oct 31	Nov 1 - April 14

Loon and Grebe Critical Life Periods

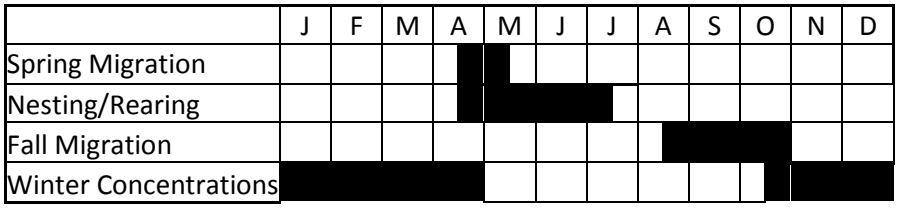
	J	F	M	A	M	J	J	A	S	O	N	D
Spring Migrations					■							
Fall Migrations									■	■		
Wintering Concentrations	■	■	■	■						■	■	■

WATERFOWL
(Ducks and geese)

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 100	100 - 1,000	> 1,000
SEASONAL SUSCEPTIBILITY	Nov 1 - Jan 31[5]	Feb 1 - April 14 May 16 - Aug 14	April 15 - May 15 Aug 15 - Oct 31
SPECIES DIVERSITY	1 – 3	4 – 6	> 6
HUMAN HARVEST	June 1 - Aug 31	Dec 1 - Dec 31	Jan 1 - May 31 Sept 1 - Nov 30

In Areas of Local Concern, (e.g., Valdez Duck Flats) where waterfowl concentrate during the winter, their susceptibility would be high.

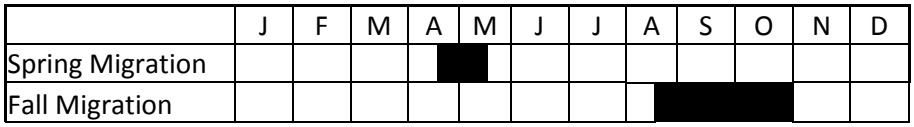
Waterfowl Critical Life Periods



MIGRATING SHOREBIRDS
(Sandpipers, surfbirds, dunlins, and plovers)

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 100	100 - 1,000	> 1,000
SEASONAL SUSCEPTIBILITY	Nov 1 - Jan 31 May 16 - Aug 14	Feb 1 - April 14	April 15 - May 15 Aug 15 - Oct 31
SPECIES DIVERSITY	1	2-4	> 4

Shorebirds Critical Life Periods



COLONIAL SEABIRDS
(Cormorants, Murres, Auklets, Puffins, Kittiwakes, Gulls, and Terns)

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 1000	1000 - 5000	> 5000
SEASONAL SUSCEPTIBILITY[7]	Oct 1 - Jan 31	Feb 1 - March 31	April 1 - Sept 30
SPECIES DIVERSITY	1 – 3	4 – 6	> 6
HUMAN HARVEST[8]	June 1 - April 19		April 20 - May 31

Some species such as the common murre become more abundant in winter months.
Seabird eggs utilized by Native communities.

Seabirds Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
On Colonies					■	■	■	■	■			
Feeding near colonies				■	■	■	■	■	■	■		

OTHER SEABIRDS
(Pigeon guillemots, Murrelets, and others)

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 10	10-20	> 20
SEASONAL SUSCEPTIBILITY	Nov 1 - Jan 31	Feb 1 - March 31	April 1 - Oct 31
SPECIES DIVERSITY	1	2-3	>3

Seabirds Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
On Colonies					■	■	■	■	■			
Feeding near colonies				■	■	■	■	■	■	■		

RAPTORS
(generally Bald eagles)

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 1 nest/3 coastal miles	1 nest/1 to 3 coastal miles	> 1 nest/coastal mile

Raptors (generally eagles) Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Nesting/Rearing				■	■	■	■	■				
Present near coast	■	■	■	■	■	■	■	■	■	■	■	■

HERRING (including capelin/hooligan)

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE (Biomass in Tons)	< 500	500 - 5,000	> 5,000
SEASONAL SUSCEPTIBILITY	Oct 1 - Feb 28	March 1 - March 31	April 1 - Sept 30
HUMAN HARVEST	Jan 1 - Feb 28	June 1 - Dec 31	March 1 - May 31

Herring Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Spawning				■	■							
Present nearshore				■	■	■	■	■	■	■		

SALMON (including hatchery fish)

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 500 spawners (pink & chum) < 50 spawners (sockeye) < 1,000 spawners (coho)	500 - 25,000 (pink & chum) 50 - 1,000 (sockeye) 1,000 - 5,000 (coho)	> 25,000 (pink & chum) > 1,000 (sockeye) > 5,000 (coho)
SEASONAL SUSCEPTIBILITY	Dec 1 - Jan 31	Feb 1 - April 30 Nov 1 - Nov 30	May 1 - Oct 31
SPECIES DIVERSITY	2 or less	3 - 4	4 and greater
HUMAN HARVEST		Oct 10 - May 15	May 15 - Oct 10

Salmon (including hatchery fish) Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Adults nearshore						■	■	■	■			
Spawning in streams							■	■	■	■	■	■
Spawning intertidally							■	■	■			
Eggs/young development	■	■	■	■	■	■	■	■	■	■	■	■
Smolt outmigration					■	■	■					
Adults return - interior					■	■	■	■	■	■		

FRESHWATER FISH SPECIES

GRAYLING

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	<50,000	50,000-100,000	>100,000
SEASONAL SUSCEPTIBILITY	Nov 1 - March 31	June 1 - Oct 31	April 1 - May 31
HUMAN HARVEST	Nov 1 - March 31	Oct 1 - Oct 31	April 1 - Sept 30

Grayling Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Adults Near Shore					■	■	■	■	■			
Spawning in Streams			■	■	■							
Eggs/young Development				■	■	■	■	■				

DOLLY VARDEN

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	<20	20 – 50	>50
SEASONAL SUSCEPTIBILITY	Dec 1 - Feb 28	June 1 - Aug 31	March 1 - May 31 Sept 1 - Nov 30
HUMAN HARVEST	Jan 1 - Feb 28	June 1 - Aug 31 Nov 1 - Dec 31	March 1 - May 31 Sept 1 - Oct 31

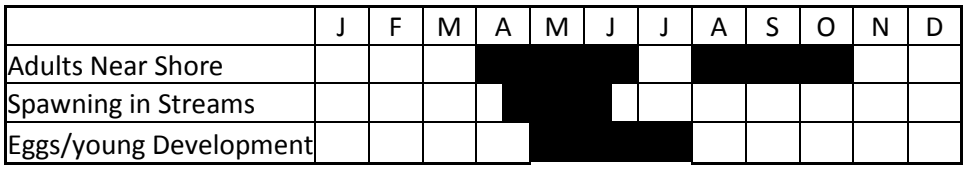
Dolly Varden Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Adults Near Shore				■	■	■		■	■	■		
Spawning in Streams								■	■	■		
Eggs/young Development	■	■	■					■	■	■	■	■

CUTTHROAT TROUT

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	<20	20 - 50	>50
SEASONAL SUSCEPTIBILITY	Dec 1 - Feb 28	June 1 - Aug 31	March 1 - May 31 Sept 1 - Nov 30
HUMAN HARVEST	Jan 1 - Feb 28	June 1 - Aug 31 Nov 1 - Dec 31	March 1 - May 30 Sept 1 - Oct 31

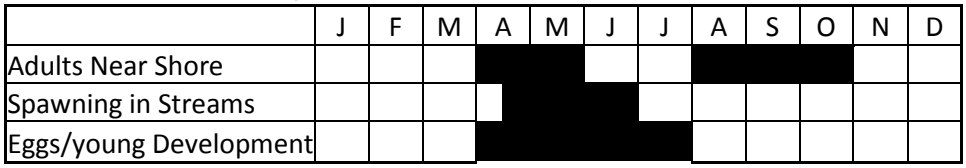
Cutthroat Trout Critical Life Periods



RAINBOW/STEELHEAD TROUT

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 500	500 - 2,000	> 2,000
SEASONAL SUSCEPTIBILITY	Oct 16 - Nov 30	Dec 1 - Feb 28	March 1 - Oct 15
HUMAN HARVEST	Oct 16 - Nov 30	Dec 1 - Feb 28	March 1 - Oct 15

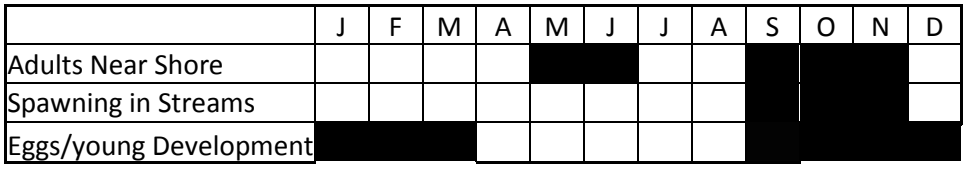
Rainbow/Steelhead Trout Critical Life Periods



LAKE TROUT

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 3,000	3,000 - 6,000	> 6,000
SEASONAL SUSCEPTIBILITY	May 1 - May 31 Nov 1 - Nov 30	Dec 1 - April 30 June 1 - Aug 31	Sept 1 - Oct 31
HUMAN HARVEST	Oct 1 - Nov 30	Dec 1 - May 31 July 1 - Aug 31	June 1 - June 30 Sept 1 - Sept 30

Lake Trout Critical Life Periods



CLAMS and OTHER MARINE INVERTEBRATES (CHITONS)

CATEGORY	LOW	MEDIUM	HIGH
HUMAN HARVEST		June 1 - Aug 31	Sept 1 - May 31

Clams and Other Marine Invertebrates (Chitons)Critical Life Periods

	J	F	M	A	M	J	J	A	S	O	N	D
Spawning												
Planktonic Larvae												

LAND MANAGEMENT DESIGNATIONS

CATEGORY	LOW	MEDIUM	HIGH
FEDERAL LANDS	Public Lands National Forests Preserves	National Parks Wildlife Refuges	Wild & Scenic Rivers Green Island Research Natural Area Copper River Delta National Natural Landmarks Wilderness Areas
STATE LANDS	Public Lands[1]	State Parks	Critical Habitats 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 village sites) Sites adjacent to shorelines	National Historical Landmarks Burial sites National Register eligible village sites Intertidal sites

v. SENSITIVE AREAS: PART FOUR – BIOLOGICAL 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. Industry-generated references that have had agency input and review are incorporated by reference.

For coastal information, see the Prince William Sound Tanker Oil Discharge Prevention and Contingency Plan (Tanker Plan) (November 2012) by the Prince William Sound Response Planning Group, and Part 3, Supplemental Information Document (SID) #3, Section 2, which contain background information and data descriptions, including:

1. Salmon and other Anadromous Fish
2. Pacific Herring
3. Halibut and Groundfish
4. Crabs and Shrimp
5. Other Intertidal/Subtidal Invertebrates (Mussels, Clams, Oysters)
6. Birds (Water-Related, Shorebirds, Seabirds, Raptors)
7. Marine Mammals (Cetaceans, Pinnipeds, Sea Otters)
8. Terrestrial Mammals
9. Threatened and Endangered Species
10. Commercial Fisheries
11. Sport Fisheries
12. Human Use of Wildlife Resources
13. Subsistence Utilization of Fish and Wildlife Resources

The Tanker Plan's automated Graphical Resource Database (November 2004) currently consists of the following data layers:

--Aerial Photo Locations
--Aquaculture Sites
--Commercial Fishing Areas-Salmon
--Community Sensitive Sites
--Equipment Storage Sites
--Historic Harbor Seal Sites
--Herring Spawning Areas
--Marine Features
--Recreation/Tourism Areas
--Salmon Streams--all
--Sea Lion Sites
--Seabird Colonies
--Small Boat Harbors
--Waterfowl Concentration Areas
--Shoreline Cleanup Assessment Team
--Eelgrass Bed Locations
--Port Valdez Sensitive Area Tactical Guide
--200 Foot Topographic Contours
--Narrow Rivers
--Tidal Flats
--Shoreline
--Geographic Response Strategies
--Salmon Collection & Release Sites
--Communities
--Bald Eagle Nest Sites
--Harbor Seal Sites
--Harbor Seal Areas
-- Hatchery Sites
--Marsh Shoreline
--Research Areas
--Salmon Index Streams
--Sea Otter Concentration Areas
--Sheltered Tidal Flats
--Subsistence Areas

--Whales
-- Land Features
--Valdez Marine Terminal
--NOAA Charts
--Wide Rivers and Lakes
--Land
--Chugach National Forest Shoreline

The Prince William Sound Environmental Sensitivity Index (ESI) maps provide a concise summary of coastal resources that are at risk if an oil spill occurs. At-risk resources include sensitive shorelines, biological resources, and human-use resources as listed below:

- Shoreline Habitats
  - Exposed rocky shores
  - Exposed wave-cut platforms in bedrock
  - Fine- to medium-grained sand beaches
  - Mixed sand and gravel beaches
  - Gravel beaches
  - Riprap
  - Exposed tidal flats
  - Sheltered rocky shores
  - Sheltered rocky rubble slopes
  - Sheltered tidal flats
  - Salt- and brackish-water marshes
- Sensitive Biological Resources
  - Threatened and Endangered species
  - Birds
    - Diving birds
    - Gulls and terns
    - Alcid and pelagic birds
    - Raptors
    - Shorebirds
    - Waterfowl
    - Nesting sites
  - Fish
  - Anadromous streams
  - Invertebrates
  - Marine Mammals
    - Pinnipeds
    - Whales
    - Sea Otters
- Human Use Features
  - Airports
  - Aquaculture sites
  - Hatcheries
  - Marinas and anchorages

The PWS ESI maps are available online at: http://response.restoration.noaa.gov/maps-and-spatial-data/download-esi-maps-and-gis-data.html#Alaska.

The Graphical Resource Database also covers the Copper River Delta and coastal resources from the eastern Kenai Peninsula coast to Shelikof Strait, including Kodiak. The GRD is proprietary software and requires permissions and registration with Alyeska Pipeline Service Company.

See the Environmental Atlas of the Trans Alaska Pipeline System (May 2013, by Alyeska Pipeline Service Company (Alyeska Atlas). The Environmental Atlas, normally accessible by APSC employees and registered users electronically, also has a hard copy version consisting of 25 maps covering the length of the Trans-Alaska Pipeline System (TAPS) and brief narratives about mammals, birds and fish found along the TAPS corridor. Each map has an overlay with the following types of information identified:

1. Recreation Sites/Areas
2. Scenic Areas
3. Special Areas
4. Subsistence Use Areas
5. Wildlife Areas (bears, bison, caribou, sheep, fox, wolf, grouse, moose, otter, raptor, swan, waterfowl, whale)
6. Fish Hatchery
7. Fish Stream (Anadromous, Non-anadromous, Overwinter)
8. Site, Den or Nest
9. Direction of View, Migration, Movement or Distribution
10. Oil Spill Containment Site

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/subareas.html. NOAA has an online ESI Data Viewer to access these maps at http://response.restoration.noaa.gov/maps-and-spatial-data/environmental-sensitivity-index-esi-maps.html.

1. *Benthic Habitats*

Oil vulnerability is lower in benthic (near bottom) 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, and coral reefs.

2. *Shoreline Habitats*

Habitats (estuarine, large lacustrine and riverine) ranked from least (#1) to most (#10) 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 to 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 flat mud to sand substrate—highly organic mud is common.

Alaska ShoreZone Coastal Habitat Mapping. An on-going coastal habitat mapping effort is producing an online 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/.

The Nature Conservancy, an Alaska ShoreZone partner, also hosts an informative online website which has links to ShoreZone information. It can be accessed at: http://www.shorezone.org.

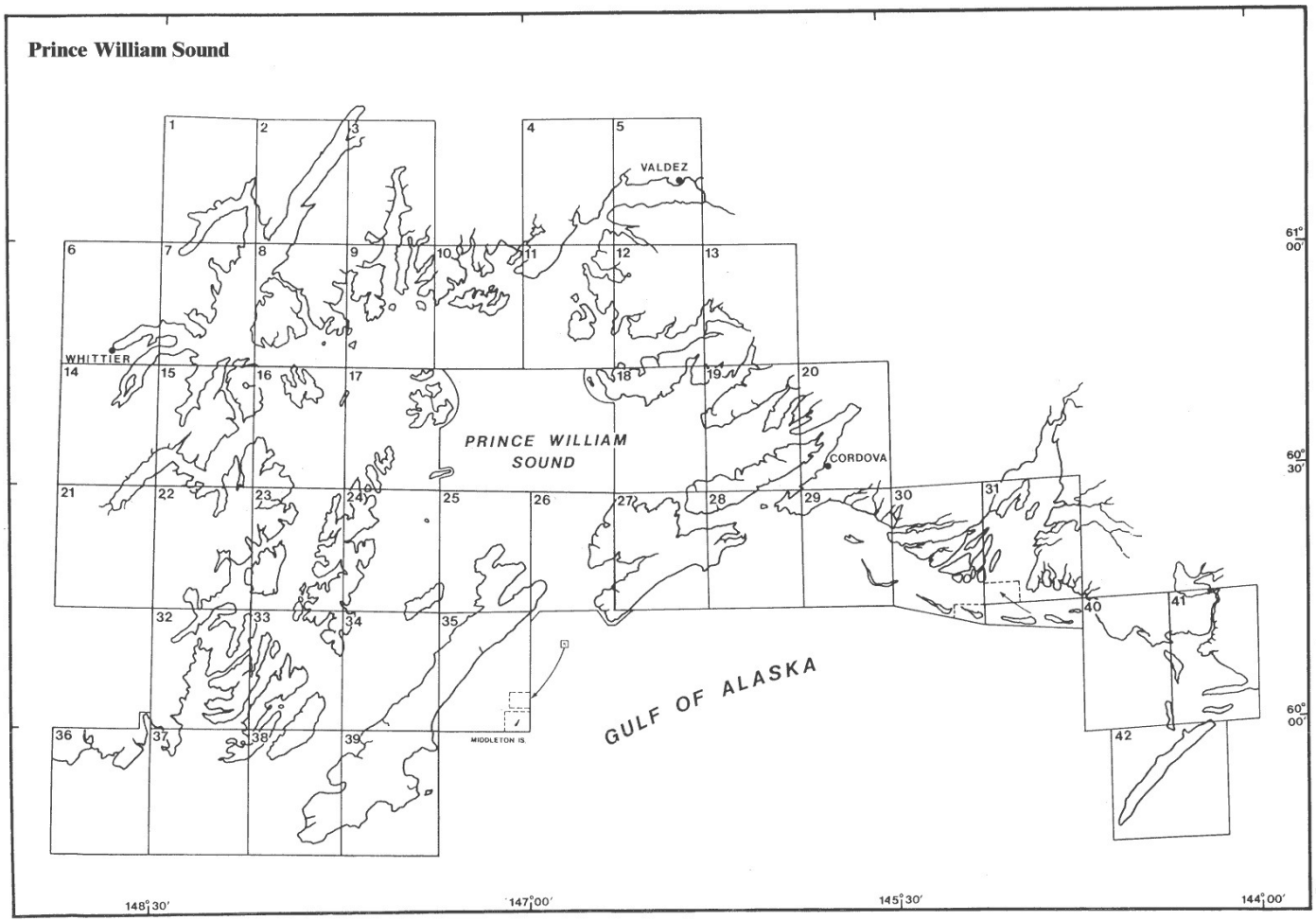
3. *Upland Habitats*

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/. View a copy of the wetlands status map here: http://www.asgdc.state.ak.us/maps/cplans/base/wetlands99.pdf.

ESI HABITAT RANKING

ESI NO.	ESTUARINE	LACUSTRINE	RIVERINE (LARGE
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	Exposed, eroding banks in unconsolidated
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
10 C		Freshwater swamps	Freshwater swamps

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



Environmental Sensitivity Index Map Atlas Index

C. BIOLOGICAL RESOURCES

1. *Threatened and Endangered Species*

Federally listed threatened and endangered species are protected under the Endangered Species Act of 1973, as amended (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 northern right whale, humpback whale, blue whale, and short-tailed albatross are also on the State of Alaska's endangered species list. The following species[a] and critical habitat occur in this subarea:

Endangered Species Act of 1973 Protected Species and Critical Habitat			
Listed species	**Stock**	**Latin Name**	**Status**
Blue whale*		*Balaenoptera musculus*	Endangered
Bowhead whale*		*Balaena mysticetus*	Endangered
Fin whale*		*Balaenoptera physalus*	Endangered
Humpback whale*		*Megaptera novaeangliae*	Endangered
North Pacific right whale*		*Eubalaena japonica*	Endangered
North Pacific gray whale*	Western population	*Eschrichitus robustus*	Endangered
Sei whale*		*Balaenoptera borealis*	Endangered
Sperm whale*		*Physeter macrocephalus*	Endangered
Steller sea lion*	Western population	*Eumetopias jubatus*	Endangered
Leatherback sea turtle*		*Dermochelys coriacea*	Endangered
Short-tailed albatross**		*Diomedea albatrus*	Endangered
Steller's eider**		*Polysticta stelleri*	Threatened
Designated Critical Habitat			
Species Group	**General Reference Area**		
Whales*	No critical habitat has been designated for the above referenced whales in		
Steller's eider**	No critical habitat has been designated for the above referenced birds in		
Steller sea lion*	Most of PWS and around Middleton Island and Cape St. Elias (50 CFR Part		
Pacific Salmon*	No critical habitat has been designated for salmon species in Alaskan		

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

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[a] 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."

The Alaskan bald and golden eagles, though not on the endangered species list, are fully protected (including their nests and nest trees) under the Bald Eagle Protection Act of 1940 and the Migratory Bird Treaty Act. Spill response activities that could affect these species should be coordinated with the U.S. Fish and Wildlife Service.

While the National Marine Fisheries Service has determined the Eastern North Pacific gray whale is no longer a threatened or endangered species, monitoring of the species has continued since the 1994 delisting. In addition, the critically endangered Western Pacific gray whale may be present offshore of Prince William Sound.

The eastern distinct population segment (DPS) of Steller sea lions was removed from the List of Endangered and Threatened Wildlife by NOAA in 2013. This population overlaps with the western DPS in the Prince William Sound Region; however, this subarea is west of the longitudinal separation of the two populations, and is considered habitat for the western DPS of Steller sea lions, which is listed as endangered.

All marine mammals, whether or not they are on the endangered species list, are protected by the Marine Mammal Protection Act of 1972. Any spill response activities, which could affect marine mammals, should be coordinated with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service, as appropriate.

For updated information on the internet:

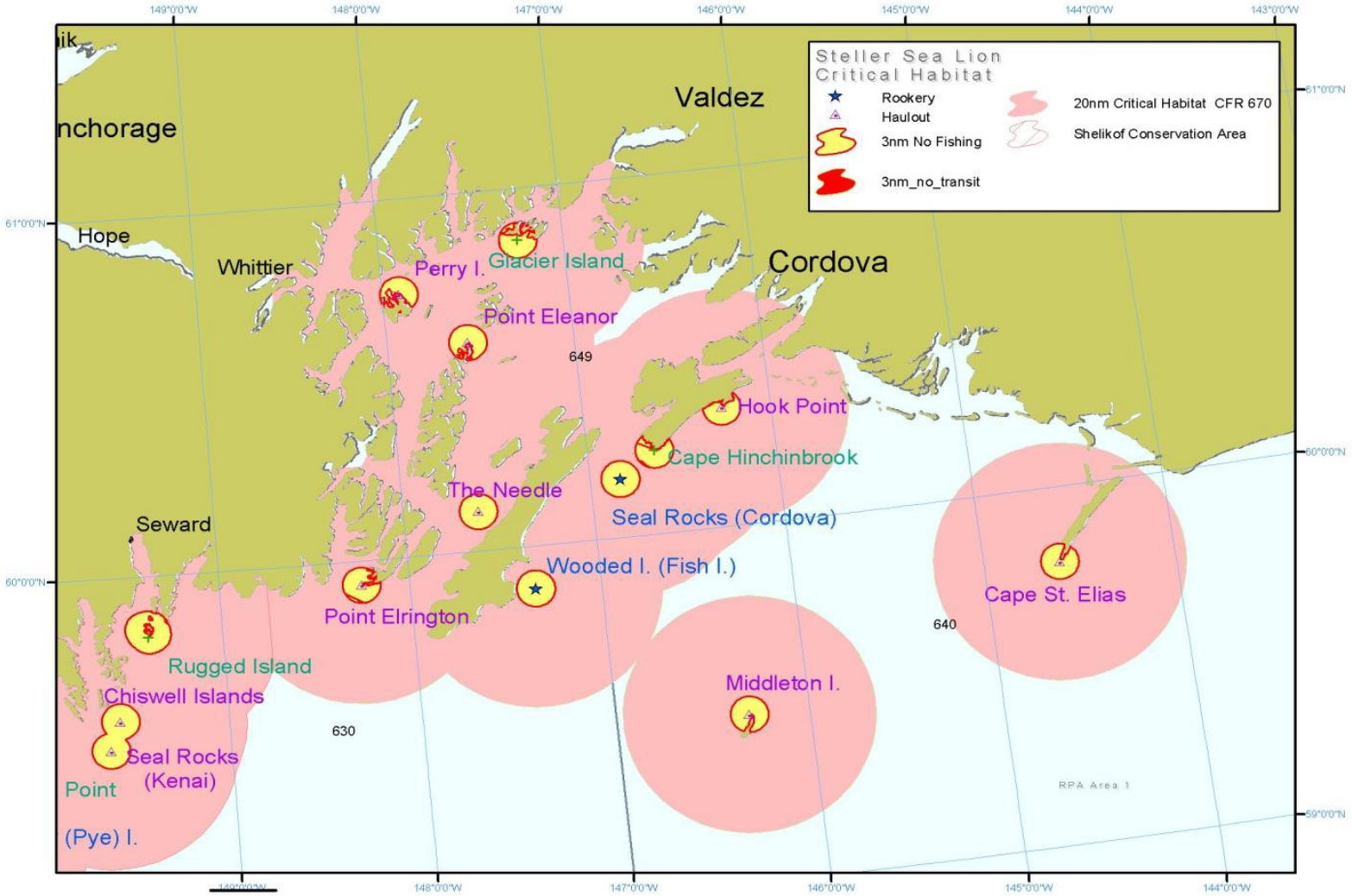
U.S. Fish and Wildlife Service National Threatened and Endangered Species website:
http://endangered.fws.gov/

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

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

Alaska Department of Fish and Game Threatened and Endangered Species website:
http://www.adfg.alaska.gov/index.cfm?adfg=specialstatus.akendangered

Stellar Sea Lion Critical Habitat in Prince William Sound
(source: National Marine Fisheries Service)



2. *Fish and Wildlife*

(a) Fish

The Prince William Sound subarea is rich in biological resources. In addition to supporting a sizeable commercial fishing industry, the area is utilized by subsistence users, hunters and sport fishermen. Many islands in the Sound provide habitat for freshwater fish and provide anadromous spawning habitat. The National Marine Fisheries Service has classified all waters of Prince William Sound as essential fish habitat for: walleye pollock, Pacific cod, yellowfin sole, rock sole, flathead sole, arrowtooth flounder, sablefish, sculpin spp., pink salmon, chum salmon, Chinook salmon, and sockeye salmon. For more information on fisheries and to access fisheries data, please see the Alaska Department of Fish & Game's e-library website at:
http://www.adfg.alaska.gov/index.cfm?adfg=library.main.

3. *FIN FISH*

The waters of the Prince William Sound subarea are among the most productive in the world. Major freshwater systems of the region include the Copper River, Resurrection River, Bering River, and Eshamy River. Many of the nearshore waters along the Tatitlek Narrows have been designated as sensitive biological resources for fish. 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 in the Prince William Sound subarea.

Arctic Grayling spawn in May and June, typically in unsilted rapid-runoff streams and lake inlets and outlets; fry emerge by early June. Grayling commonly overwinter in deep, large rivers or lakes, or in smaller streams if adequate water quality and flow exists throughout the winter. No indigenous stocks of Arctic grayling occur in the Prince William Sound Management Area. ADF&G stocked 8 lakes with Arctic grayling along the Copper River Highway between Cordova and the Million Dollar Bridge since 1984 and in Thompson Lake near Valdez. Thompson Lake is the only site in Prince William Sound that Arctic grayling are presently being stocked.

Arctic Char/Dolly Varden are widely distributed throughout the Prince William Sound subarea. Fish return to freshwater spawning and overwintering areas from July through December. Char spawn from August through November; fry emerge in April and May. Dolly Varden spawn from September to October and may live to 18 years. Most Dolly Varden live under 10 years. Char typically overwinter in lakes. The Robe River drainage is the assumed main overwintering site for various spawning stocks in the Valdez Arm. Migration of anadromous char from overwintering areas to marine feeding areas occurs from April to June. Important areas for Arctic char/Dolly Varden include Montague Island, Round Island, Controller Bay, Knight Island, Martin River Slough, Jackpot Bay, Cochrane Bay, Hawkins Island, Long Bay, Bering River and Resurrection River drainage. Montague and Knight Islands support rearing Dolly Varden. Eyak River provides important habitat for Dolly Varden.

Rainbow/Steelhead Trout occur in the Prince William Sound subarea. Rainbow trout (resident) are found in Copper River, on Round Island, and in Robe Lake. Steelhead (anadromous) are found in the Copper River Delta. Rainbow trout generally spawn during May and June, and fry emerge a few weeks to four

months later. Steelhead spawn between mid-April to June, and fry emerge during mid summer. Steelhead do not necessarily die after spawning. Many of these salmonids will move slowly back to the ocean where, after at least one year, they may return to freshwater to spawn again.

Eulachon return in small numbers to Prince William Sound glacial streams to spawn. Eulachon are broadcast spawners, spawning in April or May. Females lay between 17,000-60,000 eggs. Most die after spawning. Spawning eulachon provide a feeding feast for bears, eagles, killer whales, beluga whales, seals, sea lions, gulls, and humans. Fish are used by the Tinglet for oil and food. There are less than 6 eulachon spawning systems in Prince William Sound Management Area (PWSMA), including the Copper and Martin rivers, and Alaganik and Ibeck sloughs.

Cutthroat Trout inhabit coastal areas from Prince William Sound south. PWS is the most northern and western extreme range for this species, making the Sound population small in size and distribution. They spawn in late April to early June, females producing from 750-1,200 eggs per pound of body weight. Many occur in streams, lakes, bogs, ponds and at sea. Life span varies depending on area, with lake residents living to 19 years, stream residents to 5 years, and sea-run to 10 years. Cutthroat trout are very sensitive to environmental change, pollution and introduced species. Rainbow trout often hybridize with cutthroat trout when they occur in the same area. Hawkins Island has an important spawning stream for cutthroat trout. Jackpot Bay supports several species of anadromous fish including cutthroat trout, Dolly Varden, and sockeye salmon. Controller Bay supports cutthroat trout. The highest population of cutthroat trout in western Prince William Sound occurs in the Eshamy Bay system. Cutthroat trout rearing occurs on Knight Island. Eshamy Creek drainage and Green Island Creek were closed by emergency order No. 2-CT-6-02-92 in 1992 during the spawning season. A similar order was released in 1993. The Natural Resources Damage Assessment program collected information following the Exxon Valdez oil spill, which indicated that cutthroat trout in the oil-impacted area had reduced survival and growth.

Chinook, coho, sockeye, pink, and chum salmon occur within the Prince William Sound subarea. Adult salmon are present in freshwater from mid-March through early October, depending on the species of salmon and the stream system. Salmon eggs incubate in the stream gravels over the winter; fry emerge from stream gravels from mid-March through early June. Chinook, sockeye, and coho fry remain in fresh water from one to four years before migrating to sea. Chum and pink salmon fry migrate to the sea shortly after emerging from the gravel. In 1990, Alaska outlawed the farming of salmon to protect native stocks from hybridization, pollution, disease and competition for food. Attachment two of this document provides average salmon escapement or average peak index counts for salmon streams in the Prince William Sound area.

Pink Salmon occur in over 200 streams in the Prince William Sound area that produce natural runs of pink salmon. Four hatcheries produce pink salmon for the PWSMA. Important wild pink salmon spawning streams are located in the Port Gravina area, while Sahlin Lagoon provides rearing habitat. Pink salmon utilize Montague Island. Nellie Martin River and Knight Island are major spawning areas for pink salmon. Pink salmon spawn in the intertidal areas of most anadromous streams in the Sound, including the Cape Suckling area. The Copper River drainage supports pink salmon.

Sockeye Salmon- Sockeye salmon are found in select streams in the Prince William Sound area. In systems with lakes, juveniles usually spend one to three years in fresh water before migrating to the ocean in the spring as smolts. Sockeye salmon return to their natal stream to spawn after spending one to four years in the ocean. In mid-July to early October, sockeye run to Eshamy Lake to spawn, and they

are present in the Eshamy Bay system in large numbers. Sockeye spawn in the Campbell River and associated systems leading into Controller Bay. Knight Island provides spawning and rearing habitat for sockeye salmon. Jackpot Bay also contains sockeye salmon. While in fresh water, juvenile sockeye salmon feed mainly upon zooplankton (such as ostracods, cladocerans, and copepods), benthic amphipods, and insects. Sockeye salmon continue to feed upon zooplankton (such as copepods, euphausids, ostracods, and crustacean larvae) in the ocean, but also prey upon larval and small adult fishes (such as sand lance), and occasionally squid. Aboriginal people considered sockeye salmon to be an important food source and either ate them fresh or dried them for winter use. Sockeye salmon support one of the most important commercial fisheries on the Pacific coast of North America, are increasingly sought after in recreational fisheries, and remain an important mainstay of many subsistence users. The Copper River is world renowned for the production of Copper River sockeye (red) salmon and this river is a major commercial fishery. Historically the major recreational fisheries in PWS for sockeye have occurred at Eshamy, Cordova, Valdez, and Coghill. Sockeye fisheries at Coghill and Eshamy have rebuilding from several years of poor returns.

Chum salmon are present through PWS and fry feed on small insects in streams and estuaries before forming into schools in salt water where their diet usually consists of zooplankton. Chum do not have a period of freshwater residence after emergence of the fry as do chinook, coho, and sockeye salmon. They are similar to pink salmon in this respect, except that chum fry do not move out into the ocean in the spring as quickly as pink fry. Significant chum salmon systems include Montague Island, Nellie Martin River, and Controller Bay. Sport fishers generally capture chum salmon incidental to fishing for other Pacific salmon in either fresh or salt water. Statewide sport harvest usually totals fewer than 25,000 chums. After entering fresh water, chums are most often prepared as a smoked product. In the last few years an average of 11 million chum salmon, worth over $32 million, have been caught in Alaska. Most chum are caught by purse seines and drift gillnets, but fishwheels and set gillnets harvest a portion of the catch. In many areas they have been harvested incidental to the catch of pink salmon. The development of markets for fresh and frozen chum in Japan and northern Europe has increased their demand, especially in the last decade. The Alaska Department of Fish and Game has built several hatcheries primarily for chum salmon products. In recent years the chum slamon returning to Wally Norenberg hatchery on Esther Island have been targeted by sport anglers.

Chinook Salmon is Alaska's state fish and is one of the most important sport and commercial fish native to the Pacific coast of North America. It is the largest of all Pacific salmon, with weights of individual fish commonly exceeding 30 pounds. Unlike other salmon species, Chinook salmon rear in inshore marine waters and are, therefore, available to commercial and sport fishers all year. This also makes them vulnerable to inshore marine pollutants year round. Juvenile Chinook in fresh water feed on plankton, then later eat insects. In the ocean, they eat a variety of organisms including herring, pilchard, sandlance, squid, and crustaceans. Catches of Chinook salmon in Southeast Alaska are regulated by quotas set under the Pacific Salmon Treaty. Major waterways in the Copper River area contributing to the fisheries include Martin River, Eyak River, Mountain Slough, and Strawberry Channel. Areas closed to sport Chinook fishing include: Eccles Creek, Eyak Lake, Clear Creek upriver of the Carbon Mountain Bridge, and Hartney Creek (all near Cordova); all freshwater drainages of Valdez Arm except for a portion of Robe River and Solomon Gulch Creek; and all waters within 300 feet of a weir or fish ladder (Hoffman and Miller 2000). There is a major commercial and sport fishery for Chinook salmon in the Copper River Valley.

Coho Salmon are extremely adaptable and occur in nearly all accessible bodies of fresh water-from large transboundary watersheds to small tributaries throughout PWS. Coho salmon enter spawning streams

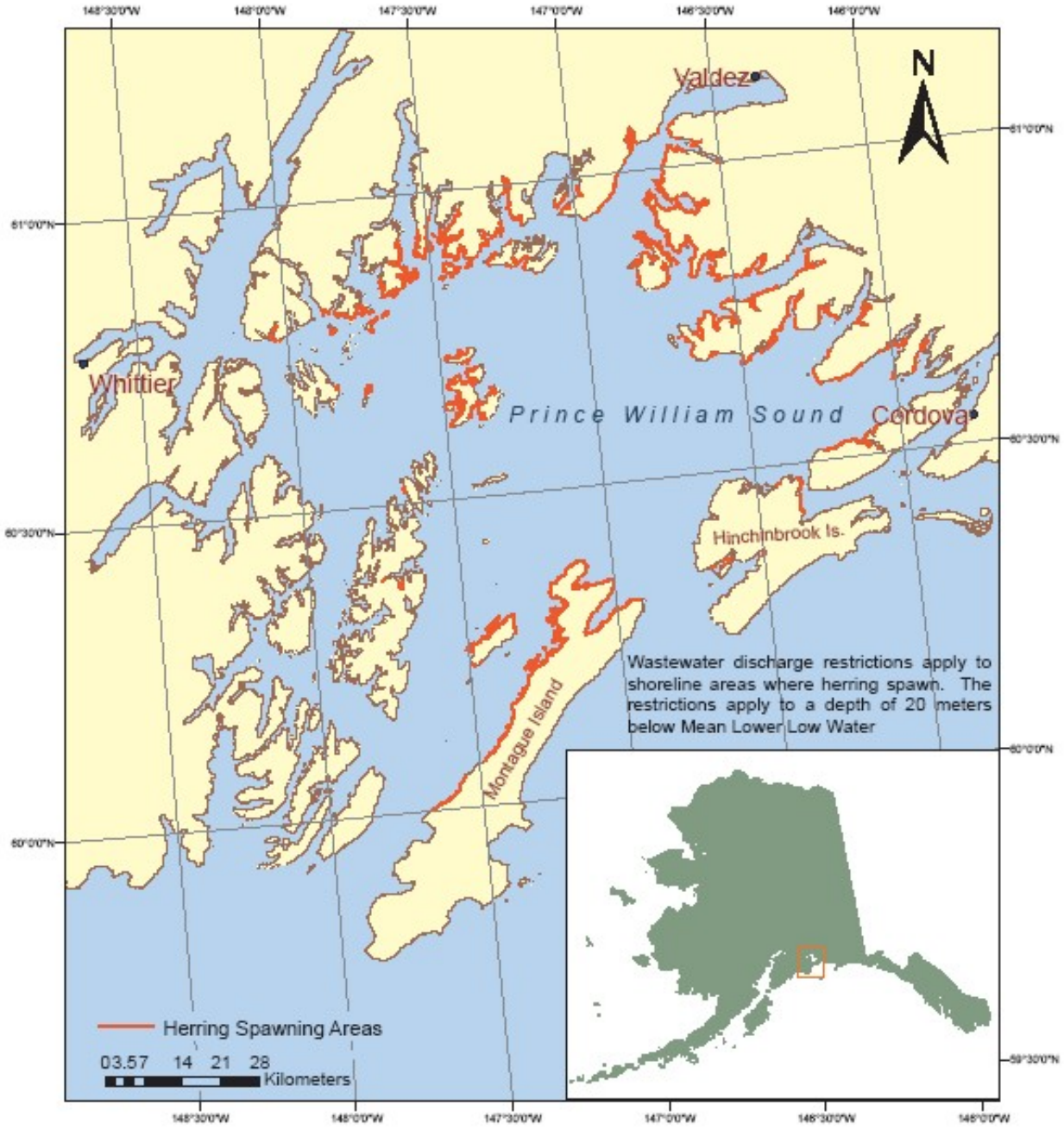
from July to November, usually during periods of high runoff. Run timing has evolved to reflect the requirements of specific stocks. The coho salmon is a premier sport fish and is taken in fresh and salt water from July to September. The streams in the Cape Suckling and Copper River Delta areas contain coho salmon. Nellie Martin River is a major spawning area for coho. Spawning and rearing of coho occurs on Knight Island, and in the Campbell River and associated systems leading into Controller Bay.

Areas closed to sport coho fishing include: Eccles Creek, Eyak Lake, Clear Creek upriver of the Carbon Mountain Bridge, and Hartney Creek (all near Cordova); all freshwater drainages of Valdez Arm except for a portion of Robe River and Solomon Gulch Creek; and all waters within 300 feet of a weir or fish ladder.

Pacific Herring are critically important in the PWS food web as many seabirds, fish and marine mammals rely on them as prey. Wide distribution of herring occurs from 50 to 100 meter depths and they aggregate in large schools for spawning in April in nearshore subtidal and intertidal areas. Herring biomass has ranged from 20,000 to well over 100,000 tons in the Sound. Spawning of Pacific herring occurs from late April to mid-June. A major spawning area for herring extends from Stockdale Harbor around to Rocky Bay. Spawning also occurs in Sheep Bay, north side of Story Island, west side of Naked Island, and Hells Hole in Port Gravina. Spawning occurs in intertidal and subtidal areas. Kelp or eelgrass is typically the preferred spawning substrates. Rearing juvenile herring are found at the mouth of St. Matthew's Bay in Sheep and Simpson bays and at Knowles Head. At Jackpot and Whale bays, major juvenile herring nurseries occur. A rich supply of nutrients at the Hinchinbrook Entrance supports spawning in May. The Tatitlek Narrows support a major Pacific herring spawning area in the southern half of the Narrows, down into the mouth of Port Fidalgo. Pacific herring spawn on the north side of Fairmount Island. Overwintering grounds link Montague and Green Islands and are also found in Zaikof Bay and off Montague Point. Port Gravina holds a major over-wintering population.

Herring Spawning Areas
Prince William Sound, Alaska

Alaska Department of Environmental Conservation, November 2005



Not for Navigational purposes, map for identification of the herring spawning areas only

Data source: Alaska Department of Fish and Game, Commercial Fisheries Division

Capelin are infrequently harvested, but are nevertheless important forage fish for higher trophic predators such as seabirds and marine mammals because of their high oil content. Capelin spawn on sandy to small gravel beaches. They typically spawn from May through July, but they are inconsistent in timing, location, and numbers from year to year. Capelin are infrequently repeat spawners. Much of their life history in the Prince William Sound area is unknown, but they are known to spawn at the Hinchinbrook Entrance and their larvae is known to increase in Chenega Bay in August.

Pacific Halibut are found throughout the PWS area and are important for commercial, sport, and subsistence fishing. They spawn in deep water from 600 to 1,500 feet from November to January. The fertilized eggs hatch in about 15 days. Older halibut spend winters in the deep water along the continental shelf. In summer, adult halibut move to shallow coastal waters with depths from 90 to 900 feet. Halibut are able to eat a large variety of fishes (cod, turbot, pollock) plus some invertebrates such as crab and shrimp. Sometimes halibut leave the ocean bottom to feed on pelagic fish such as sand lance and herring. Halibut and their fisheries are managed under an international treaty, the Halibut Convention of 1982 and the 1979 Protocol. The International Pacific Halibut Commission was formed to assure the optimal sustained yield of North Pacific halibut resources. In waters of the United States, halibut are governed under the Magnuson-Stevens Fishery Conservation and Management Act and the responsibility for allocation of the catch quota among fisheries falls to the North Pacific Fishery Management Council.

Lingcod typically inhabit nearshore rocky reefs from 30 to 330 feet in depth. Lingcod is an increasingly popular recreational fish.

Groundfish. The following species are found throughout Prince William Sound: arrowtooth flounder, flathead sole, Pacific cod, rock sole, sculpin, walleye pollock, and yellowfin sole. Pollock spawn in Hinchinbrook Entrance in April and May and their larvae may be susceptible to oil contamination at that time. Cod spawn in late winter or early spring and due to their abundance, they are extremely important to the ocean's food web. Yellowfin sole juveniles stay in the nearshore area for 3 to 5 years.

Other Forage Fish. Numerous species of fish inhabit the nearshore areas and these populations are often dominated by sand lance and rainbow smelt which might comprise 40% of the nearshore fish by number. Sand lance is one of the most important forage fish in the Prince William Sound subarea. Rainbow smelt is also an important subsistence food where communities harvest up to several thousand pounds per community.

4. *SHELLFISH*

Dungeness Crabs are found from the intertidal region to a depth of 230 m. Dungeness crabs are most common on sand or muddy-sand bottoms in the subtidal region, and are often found in or near eelgrass beds. However, they can also be found on a number of other substrata including various mixtures of silt, sand, pebble, cobble, and shell. Juvenile Dungeness crabs are found in similar habitats to adults, but they generally occupy shallower depths than adults. Juvenile crabs can be very abundant in the intertidal zone, but also occur in shallow subtidal areas. Survival of young crabs is greatest in habitats such as intertidal zones and eelgrass beds, where they can gain refuge from predators.

King Crab. Three species of king crab are located in PWS: red, blue, and brown. Red king crab larvae generally exhibit a diel movement being most abundant in the upper water column during the day and deeper at night. Young of the year crab occur at depths of 50 m or less. They are solitary and need high

relief habitat or coarse substrate such as boulders, cobble, shell hash, and living substrates such as bryozoans and stalked ascidians. Between the ages of two and four years, there is a decreasing reliance on habitat and a tendency for the crab to form pods consisting of thousands of crabs. Podding generally continues until four years of age (about 6.5 cm), when the crab move to deeper water and join adults in the spring migration to shallow water for spawning. Adult red king crabs occur to a depth of 365 m; preferred habitat for reproduction is water less than 90 m. Red king crabs are sparsely distributed throughout Prince William Sound with historic concentrations occurring in eastern Prince William Sound and Hinchinbrook Entrance. Blue king crabs are located in the Port Wells-Harriman Fjord area with small isolated populations associated with glacial fjords in western Prince William Sound. Brown king crabs occur at depths of 300-800 meters and are found in central and western PWS. They move into waters of less than 10 fathoms from about mid-February to June 1 to mate and molt.

Tanner Crab larvae are strong swimmers and perform diel vertical migrations in the water column (down at night). They usually stay near the depth of the chlorophyll maximum during the day. The length of time larvae take to develop is unknown, although it has been estimated at only 12 to 14 days. After settling to the bottom, Tanner crabs are widely distributed at depths up to 473 m. Females are known to form high density mating aggregations consisting of hundreds of crabs per mound. The mounds likely form in the same general location each year, but the location of the mounds is largely undocumented. Important rearing habitat occurs around the north end of Montague and the north end of Green Island as well as south between Montague and Green islands.

Weathervane scallops occur in the PWS area. Weathervane scallops are found on sand, gravel, and rock bottoms from 50-200 m. Generally, weathervane scallops are sexually mature at age 3 or 4 and are of commercially harvestable size at 6 to 8 years. Scallops are found in beds (areas of abundant numbers), and are dioecious, having separate sexes. Spawning occurs in June and July where the spermatozoa and ova are released into the water. In approximately one month hatching occurs and the larvae drift with the tides and currents. After two or three weeks the larvae will have gained shell weight, settled to the bottom, and attached to seaweed. Within four to eight weeks after settling, the juvenile will develop the ability to swim for locomotion. At this time, the juvenile scallop is approximately 3/8 of an inch in diameter and will take on the adult form. Scallops may live to age 18 and they feed by filtering microscopic plankton from the water. They have been commercially harvested throughout Alaska on a sporadic basis due to overharvesting scallop beds.

Shrimp. Pandalid shrimp (northern pink shrimp, humpy/flexed shrimp, spot shrimp/prawn, coonstripe shrimp, and sidestripe/giant red shrimp) are distributed throughout most major bays and certain nearshore and offshore areas in PWS. Spots and coonstripes are generally associated with rock piles, coral, and debris-covered bottoms, whereas pinks, sidestripes, and humpies typically occur over muddy bottom. Pink shrimp occur over the widest depth range (10-800 fathoms) while humpies and coonstripes usually inhabit shallower waters (3-200 fathoms). Spot shrimp seem to be caught in the greatest concentrations around 60 fathoms, but range from 2 to 250 fathoms. Sidestripes are typically found from 25 to 350 fathoms, but most concentrations occur in waters deeper than 40 fathoms. Most shrimp migrate seasonally from deep to shallow waters. Pandalid shrimp will eat a wide variety of items such as worms, diatoms, detritus (dead organic material), algae, and various invertebrates. Shrimp are an important part of the ocean food chain and are often the diet of large predator fish such as Pacific cod, walleye pollock, flounders, and salmon. Fisheries for shrimp have occurred in the Prince William Sound area with limited harvest occurring in western PWS. Pink shrimp generally comprise more than 80 percent of trawl landings. Spot shrimp are the primary species caught in Prince William Sound and the waters of Southeast Alaska. There are both a sport fishery and a commercial fishery for shrimp in

PWS. During the 1999 Board of Fisheries Meeting, the Board reduced the number of pots allowed to no more than 5 pots per person with a maximum of 5 per vessel and defined the season from April 15 to September 15 to help reduce harvest of egg-bearing females. Since 2001, a permit is required to harvest shrimp in Prince William Sound.

Razor clams live in surf-swept and somewhat protected sand beaches of the open ocean throughout PWS. They are found from approximately 4 feet above the mean low water level down to depths of 30 fathoms. Razor clams subsist on minute plants and animal life (plankton) filtered from the surrounding seawater. Razor clam concentrations are found in the Copper River Delta/Controller Bay area. Commercial harvest of razor clams in Prince William Sound has occurred since 1916 in the Cordova area. Annual production levels have fluctuated greatly reaching approximately 600,000 pounds in Cordova. The 1964 earthquake adversely affected razor clam populations in the Cordova area.

Pacific Little Neck Clams are commercially harvested throughout Prince William Sound.

Blue mussels are found throughout the Prince William Sound area and are densely packed around Port Gavina, LaTouche Island's Sleepy Bay, and Evans Island's Shelter Bay.

5. *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, 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 the 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 interactive mapping website at:
http://www.fakr.noaa.gov/maps/.

An additional EFH resource is their interactive mapping website:
http://www.habitat.noaa.gov/protection/efh/habitatmapper.html.

(a) Birds

Important Bird Habitats/Communities

Important Bird Area (IBA). The marine waters of Prince William Sound have been designated as a globally significant Important Bird Area by Audubon, as the U.S. Partner for BirdLife International. Important Bird Areas, or IBAs, are sites that provide essential habitat for one or more species of birds, including sites for breeding, wintering, and/or migrating birds. PWS is an IBA for the following species: Kittlitz's murrelet, pelagic cormorant, black scoter, marbled murrelet, Barrow's goldeneye, and harlequin duck.

The Audubon Alaska's Marine Important Bird Areas in Alaska report can be downloaded at:
http://ak.audubon.org/sites/default/files/documents/marine_ibas_report_final_sep_2012.pdf.

More than 220 species of birds are found in the Prince William Sound region. Large numbers of waterfowl, seabirds, and shorebirds are found in Prince William Sound and the Copper River Delta during spring and fall migrations, with populations peaking during April and May. During spring bird

migrations, some species concentrate in flocks of thousands, others in flocks of hundreds of thousands. Many birds also breed in the region during the summer and overwinter in sheltered areas.

The more common water bird species for the region include common loon, yellow-billed loon, red-throated loon, double-crested cormorant, pelagic cormorant, great blue heron, Canada goose, green-winged teal, Barrow's goldeneye, northern fulmar, harlequin duck, long-tailed duck , white-winged scoter, surf scoter, black scoter, common merganser, red-breasted merganser, black-legged kittiwake, gulls, common murre, thick-billed murre, pigeon guillemot, marbled murrelet, Kittlitz's murrelet, ancient murrelet, horned puffin, and tufted puffin. A complete list of birds vulnerable to oiling impacts in the PWS subarea can be found in the Unified Plan: Annex G – Wildlife Protection Guidelines, Appendix 2 Species of Concern by Subarea: Migratory Birds.

Surfbirds. Tens of thousands of surfbirds are attracted to the herring roe in Rocky Bay from early March to mid-April. North Montague Island is also a migratory stopover for post-breeding surfbirds, rock sandpiper, and black turnstones numbering in the thousands. Seventy percent of the world's surfbird populations use Montague Island as their staging area as they prepare to migrate to inland alpine tundra.

Waterfowl. One third of the southwestern Sound harlequin duck population is found along Green and Channel islands. The eastern Sound population of harlequin duck is concentrated in Olsen Bay, Hell's Hole, and Sheep Bay. Harlequin ducks nest around Constantine Harbor. Wintering areas for harlequin duck and scoters include Harriman Fjord and Barry Arm. Eshamy Bay supports harlequin ducks wintering in the nearshore marine zone and they nest and brood on fast moving streams in the area. Harlequin ducks molt and winter in the Tatitlek Narrows. An important waterfowl migratory stopover has been designated on Patton Bay. Both Heather and Columbia bays have been identified as an important resource area for waterfowl.

Seabirds. The North Pacific Pelagic Seabird Database (NPPSD) provides comprehensive geographic data on the pelagic distribution of seabirds in Alaska and the North Pacific. The current version of the NPPSD contains 335 unique taxa and include 4-letter codes, common names, ITIS taxonomic serial number, and NODC taxonomic code for marine birds and mammals observed on surveys in the NPPSD dataset. This list is provided to further the goal of standardizing pelagic seabird data. Researchers are encouraged to use this list for marine bird and mammal surveys in the North Pacific. This dataset is managed by the USGS Alaska Science Center and can be found at:http://alaska.usgs.gov/science/biology/nppsd/index.php. See the following link for a regional summary Seabird Population Map. http://www.asgdc.state.ak.us/maps/cplans/pws/pws3seabird.pdf.

The North Pacific Seabird Data Portal provides access to the North Pacific Seabird Colony Register, an automated database that contains the distribution of breeding seabirds and the relative size of all the colonies in Alaska. Download requests can be submitted online and colony data can be downloaded directly to a computer. The downloaded colony data provides information on a colony's location, species composition, and estimated numbers of breeding seabirds at that colony. The North Pacific Seabird Colony Register is maintained by the U.S. Fish and Wildlife Service, Division of Migratory Bird Management, in Anchorage. For updated information see the internet at: http://axiom.seabirds.net/maps/js/seabirds.php?app=north_pacific&v=rand.

In the southwest portion of Prince William Sound, almost two-thirds of the pigeon guillemot population resides with colonies on Evans Island. Tufted puffins have a large colony at Point Elrington and horned

puffin, Arctic tern, black-legged kittiwake, pelagic and red-faced cormorant, common murre, and glaucous-winged gull also have colonies at Point Elrington. Glaucous-winged gulls are attracted to the herring roe in Rocky Bay in large numbers. The highest nesting densities of pigeon guillemot (1/4 of colonies nesting) in the Sound occur on Naked Island. One of the primary locations for marbled murrelet in the Sound is on Naked Island. Large congregations of seabirds including double-breasted and pelagic cormorant, glaucous-winged gull, pigeon guillemot, and tufted and horned puffin occur on the west side of Hinchinbrook Island in May.

Kittlitz's murrelet numbers have dropped dramatically over the last decade throughout Prince William Sound. The Kittlitz's murrelet population, found almost exclusively in Alaska, feeds and nests throughout PWS, but primarily occurs in glaciated fjords. Fjords with high concentrations are Harriman and College fjords and Glacier and Heather bays, with smaller numbers in Blackstone Bay and Port Nellie Juan. Marbled murrelets also nest and feed throughout PWS, particularly in areas with large old-growth trees. A smaller portion of the PWS marbled murrelet population nest on the ground in cliff crevices. Large numbers of tufted puffins, horned puffins and pigeon guillemot have been counted in this area. Marbled murrelets are known to nest at the north end of Green Island and there is a high density in foraging areas near Needle and Seal islands.

Glaucous-winged gull, mew gull, black-legged kittiwake, and Arctic tern occur and breed in PWS. Skilled birdwatchers can also spot the Aleutian tern and the Caspian tern. Parasitic jaegers often pursue gulls, terns, and kittiwakes making them disgorge their catch.

Every June, black-legged kittiwake are found at Knowles Head. Boswell Rocks and Pinnacle Rocks host major kittiwake colonies. There are documented seabird colonies in 12 areas of Harriman Fjord and Barry Arm. Species within the colonies include pigeon guillemot, black-legged kittiwake, black oystercatcher, Arctic tern, and mew and glaucous-winged gull. Arctic terns and glaucous-winged gulls are present at Unakwik Reef. Arctic tern and glaucous-winged gulls breed on Danger Island. Porpoise Rocks contain large colonies of black-legged kittiwakes as well as common murre and tufted puffin and smaller colonies of glaucous-winged gull and horned puffin. Arctic tern, tufted puffin, and pigeon guillemot all nest around Constantine Harbor.

Areas identified as important for seabirds include Surprise Inlet, Patton Bay, and Serpentine Cove. The major seabird species on Patton Bay in descending order of abundance: tufted puffin, fork-tailed storm-petrel, black-legged kittiwake, Leach's storm petrel, glaucous–winged gull, three species of cormorant, pigeon guillemot, common murre, parakeet auklet, and horned puffin.
Shorebirds-The Sound's shorelines provide a varied assortment of invertebrates for shorebirds to feed on. Common shorebirds include the black oystercatcher, black turnstone, fork-tailed storm-petrel, surfbird, semipalmated plover, greater yellowlegs, spotted sandpiper, wandering tattler, common snipe, and least sandpiper. Black turnstones are attracted to the herring roe in Rocky Bay. More information can be found in Appendix 5 of the Alaska Shorebird Conservation Plan (2008) which identifies important areas for PWS. A copy of the plan can be found at:
http://www.fws.gov/alaska/mbsp/mbm/shorebirds/plans.htm.

Black oystercatchers with their brilliant 3-inch long bills, bright orange eyes, and pale pink legs are common around Growler Island. Biologists estimate the world population at a mere 10,000 of which about 1,000 may live in Prince William Sound, occupying gradually sloping rocky spits left by the Pleistocene glaciers. Here, the black oystercatchers slowly stalk the tides in and out feeding on blue mussels and other invertebrates while nearby their young are hidden in the tall beach grasses from

predators like bald eagles, ravens, and river otters. Black oystercatchers feed on urchins, crabs, and mussels in the Unakwik area. High densities of breeding black oystercatchers occur on Green, Little Green, and Channel islands and hundreds of black oystercatchers over-winter on Green Island, Stockdale Harbor, and Port Chalmers. Two Moon Bay in Port Fidalgo, Bligh Island, and Sheep Bay are considered prime habitat for oystercatchers. Black oystercatchers breed on Danger Island, and the shores of Prince of Wales Passages are considered important habitat. They are known to nest around Constantine Harbor.

Middleton Island supports about 700 breeding birds. PWS is home to at least 500 breeding black? oystercatchers with the largest concentrations in Harriman Fjord and along the coasts of Montague and Green Islands. The above areas alone comprise between 45-72% of the estimated global population. PWS supports black? oystercatchers in winter, principally in Constantine Harbor on Hinchinbrook Island, and around Green Island east to the northern portion of Montague Island including Zaikof Bay and Port Chalmers.

Additional information can be found in the Black Oystercatcher Conservation Action Plan (2007). The plan can be found at:
http://www.fws.gov/oregonfwo/Species/Data/BlackOystercatcher/Documents/Black_oystercatcher_conservation_action_plan_FINAL_April07.pdf.

Orca Inlet is a staging ground for hundreds of thousands of birds including dunlin, western sandpiper, least sandpiper, and dowitcher as they travel to their breeding grounds. In early May, the tidal flats of the Copper River Delta come alive with the activity of hundreds of thousands of shorebirds. As many as 5 million shorebirds rest and feed on the Copper River Delta during spring migration.

Passerines The upland mosaic of PWS habitats provide nesting, resting, and feeding areas for a variety of birds including the rufous hummingbird, belted kingfisher, violet-green swallow, tree swallow, Steller's jay, black-billed magpie, common raven, northwestern crow, chestnut-backed chickadee, brown creeper, dipper, winter wren, varied thrush, hermit thrush, Swainson's thrush, golden-crowned kinglet, orange-crowned warbler, yellow warbler, Wilson's warbler, pine grosbeak, common redpoll, pine siskin, savannah sparrow, dark-eyed junco, golden-crowned sparrow, fox sparrow, Lincoln's sparrow, and song sparrow. Northwestern crows nest in the spruce copses around Growler Island and feed in the adjacent intertidal zones where one can watch them rolling over or shoving rocks aside with their bills as they seek worms and other invertebrates.

Raptors known to inhabit Prince William Sound include bald eagles and Peale's peregrine falcon. The breeding population of raptors in Prince William Sound is placed at 2,256 out of a North American population estimated between 71,000 - 96,000. Feeding habits of the bald eagle include preying on a wide variety of fish captured during flight. They also feed on carrion. Bald eagles concentrate at freshwater inlets of Eshamy Bay for the spawning sockeye salmon returning. There are approximately 1,638 eagle nests in the Prince William Sound area. Although Alaskan bald and golden eagles are not on the endangered species list, they are fully protected (including their nests and nest trees) under the Bald Eagle Protection Act of 1940 and the Migratory Bird Treaty Act of 1918. Spill response activities that could affect these species should be coordinated with the U.S. Fish and Wildlife Service.

(b) Marine Mammals

Harbor seals, Steller sea lions, sea otters, gray whales, fin whales, sei whales, minke whales, humpback whales, beluga whales, sperm whales, Cuvier's beaked whales, killer whales, Dall's and harbor

porpoises, and Pacific white-sided dolphins may be present in the Sound. The Marine Mammal Protection Act of 1972 protects all marine mammals. Any spill response activities, that may affect marine mammals, should be coordinated with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service. Several species of endangered baleen whales migrate through the area and stop to feed in the Sound in the spring and summer. Large Steller sea lion rookeries are located on Seal Rocks and Wooded Island, and major haulouts are found on Pt. Elrington, the Needle, and Cape St. Elias.

Several harbor seal haulouts are scattered throughout the Sound and near the mouth of the Copper River. Dense concentrations of marine organisms occur in the Sound, including all five species of Pacific salmon, herring, crab, shrimp, clams, mussels and a variety of intertidal organisms, which attract the populations of marine mammals. Local kelp and eelgrass beds are critical components of the marine ecosystem supporting marine mammals.

Killer Whales. Killer whales are commonly observed throughout Prince William Sound and inhabit both near-shore and mid-Strait areas with some preference for the southwestern section of the Sound. Approximately 300 individuals have been documented in this region. Sightings have been made throughout the year with peak occurrence between April and September. Two ecotypes exist in the area—resident pods (i.e., fish eaters) and transient groups (i.e., marine mammals eaters). Specifically, resident killer whales follow and feed on salmon through Montague Strait and into areas within the Sound. Around Green Island transient killer whales have been reported to forage regularly on harbor seals. Transient killer whales also hunt harbor seals in Icy Bay and are known to hunt Dall's porpoises and harbor porpoises in the Knight Island Passage area. Attacks by transient killer whales on sea lions at the Needle have also been reported. Attacks by this top predator on marine mammals can occur throughout the Sound. In addition to the resident killer whale pods of PWS, two resident killer whale pods well-known from Southeast Alaska have been documented in the Sound. Superpods consisting of both PWS residents and Southeast Alaska residents have been observed in both July and August. All life processes occur in this area (e.g., feeding, mating, calving).

Humpback Whales. Prince William Sound represents a major feeding ground for the North Pacific humpback whale with site fidelity by whales documented for this regions. Peak numbers of humpback whales occur in PWS between early summer and late fall. Sightings, however, have been reported every month of the year. This species occupies both near-shore and mid-channel habitats. Humpback whales feed regularly in the Green Island area in July and August in groups of up to 30 individuals. Humpback whales also forage in the Southwest Passage and Knight Island Passage; the Knight Island Passage area represents a major migration corridor for humpbacks during the summer. Feeding bouts have also been reported in the Hinchinbrook Entrance area in July and August.

Gray Whales are not regularly found in Prince William Sound. They are alone among baleen whales in feeding predominantly on infaunal invertebrates. Gray whales are the only baleen whales that are mainly bottom feeders. They apparently feed by lying on their sides and sucking up sediment from the sea floor. The estimated daily consumption of an adult gray whale is about 2,600 pounds (1,200 kg). In the approximately five months spent in Alaska waters, one whale eats about 396,000 pounds (180,000 kg) of amphipod crustaceans. In 1948 the International Convention for the Regulation of Whaling banned all hunting of gray whales except by aboriginal people and by contracting governments when the meat and products are for aboriginal use. Eastern North Pacific gray whales have recovered slightly and their world population is now estimated at about 21,000. Western North Pacific gray whales are thought to number approximately 135 individuals and may rarely occur in the waters offshore of Prince William Sound.

Dall's Porpoise. Dall's porpoise are found throughout Prince William Sound primarily in mid-channel areas and occasionally in near-shore habitats. Year-round occurrence has been documented with seasonal peaks in spring and summer.

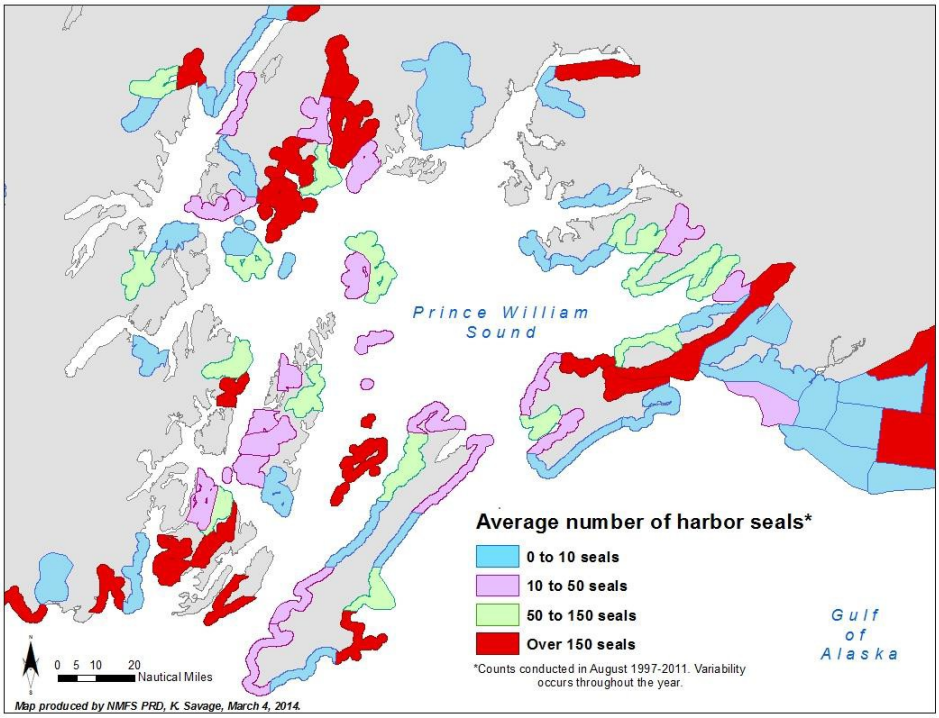
Harbor Porpoise. Harbor porpoise are also known to inhabit the waters of Prince William Sound. This species prefers near-shore habitats and has been documented during every month of the year in this region.

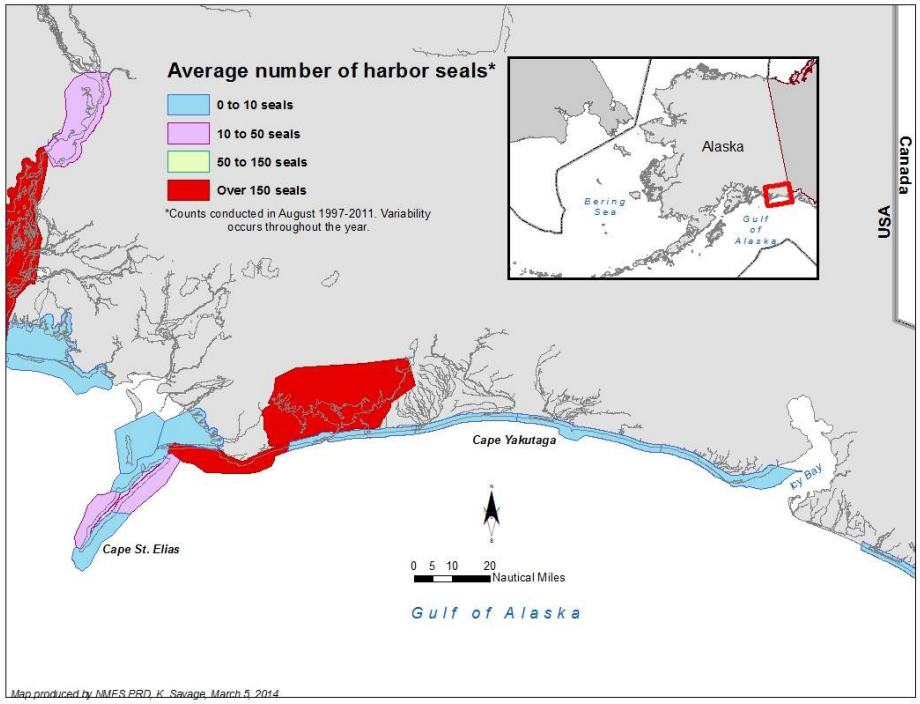
Harbor Seals are found in nearshore waters throughout the Prince William Sound region. An estimated 12,300 inhabit the Sound and Copper River Delta (including Kayak Island) during their molting season in August. Harbor seals tend to aggregate in estuaries and protected waters, where they exhibit strong site fidelity. Habitats used for haulouts include cobble and sand beaches, tidal mud flats, sand bars, offshore rocks and reefs, and ice (frozen heads of bays and on floating ice in fjords). Harbor seals enter lakes and rivers on a seasonal basis most likely in search of prey. Known seal haulouts occur throughout the Prince William Sound area. Major haulout locations include: Fairmount Island, Applegate Rocks, Schooner Rocks, Icy Bay, Port Chalmers, Canoe Passage near Hawkins Island, Iktua Rocks, Danger Island, Agnes Island, Barry Arm, Surprise Inlet, Nuchek, Little Smith Island, Big Smith Island, the northwest tip of Evans Island, the southwestern tip of LaTouche, Olsen Bay, Gravina Rocks, Gravina Island, Stockdale Harbor, Strawberry Channel, Egg Island Channel, islands around the Copper River entrance into the Gulf of Alaska, Rocky Bay, Controller Bay, Kayak Island, Green and Little Green islands, Seal and Channel islands. Other haulouts include: off Lone Island, Story Island, and Perry Island.

Haulouts are used for pupping, molting, and resting, and may be used year-round; peak haulout use occurs during June through early October. Pupping occurs between late May and early July; most pups are born during the first three weeks of June and require about 3 weeks to wean. Molting occurs from late July to mid-September. Portions of the marine waters of Port Etches have been designated as a sensitive biological resource for harbor seals. Ice calved from tidewater glaciers also provide resting areas for seals, with aggregations mapped near the Harriman, Surprise, Meares, Tiger, Nellie Juan, Yale, Blackstone, Harvard, Barry, and Chenega glaciers. Surprise Inlet and Barry Arm are an important biological resource for seals. Columbia Bay has one of the highest harbor seal densities in the Sound with over 700 seals counted on the ice. Ice in the bay provides floating platforms for resting during pupping in early summer and molting in late summer through early fall. The Copper River, as it enters the Sound, provides a wealth of resources for harbor seals which aggregate there in large numbers, particularly at peak abundance in August. The few dozen haulouts in this region are estimated to host almost 7,000 individuals during the August molting season (see map below).

Harbor Seals in the Prince William Sound Subarea

(source: National Marine Fisheries Service)





Sea Otters are estimated at 10,000 to 12,000 individuals occupying Prince William Sound with 90% of the world population residing in the near shore, coastal waters of Alaska. Sea otters were heavily impacted by the Exxon Valdez oil spill (EVOS). In 2010, the EVOS Trustee Council listed this species as "recovering". Food items preferred by the sea otters include crustaceans and mollusks, but they also eat fish and octopus. Sea otters often use stones to help crack shells of food items and frequently roll to clean their fur in the water. This is necessary to keep thermoregulation at an optimum since sea otters lack an insulating layer of fat (blubber) and they rely solely on their fur for insulation.

Sea otters require ¼ of their weight in food per day. The northwest coast of Montague Island provides excellent habitat for sea otters. High sea otter concentrations are found in Port Gravina, Sheep Bay, Simpson Bay, and around Surprise Glacier. Sea otters pup near the northeast end of Evans Island, and overwinter on the west side of LaTouche Island. Orca Inlet has high sea otter densities. The nearshore waters and shoreline of Port Etches have been designated as concentration areas for sea otters. A high concentration of sea otters has been documented in Barry Arm. The Chugach National Forest has documented large numbers of sea otters around Wooden Island. Strong populations of forage fish and invertebrates in Tatitlek Narrows support large populations of sea otters. High concentrations of sea otters are also found in the Bligh and Busby islands. Sea otters utilize the shallow exposed waters in the lower half of Unakwik Inlet where greater benthic biomass exists. Eshamy Bay provides protected sea otter pupping areas and has been designated as a concentration area for sea otters. For more about sea otters: http://www.fws.gov/alaska/fisheries/mmm/seaotters/otters.htm.

Steller Sea Lion populations within Prince William Sound consist of both the Western Distinct Population Segment (WDPS) and Eastern Distinct Population Segment (EDPS). The WDPS has been listed as endangered by the Endangered Species Act since 1997. The EDPS was removed from the Endangered Species Act list in 2013. During May through August, territorial breeding behavior occurs on the rookeries. Pupping occurs from late May to early July; most pups are born during June. Steller sea lions use the Needle, Point Elrington, Glacier Island, Perry Island, and the Pleiades Islands as year-round haulouts. Steller Sea Lion rookeries in Prince William Sound are Seal Rocks, Wooded Island, and the Chiswell Islands. The National Marine Fisheries Service has designated these rookeries as critical habitat for this endangered species. Patton Bay and the surrounding islands provide Steller sea lions with access to dense concentrations of forage fish. Fish Island has been used as a haulout of Steller sea lions since the 1970s. A major haulout located at Kayak Island in the Gulf of Alaska has approximately 144 individuals. Please see map below for further Steller sea lion critical habitat delineations.

(c) Terrestrial Mammals

Several species of large terrestrial mammals are abundant throughout the Prince William Sound area. Brown and black bear, moose, Sitka black-tailed deer, Dall sheep, and mountain goats are common throughout the Prince William Sound region.

Sitka black-tailed deer were introduced throughout Prince William Sound between 1916 and 1923. During summer, deer generally feed on herbaceous vegetation and the green leaves of shrubs. During winter, they are restricted to evergreen forbs and woody browse. When snow is not a problem, evergreen forbs such as bunchberry and trailing bramble are preferred. During periods of deep snow, woody browse such as blueberry, yellow cedar, hemlock, and arboreal lichens are used. Woody browse alone, however, is not an adequate diet and deer rapidly deplete their energy reserves when restricted to such forage. Islands known to have concentrations of deer include Elrington, Montague, Bligh, Hawkins, Port Gravina, Mummy, Hinchinbrook, LaTouch, and Evans. The Prince William Sound

population is estimated from 8,000 to 12,000 individuals and one estimate states that between 70% and 75% of the deer population in the Sound resides on Hawkins, Hinchinbrook, and Montague islands.

Moose occur in habitats throughout much of the Prince William Sound region, ranging from aquatic and riparian floodplains 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. During fall and winter, moose consume large quantities of willow, birch, and aspen twigs. In some areas, moose actually establish a "hedge" or browse line 6 to 8 feet above the ground by clipping most of the terminal shoots of favored food species. Spring is the time of grazing as well as browsing. Moose eat a variety of foods, particularly sedges, equisetum (horsetail), pond weeds, and grasses. During summer, moose feed on vegetation in shallow ponds, forbs, and the leaves of birch, willow, and aspen. Riparian areas along the major rivers and tributary streams are particularly important during winter. Calving occurs in late May and early June, frequently in isolated marshy lowlands. Moose concentrations along the Copper River drainage are apparent.

Brown Bears are distributed throughout Prince William Sound, with the exception of Middleton Island and small islands throughout the Sound. The population on Montague Island is recovering from over-harvesting in the 1970s and early 1980s. Bear concentrations may be found along rivers when spawning salmon are present. Brown bears consume a wide variety of foods including: berries, grasses, sedges, horsetails, cow parsnips, fish, ground squirrels, carrion, and roots of many kinds of plants. In some parts of Alaska, brown bears have been shown to be capable predators of newborn moose and caribou, also killing adults and domestic animals. Brown bears enter dens beginning in late October, with most bears denned by mid-December. Bears emerge from their dens as early as mid-March, depending on weather conditions. No census has been completed in Prince William Sound for population numbers, but population densities on the adjacent Copper River delta reportedly varies from 1 per 3.3 to 4.6 square miles. Brown bears are abundant at the head of Port Gravina. Brown bears are very numerous in the Nellie Martin River area due to the abundance of pink and silver spawning salmon. Bears concentrate at the freshwater inlets of Eshamy Bay for the spawning pink and sockeye salmon returning from the sea. East of the line from Point Freemantle out Montague Strait is brown habitat. Both black and brown bears visit tidal flats in the spring to graze on the grass and sedge communities. This occurs from mid-late April through late June. Use of intertidal areas decreases during mid-summer, although individuals will visit to dig clams or scavenge beached carcasses. Once the salmon return to streams in August, bears concentrate along the streams near tidewater to feed. In eastern PWS, brown bears mostly keep black bears away from streams. Brown bears will stay near salmon streams until the runs play out, sometimes into October.

Black Bears are found throughout the Prince William Sound area with the exception of Montague, Hinchinbrook, Hawkins, Kayak, and Middleton islands, and several other small islands in Prince William Sound. The black bear is omnivorous, and they consume freshly sprouted green vegetation, carrion, fresh kills of young moose and deer, and berries. In western PWS, black bears feed on salmon during August and then head for berry country, usually in the higher elevations. They measure about 26 inches at the shoulder and about 60 inches from nose to tail. Male black bears weigh around 200 pounds in spring and about 20% more in fall before denning. Three color phases of black bear occur in Alaska: jet black, brown (or cinnamon), and blue. The blue color bears, or glacier bears, occur in a restricted coastal belt from Prince William Sound to the northern fringes of southeast Alaska. Black bears lack a prominent shoulder hump and usually have a conspicuous patch of white on their chests. Reported

densities of black bears in Prince William Sound range from 2.5 bears per square mile to 8 to 10 per square mile.

Furbearers. Beavers, coyotes, red foxes, lynx, martin, mink, muskrats, land otters, and wolverines are all present in the Prince William Sound area. Historical information on population status is mostly anecdotal. ADF&G sealing monitors harvests of beavers, lynx, land otters, and wolverines. Lynx are relatively scarce in the area. It is suggested by C. Rhode that coyotes are relatively new to the area and did not become a dominant canine until 1938. Marten densities are variable, and excessive trapping is thought to result in low numbers in the Copper and Bering river areas.

In the Prince William Sound area, beaver, mink, and river otter are common inhabitants of aquatic and riparian floodplain and wetland areas, including marshes, ponds, lakes, streams, and rivers. Mink are considered to be common to abundant through the Sound area. They prey on a variety of animals and feed on anything they can capture and kill. They are adapted to capture aquatic and terrestrial prey including mammals, fish, birds, amphibians, crustaceans, and insects. Fish are their main food item. River otters are considered to be common to abundant in the Prince William Sound area. Diet of the river otters consist of fish, crustaceans, amphibians, insects, birds, and mammals. Fish compose the majority of the river otter's diet. High concentrations of river otters occur in the Bligh and Busby islands due to the high quality intertidal and subtidal biota.

Wolves and Foxes are found throughout Prince William Sound, however they have not become established on the major islands where deer would be adequate prey. Wolves are carnivores, and in most of mainland Alaska moose and/or caribou are their primary food, with Dall sheep being important in limited areas. In Southeast Alaska, Sitka black-tailed deer, mountain goats, and beaver are the most important sources of food. During summer, small mammals including voles, lemmings, ground squirrels, snowshoe hares, beaver, and occasionally birds and fish are supplements in the diet. The rate at which wolves kill large mammals varies with prey availability and environmental conditions. A current Alaska Department of Fish and Game report for the Prince William Sound and north Gulf Coast area suggests a stable wolf population of 50-65 wolves in 8 packs. Wolves and foxes select den sites where unfrozen, well-drained soils occur (e.g., dunes, river banks, and moraines). Wolves may initiate den construction in mid-April with pups being born from mid-May through early June. Dens may be occupied until August. Red foxes have a reproductive pattern similar to that of wolves. They are relatively scarce in the Prince William Sound area. The last significant harvest of red fox was in 1972 in Unit 6C and the fox is thought to have been displaced as coyote populations increased.

6. *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. For more information, check the web site at: http://aknhp.uaa.alaska.edu/botany/rare-plants-species-lists/.

RARE PLANTS KNOWN FROM THE PRINCE WILLIAM SOUND SUBAREA

Global Rank	State Rank	Scientific Name	Common name
G1G2	S1	*Arabis codyi*	
G1G2Q	S1	*Isoetes truncata*	TRUNCATE QUILLWORT
G1G2Q	S1S2	*Cochlearia sessilifolia*	
G1Q	S1	*Cryptantha shackletteana*	SHACKLETTES' CATSEYE

Global Rank	State Rank	Scientific Name	Common name
G1Q	S1	*Draba kananaskis*	TUNDRA WHITLOW-GRASS
G2G3	S2S3	*Douglasia alaskana*	ALASKA ROCK-JASMINE
G3	S1S2	*Lesquerella calderi*	CALDER'S BLADDER-POD
G3	S2	*Lupinus kuschei*	YUKON LUPINE
G3	S2	*Poa laxiflora*	LOOSE-FLOWERED BLUEGRASS
G3	S2S3	*Douglasia arctica*	MACKENZIE RIVER DOUGLASIA
G3	S2S3	*Oxytropis huddelsonii*	
G3	S2S3	*Phacelia mollis*	MACBRIDE PHACELIA
G3	S3	*Aphragmus eschscholtzianus*	
G3	S3	*Douglasia gormanii*	GORMAN'S DOUGLASIA
G3	S3	*Draba ruaxes*	RAINIER WHITLOW-GRASS
G3	S3	*Montia bostockii*	BOSTOCK'S MINER'S-LETTUCE
G3	S3	*Platanthera chorisiana*	CHORISO BOG-ORCHID
G3	S3	*Romanzoffia unalaschcensis*	UNALASKA MIST-MAID
G3	S3	*Rumex beringensis*	
G3	S3	*Stellaria alaskana*	ALASKA STARWORT
G3	S3	*Thlaspi arcticum*	ARCTIC PENNYCRESS
G3?	S2	*Phyllospadix serrulatus*	SERRULATE SURF-GRASS
G3G4	S1S2	*Draba porsildii*	PORSILD'S WHITLOW-GRASS
G3G4	S3	*Papaver alboroseum*	PALE POPPY
G3G4	S3S4	*Draba stenopetala*	ANADYR WHITLOW-GRASS
G3G4Q	S3S4	*Atriplex alaskensis*	ALASKA ORACHE
G3G4Q	S3S4	*Castilleja annua*	ANNUAL INDIAN-PAINTBRUSH
G3Q	S3	*Taraxacum carneocoloratum*	PINK-FLOWER DANDELION
G4	S1	*Carex adelostoma*	A SEDGE
G4	S1	*Carex laxa*	
G4	S1	*Carex sychnocephala*	MANY-HEADED SEDGE
G4	S2	*Carex heleonastes*	HUDSON BAY SEDGE
G4	S3	*Asplenium trichomanes-ramosum*	GREEN SPLEENWORT
G4	S3	*Colpodium vahlianum*	
G4	S3S4	*Festuca brevissima*	
G4	S4	*Erysimum pallasii*	PALLAS WALLFLOWER
G4?	S2	*Carex holostoma*	
G4G5	S2	*Lonicera involucrata*	
G4Q	S3	*Pedicularis macrodonta*	BIGTOOTH LOUSEWORT
G4T2T3Q	S2?	*Phlox richardsonii ssp richardsonii*	RICHARDSON'S PHLOX
G?	S2S3	*Elymus calderi*	
G4T3	S2?	*Draba lonchocarpa var vestita*	
G5	S1	*Agoseris glauca*	PALE FALSE-DANDELION
G5	S1	*Draba densifolia*	DENSE-LEAF WHITLOW-GRASS

Global Rank	State Rank	Scientific Name	Common name
G5	S1	Viola sempervirens	REDWOODS VIOLET
G5	S1S2	*Juniperus horizontalis*	
G5	S2	*Agrostis thurberiana*	THURBER BENTGRASS
G5	S2	*Ceratophyllum demersum*	COMMON HORNWORT
G5	S2	*Salix hookeriana*	HOOKER WILLOW
G5	S3	*Zannichellia palustris*	HORNED PONDWEED
G5	S3S4	*Malaxis monophyllos*	WHITE ADDER'S-TONGUE
G5	S3S4	*Minuartia dawsonensis*	
G5T2Q	S2	*Arnica lessingii ssp norbergii*	NORBERG ARNICA
G5T2T3Q	S2S3	*Smelowskia calycina var porsildii*	
G5T2T4Q	S2	*Dodecatheon pulchellum ssp alaskanum*	ALASKAN PRETTY SHOOTING-STAR
G5T3	S3	*Astragalus harringtonii*	
G5T3Q	S3	*Carex lenticularis var dolia*	GOOSE-GRASS SEDGE
G5T3T4	S2	*Saxifraga nelsoniana ssp porsildiana*	HEART-LEAF SAXIFRAGE
G5T4Q	S2	*Trisetum sibiricum ssp litorale*	SIBERIAN FALSE-OATS
G5T5	S1	*Poa douglasii ssp macrantha*	

Species Ranks used by the Alaska Natural Heritage Program

Species Global Rankings

G1: Critically imperiled globally (5 or fewer occurrences) G2: Imperiled globally (6-20 occurrences)

G3: Rare or Uncommon globally (20-100 occurrences)

G4: Apparently secure globally, but cause for long-term concern (>100 occurrences) G5: Demonstrably secure globally

G#G# Rank of species uncertain, best described as a range between two ranks G#Q Taxonomically questionable

G? Unranked

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

Species State Rankings

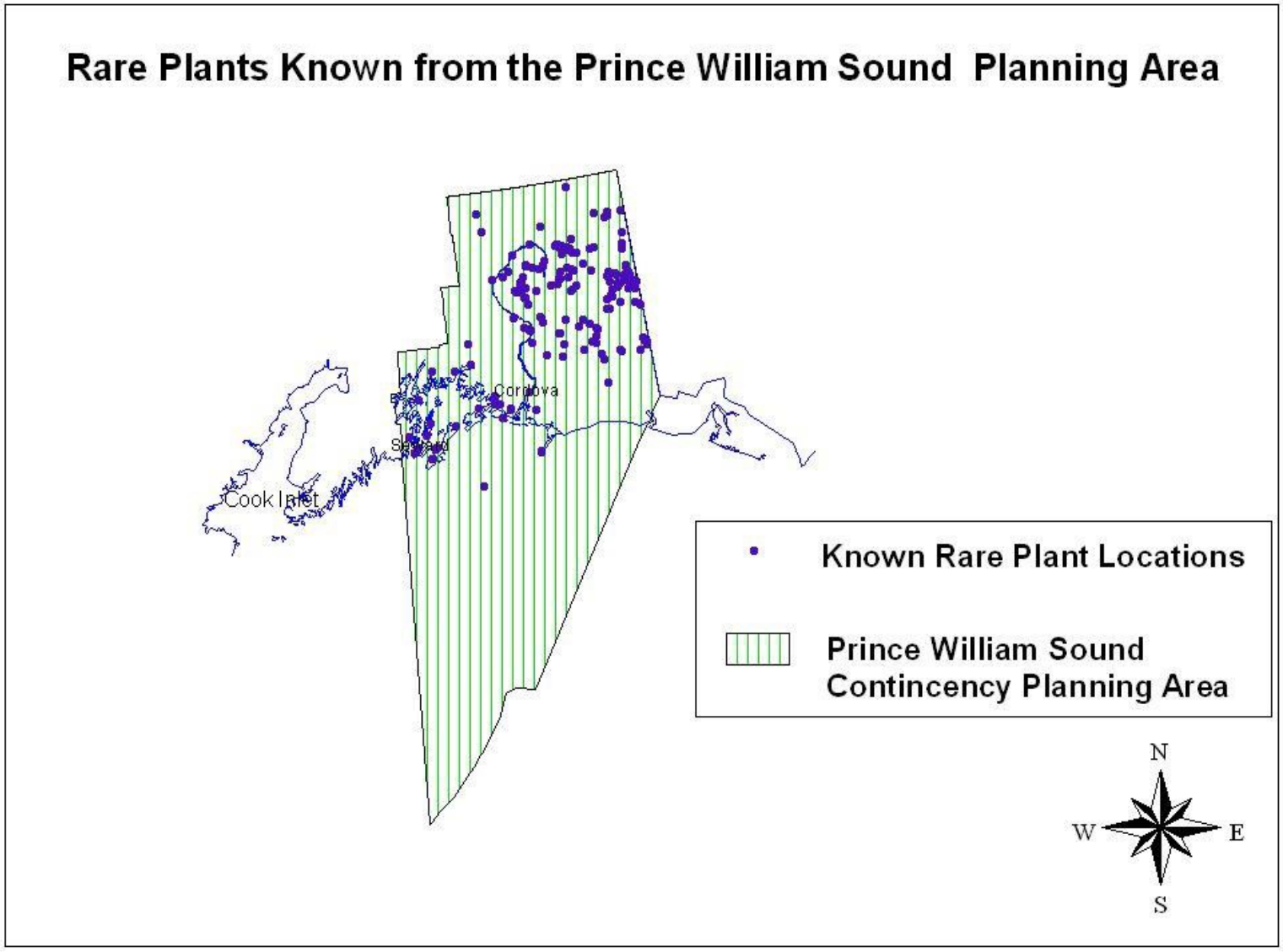
S1: Critically imperiled in state (5 or fewer occurrences)

S2: Imperiled in state (6-20 occurrences)

S3: Rare or Uncommon in state (20-100 occurrences)

S4: Apparently secure in state, but cause for long-term concern (>100 occurrences) S5: Demonstrably secure in state

S#S# Rank of species uncertain, best described as a range between two ranks


Rare Plants Known from the Prince William Sound Planning Area
Cordova
Cook Inlet
Known Rare Plant Locations
Prince William Sound
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D. HUMAN RESOURCE USES

1. *Fish Hatcheries and Associated Ocean Net Pens*

All five species of Pacific salmon are produced in hatcheries in the subarea. In recent years, hatchery production has accounted for the majority of the commercial salmon harvest in the Sound. Direct telephone communication with all but the Solomon Gulch and Gulkana hatcheries is difficult or impossible. The easiest means of notifying the remote hatcheries is via the PWSAC office in Cordova listed below.

The hatchery activities most vulnerable to spill damage include fry rearing and release, terminal harvests, and egg takes. However, since the timing of these activities varies by hatchery and species, it is difficult to generalize about what occurs when, although spring and summer will tend to be the most critical times. Hatchery managers should be contacted for specific information.

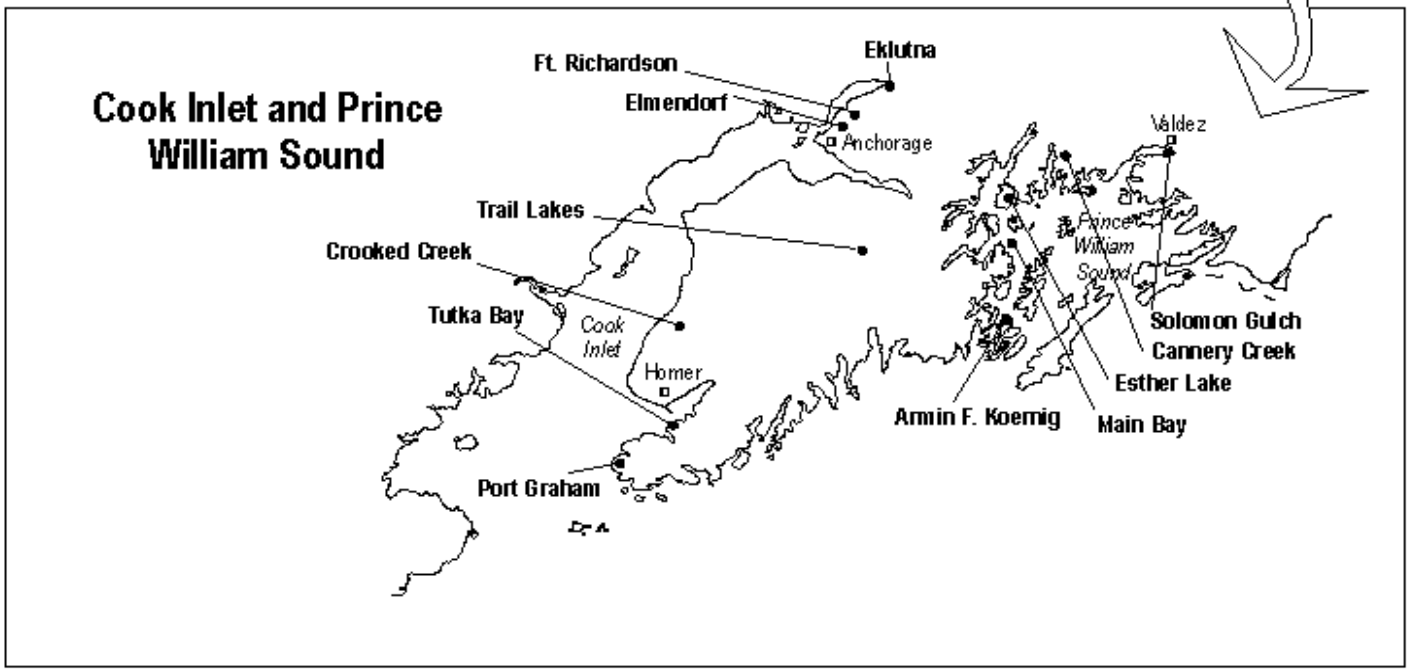
Currently, there is remote release of chum salmon to Port Chalmers on north Montague Island originating from the WN Hatchery. Main Bay Hatchery releases coho salmon to Solf Lake. There is a remote release of coho salmon to Whittier, Chenega, and Cordova from the WN Hatchery.

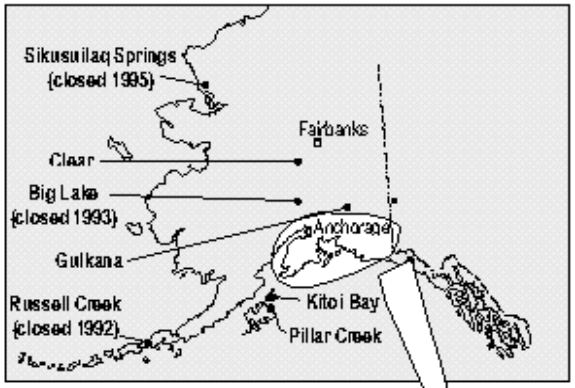
For additional information on hatcheries in Prince William Sound contact the Alaska Department of Fish and Game in Cordova.

E. FISH HATCHERIES

Operator, Hatchery, City, Phone	Salmon Species
1. ***Prince William Sound Aquaculture Assoc.:***	
Main Bay Hatchery, Cordova 835-4193	sockeye
Cannery Creek Hatchery, Whittier 424-7511	pink
Gulkana Facilities, Glennallen 822-5141	sockeye
AFK Hatchery, Cordova	pink
WN Hatchery, Cordova 265-9618	pink, chum, coho,
Valdez Fisheries Development Assoc.:	
Solomon Gulch Hatchery, Valdez 835-1329	pink and coho

Locations of Hatcheries in Prince William Sound, Interior, and Southcentral Alaska





2. *Aquaculture Sites*

Commercial aquatic farms are currently raising Pacific oysters in Prince William Sound. The number of applications for aquatic farm permits is on the rise and the number of farms may increase significantly in the near future. The locations of the current shellfish farms granted permits are shown in the following figure.

Aquatic farms are vulnerable to spill damage on a year-round basis since the shellfish are suspended from anchored gear and are submerged continuously in the water column. Harvest takes place year round. For more information see the following map at:
http://www.asgdc.state.ak.us/maps/cplans/pws/pws3aqua.pdf.

insert aquafarm map here
http://www.asgdc.state.ak.us/maps/cplans/pws/pws3aqua.pdf

Prince William Sound Active Aquatic Farms

(Source: Alaska Department of Natural Resources)

Map Code	Company	Contact	City	Telephone
ADL 225239	Aquabionics, INC/New Wave Seafoods	Jack Van Hyning	Prince William Sound/Perry Island	479-2476
ADL 225257	Dojer LTD	Gerald Protzman	Prince William Sound/Fairmont Cove	472-2319
ADL 225295	Pristine Products	David Sczawinski	Prince William Sound/Wells Passage	255-2340
ADL 225296	Pristine Products	David Sczawinski	Prince William Sound/Eaglek Bay	255-2340
ADL 225865	Tatitlek Mariculture Project	Tatitlek IRA Council	Prince William Sound/Tatitlek Narrows	424-3777
ADL 226332	C.C. Oyster Company	David Chipman	Prince William Sound/Windy Bay	
ADL 226577	Pristine Products	David Sczawinski	Prince William Sound/Squaw Bay	255-2340
ADL 226846	Eagle Shellfish Farm	James Aguiar	Prince William Sound/Simpson Bay	424-3482
ADL 226874	Windy Bay Oyster Company	John Wiese	Prince William Sound/Windy Bay	424-7754
ADL 227611	McClure Bay Oyster Farm	William Kelley	Prince William Sound/McClure Bay	

Insert aqua farm map for Blue Fiord and McClure Bay here

http://www.asgdc.state.ak.us/maps/cplans/pws/PWSbluefiordmclurebay.pdf

Insert aqua farm map of Fairmont Bay here

http://www.asgdc.state.ak.us/maps/cplans/pws/PWSfairmont.pdf

Insert aqua farm map of Perry Island here

http://www.asgdc.state.ak.us/maps/cplans/pws/PWSperryisland.pdf

Insert aqua farm map of Simpson and Windy Bays here

http://www.asgdc.state.ak.us/maps/cplans/pws/PWSsimpsonwindybays.pdf

Insert aqua farm map of Squaw Bay here

http://www.asgdc.state.ak.us/maps/cplans/pws/PWSsquawbay.pdf

Insert aqua farm map of Tatitlek here

http://www.asgdc.state.ak.us/maps/cplans/pws/PWStatitlek.pdf

3. *Historic Properties*

The subarea contains a multitude of known and unidentified archaeological and historic sites. These sites are not identified here, in order to protect them from scavenging. Oil spills and hazardous substance releases may result in direct and/or indirect impacts to those historic properties. On-Scene Coordinators are responsible for ensuring that response actions take the protection of historic properties into account and that the statutory requirements for protecting them are met. Annex M of the *Unified Plan* outlines Federal On-Scene Coordinator responsibilities for protecting historic properties and provides an expedited process for compliance with Section 106 of the National Historic Preservation Act during the emergency phase of a response. The Alaska Department of Natural Resources State Historic Preservation Office should be contacted at 907-269-8721 for information on archeological and historic sites.

4. *Subsistence and Personal Use Harvests*

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 opportunities. In 1990, however, federal agencies became responsible for assuring a federal subsistence priority on federal public lands, and in 1999 on federal reserved waters. The Federal Subsistence Board adopts subsistence regulations that are administered by various federal agencies on federal public lands. State regulations continue to apply to State and private lands. As a consequence, the number of agencies involved in regulating 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 (http://www.subsistence.adfg.state.ak.us/) or the U.S. Department of the Interior's Office of Subsistence (http://www.doi.gov/subsistence/index.cfm).

Subsistence uses in the area are extensive and vary by season, resource, and village. Some information about subsistence uses is community-sensitive. Contacts for potentially affected communities are identified in the Response Section, Part One.

5. *Commercial Fishing*

The following chart provides general information on the timing of major commercial fisheries in the subarea. It must be remembered, however, that all fishing seasons are subject to emergency openings and closures and that many seasons are only open for a portion of the times specified in the regulations. Also, fishing regulations and seasons can change from year to year. Specific information on which species are currently being harvested may be obtained from the Alaska Department of Fish and Game, Commercial Fisheries Division in Anchorage.

Maps of key commercial fishing areas are available in the following Alaska Department of Fish and Game publications: the Alaska Habitat Management Guide Reference Maps, Southcentral Region, Vols. 1 and 2 and the Alaska Habitat Management Guide, Southcentral Region Map Atlas. For more information see: http://www.cf.adfg.state.ak.us/.

Economically speaking, the salmon fishery is the most important commercial harvest activity. Pink salmon, produced in large part by the Prince William Sound hatcheries, are the mainstay of the industry, although the Copper River sockeye gill net fishery is also very productive. Copper River sockeye are also the first major salmon run of the season, starting in mid-May. The herring fishery has historically been economically significant, but the stocks have been depressed.

The following groups can be contacted with requests for specific information on location and timing of fish and wildlife as well as local current conditions. Although the primary function of these organizations is not to provide such information, the individual members will be quite knowledgeable about environmental conditions and will often be willing to share information.

Cordova District Fishermen United
Cordova
424-3447
FAX 424-3430

Prince William Sound Aquaculture Corporation
Cordova
424-7511

Valdez Fisheries Development Association Valdez
835-1329

Cordova Aquatic Marketing Association
Cordova
424-3458

Alaska Shellfish Grower's Association
Anchorage
248-7709

GENERAL COMMERCIAL FISHERIES TIMING PRINCE WILLIAM SOUND												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
SALMON												
seine net												
gill net												
set net												
HERRING												
sac roe												
roe-on-kelp												
Bait												
HALIBUT[1]												
PACIFIC COD												
POLLOCK[2]												
SABLEFISH												
CRAB												
Dungeness[3]												
Brown king[3]												
SHRIMP												
pots												
trawls												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

[1] Halibut fisheries timing are determined by the IPHC every year.

[2] Pelagic trawl gear only.

[3] Subsistence crab fishery only. No commercial crab fisheries in PWS.

6. *Sport Fishing and Hunting*

Sport fishing and hunting occurs at a wide variety of locations in the 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. For more information see http://www.sf.adfg.state.ak.us/.

7. *Recreational Sites and Facilities*

(see also Part 4.A, Land Management Designations)

(a) Alaska Department of Natural Resources: State Parks, Picnic Areas, and Campgrounds: Name, Nearest Community

Bettles Bay State Marine Park, Whittier Blueberry State Recreation Site, Valdez Boswell Bay State Marine Park, Cordova Canoe Passage State Marine Park, Cordova Decision Point State Marine Park, Whittier Dry Creek State Recreation Site, Glennallen Eagle Trail State Recreation Site, Tok
Entry Cove State Marine Park, Whittier Granite Bay State Marine Park, Whittier
Horseshoe Bay State Marine Park, Chenega Bay Jack Bay State Marine Park, Valdez
Kayak Island State Marine Park, Cordova
Lake Louise State Recreation Area, Glennallen Liberty Falls State Recreation Site, Chitina
Little Nelchina State Recreation Site, Glennallen Little Tonsina State Recreation Site, Copper Center
Moon Lake State Recreation Site, Tok
Porcupine Creek State Recreation Site, Tok Sawmill Bay State Marine Park, Valdez Shoup Bay State Marine Park, Valdez
South Esther Island State Marine Park, Whittier Squirrel Creek State Recreation Site, Copper Center
Surprise Cove State Marine Park, Whittier
Tok River State Recreation Site, Tok
Tolsona Creek State Recreation Site, Glennallen Worthington Glacier State Recreation Site, Valdez
Zeigler Cove State Marine Park, Whittier

For more information see: http://www.dnr.state.ak.us/parks/.

Bureau of Land Management: Name, Nearest Community
Alaska Public Lands Information Center, Tok
Tangle Lakes Campground, Paxson
Tangle River Campground, Paxson
Paxson Lake Wayside, Paxson
Paxson Lake Campground, Paxson
Sourdough Campground, Glenallen

U.S. Forest Service: Name, Nearest Community
Alaganik Bridge, Cordova
Alaganik Slough, Cordova
Cabin Lake, Cordova
Childs Glacier, Cordova

(b) Public Use Cabins (U.S. Forest Service): Name, Nearest Community

Pigot Bay, Whittier
Shrode Lake, Whittier
Coghill Lake, College Fiord
Harrison Lagoon, Port Wells
Paulson Bay, Whittier
South Culross Passage, Whittier
San Juan Bay, Montague Island
Barber, Montague Island
Port Chalmers, Montague Island
Beach River, Montague Island
Nellie Martin River, Montague Island
Caribou Creek, Green Island
Double Bay, Hinchinbrook Island
Hook Point, Hinchinbrook Island
Shelter Bay, Hinchinbrook Island
Martin Lake, Copper River Delta
Softuk Bar, Copper River Delta
Pete Dahl, Copper River Delta
Tiedeman Slough, Copper River Delta
McKinley Trail, Copper River Delta
McKinley Lake, Copper River Delta
Power Creek, Cordova
Jack Bay, Valdez

For more information see: http://www.fs.fed.us/recreation/reservations/.

(c) Public Anchorages and Moorings: Name, Nearest Community

West Twin Bay, Perry Island
South Bay, Perry Island
Esther Bay, Perry Island
Head of Eaglek Bay, Perry Island
Deep Water Bay, Port Nellie Juan
Derickson Bay, Port Nellie Juan
Long Bay, Culross Passage
Picturesque Cove, Culross Passage
Applegate Island, Culross Passage
Goose Bay, Culross Passage
Shotgun Cove, Passage Canal
Jackson Hole, Glacier Island
Jackson Cove, Glacier Island
Jackpot Bay, Dangerous Passage
Marsha Bay, Dangerous Passage
Paddy Bay, Dangerous Passage
Granite Bay, Dangerous Passage
Ewam Bay, Dangerous Passage
Masked Bay, Dangerous Passage

ALASKA STATE PARKS
Alaska Department of Natural Resources
Division of Parks and Outdoor Recreation

Alaska State Parks in the Prince William Sound Region (maps and charts)

1. Cordova (SE Prince William Sound)
2. Valdez (NE Prince William Sound)
3. Whittier (NW Prince William Sound)

Chart Key

CS = Camp sites	**W** = Water, drinkable	**C** = Cabins
CL = Camping limit	**S** = Picnic shelter	**D** = Daily parking fee
CF = Camping fee	**Tr** = Trails	**F** = Fishing
P = Picnic sites	**H** = Historical feature	***** = Tent camping only
T = Toilet	**B** = Boat launch	****** = Annual passes not accepted
/a = Facilities are ADA accessible		******* = Sanitary dump station

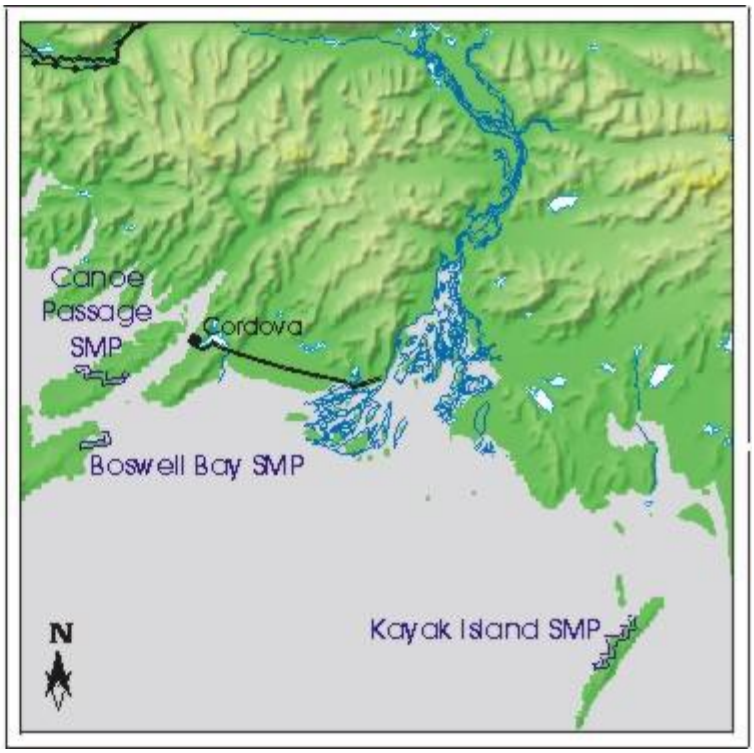
SRA = State Recreation Area	**SP** = State Park	**DU** = Day Use
SRS = State Recreation Site	**SMP** = State Marine Park	**GU** = Group Use
SHP = State Historical Park	**SWP** = State Wilderness Park	**CG** = Campground
SHS = State Historic Site	**TH** = Trailhead	**BL** = Boat Launch

For further information: http://www.dnr.state.ak.us/parks/ or call 269-8700 (Anchorage Office).

To access maps and charts: http://www.dnr.state.ak.us/parks/aspbro/statemap.htm.

Alaska State Parks near Cordova in SE Prince William Sound

This map is not intended to be used as a navigational aid.



Park Unit	Acres	CS	CL	CF	P	T	W	S	Tr	H	B	C	D	F	Location
Boswell Bay SMP	799				Undeveloped									F	No road access
Canoe Passage SMP	2,735				Undeveloped									F	No road access
Kayak Island SMP	1,437				Undeveloped									F	No road access

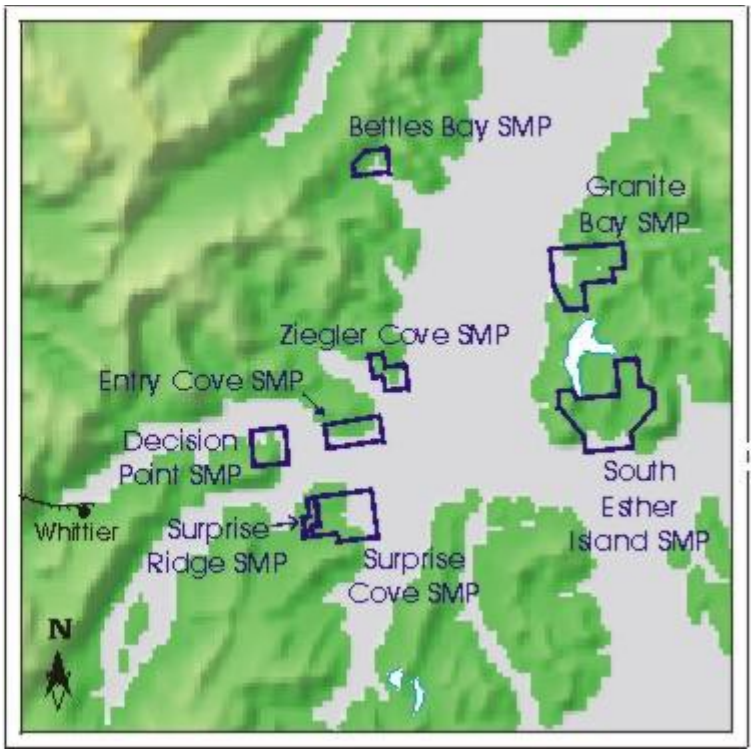
Alaska State Parks near Valdez in NE Prince William Sound

This map is not intended to be used as a navigational aid.

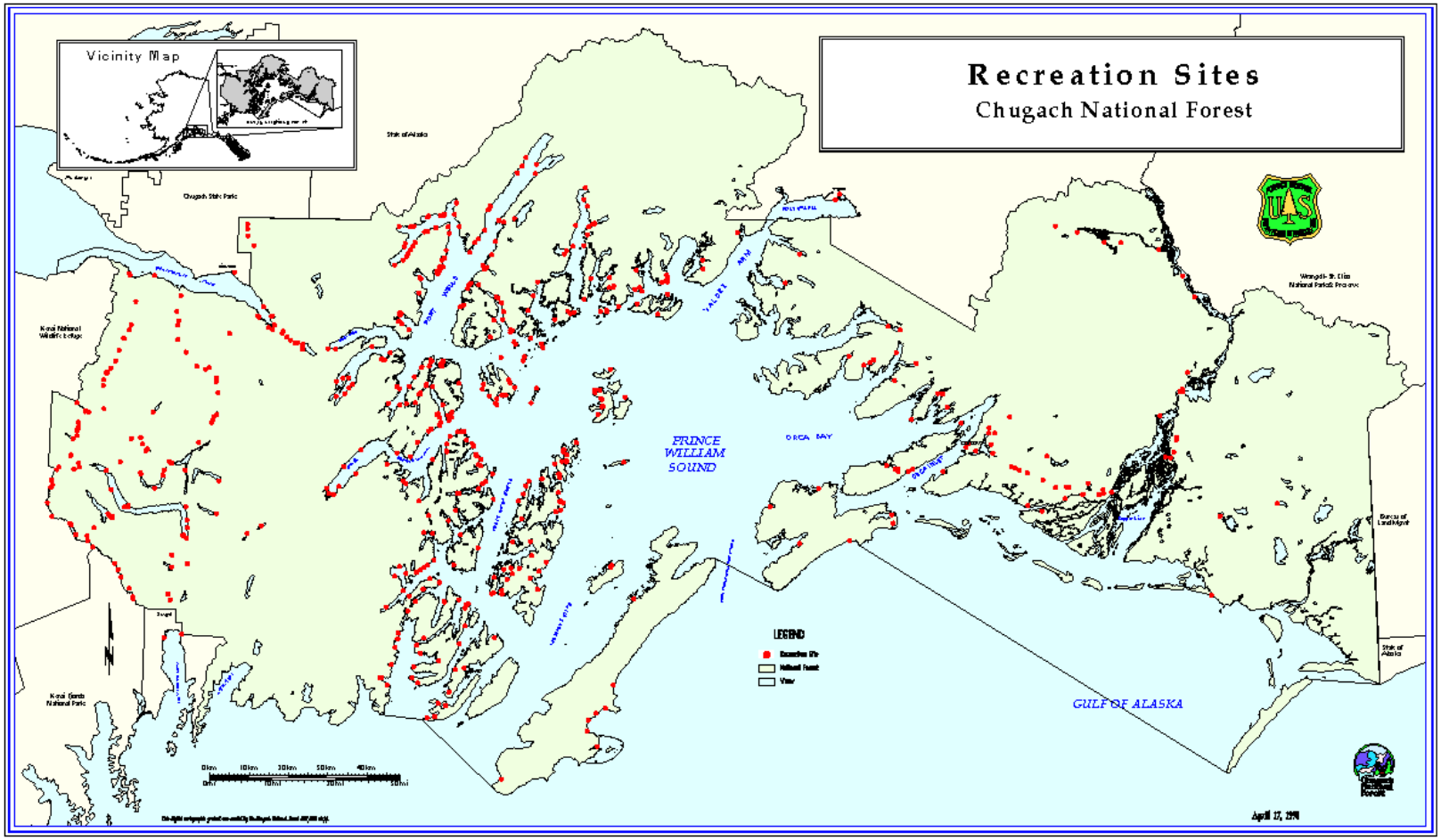
Park Unit	Acres	CS	CL	CF	P	T	W	S	Tr	H	B	C	D	F	Location
Blueberry Lake SRS	192	15	15	CF		T/a	W		Tr					F	23 Richardson Hwy.
Jack Bay SMP	811	3				T								F	No road access
Sawmill Bay SMP	2,320	3				T								F	No road access
Shoup Bay SMP	4,560	2				T/a			Tr			C/a		F	No road access
Shoup Glacier SMP	640				Undeveloped										No road access
Worthington Glacier SRS	113					T			Tr						28.7 Richardson Hwy.

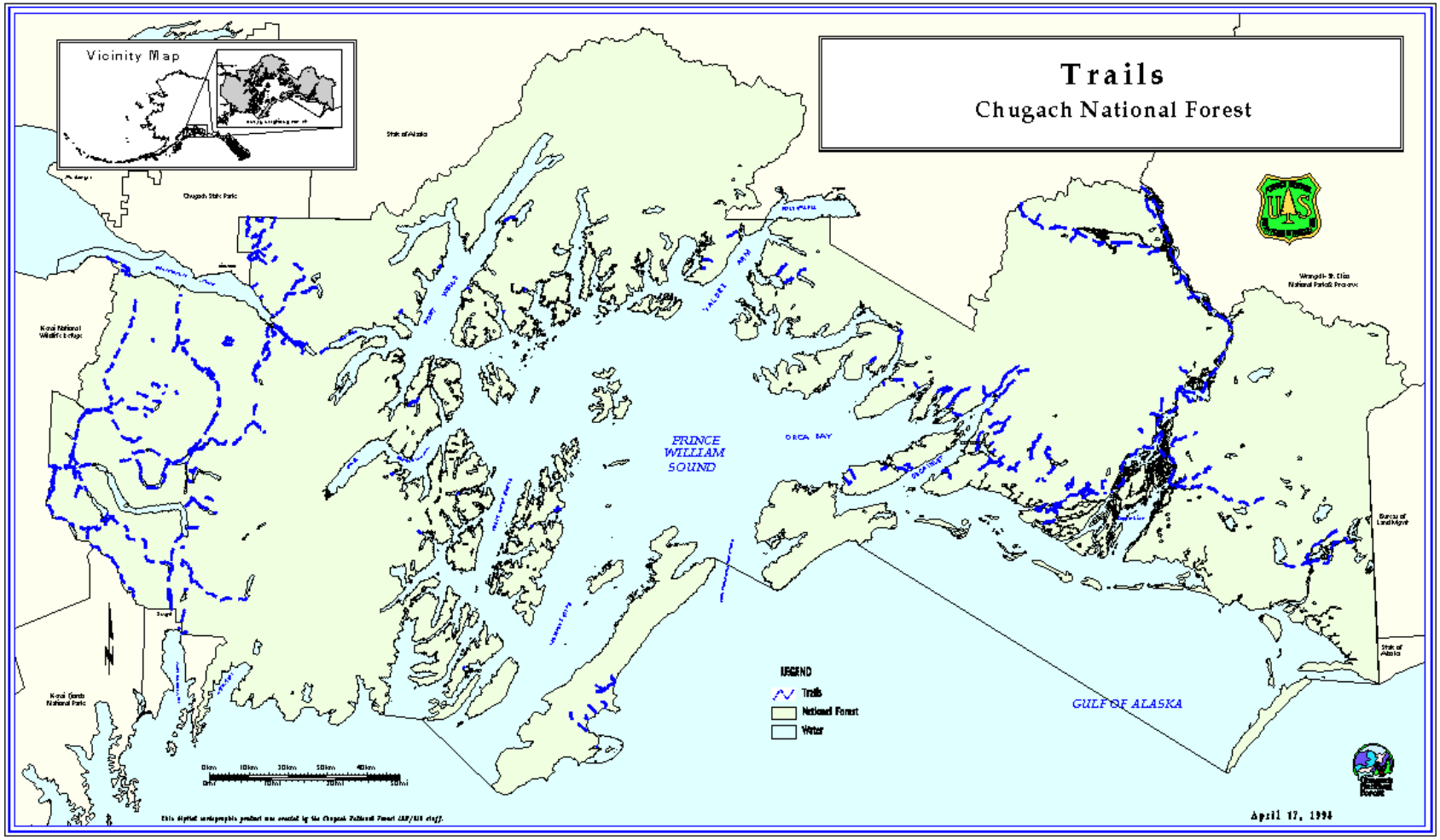
Alaska State Parks near Whittier in NW Prince William Sound

This map is not intended to be used as a navigational aid.



Park Unit	Acres	CS	CL	CF	P	T	W	S	Tr	H	B	C	D	F	Location
Bettles Bay SMP	680				Undeveloped									F	No road access
Decision Point SMP	460	4				T								F	No road access
Entry Cove SMP	370				Undeveloped									F	No road access
Granite Bay SMP	2,105				Undeveloped									F	No road access
South Esther Island SMP	3,360	2				T			Tr					F	No road access
Surprise Cove SMP	2,280	6				T			Tr					F	No road access
Surprise Ridge SMP	240								Tr						No road access
Ziegler Cove SMP	720				Undeveloped									F	No road access


Recreation Sites
Chugach National Forest
Vicinity Map
PRINCE WILLIAM SOUND
ORCA BAY
GULF OF ALASKA
LEGEND


Trails
Chugach National Forest
Vicinity Map
PRINCE WILLIAM SOUND
ORCA BAY
GULF OF ALASKA
LEGEND
Trails
National Forest
Water
April 17, 1994

8. *Commercial Tourism*

Tour boat, cruise ship, and ferry boat routes and stops Small boat and kayak use areas
Road and rail routes and nodes at Whittier, Valdez, and Glennallen Commercial airport access at Valdez and Cordova

Key locations of interest:

Growler Island
Heather Bay
Columbia Bay
Harriman Fjord
Shoup Bay
Blackstone Bay
College Fjord

The following organizations can be contacted with requests for specific information on location and timing of recreation and tourism activities. Although the primary function of these organizations is not to provide such information, the individual members will be quite knowledgeable about environmental conditions and will often be willing to share information.

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

See also: http://www.travelalaska.com.

9. *Marinas and Ports*

(See Resources Section)

10. *Fish Processing*

The following table identifies fish processors, canneries, and shellfish processors operating in Prince William Sound and provides the general location in which they operate and how to contact them. The list excludes fishing vessels and shellfish harvesters.

Cordova:

Saint Elias Ocean Products, Inc. Cordova
424-7171

Cannery Row Fish Co.
424-5920

Great Pacific Seafoods, Inc.
424-5481

Norquest Seafoods, Inc.
424-5930

Prince William Sound Aquaculture
424-7511

Copper River Delta Smokery
424-7111

Eyak Packing Co.
424-5300

North Pacific Processors
424-7111

Ocean Beauty Seafoods, Inc.
424-7171

F/V Aquarius
424-3385

Whittier:

Anchor Services Unlimited
472-2354

Great Pacific Seafoods, Inc.
472-2400

Prince William Sound Aquaculture
424-7511

Fairmount Island Seafoods
472-2319

F/V Wave Maker
982-2670

Valdez:

Solomon Falls Seafood
835-4874

Solomon Gulch Hatchery
835-4874

Nautilus Foods, Inc
835-4227

Silver Bay Seafood
835-8910

Peter Pan Seafoods, Inc.
835-2080

11. ***Logging Facilities***

The following organizations can be contacted with requests for specific information on location and timing of logging activities. Although the primary function of these organizations is not to provide such information, the individual members will be quite knowledgeable about environmental conditions and will often be willing to share information.

Koncor Forest Products
Anchorage
562-3335
FAX 562-0599

Alaska Forest Association
Ketchikan
225-6114

Current Log Transfer Facilities (LTFs) are:

Location	Operator
Port Graham	Bureau of Indian Affairs
Orca Inlet	Eyak Corp.
Orca Bay	Eyak Corp.
Cordova	Eyak Corp.

Permits expired, suspended, or not issued:

Montague Island, McCloud Harbor	Chugach Alaska Corp./Koncor Forest Products Two
Moon Bay	Tatitlek Native Corp.
Fish Bay	Tatitlek Native Corp.

12. ***Water Intake and Use***

See Attachment One for a list of water intake/use permits generated from a database maintained by the Alaska Department of Environmental Conservation. The list shows “type A” water users, which are those systems serving 25 or more persons using the system for 6 or more months of the year.

vi. 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*

Tanana Valley State Forest. The Tanana Valley State Forest was first designated in 1983 and currently contains 1,822,100 acres. Its area extends from north of Fairbanks to north of Tetlin Junction and closely follows the Tanana River on the north. The Forest's area encompasses or is adjacent to many bodies of water including the Tanana, Healy and Robertson rivers; lakes George and Mansfield; Fish, Sand Healy and Wolf lakes; and George, Sand, Mansfield, Fortymile and Billy creeks.

State Game Refuges, Habitats, Sanctuaries. The Alaska State Legislature has classified certain areas as being essential to wildlife and fisheries resources. These areas are designated as either a game refuge, critical habitat area, or game sanctuary. Management of these essential areas is the joint responsibility of the Department of Fish and Game and Department of Natural Resources. Legislation pertaining to these lands may be found in Alaska Statutes Title 16, Chapter 20. Legal descriptions of area boundaries can be found in Alaska Department of Fish and Game's publication, State of Alaska Game Refuges, Critical Habitat Areas and Game Sanctuaries (1991) or on their website at http://www.adfg.alaska.gov/index.cfm?adfg=protectedareas.locator (see Part D.7, Recreational Sites and Facilities, for State Parks information.)

Copper River Delta State Critical Habitat Area was established in 1978 to protect habitat crucial to perpetuation of fish and wildlife (especially waterfowl and shorebirds). The Area includes all public land, tideland, submerged land, and water covering the Copper River Delta from the mouth of Orca Inlet to Palm Point. This area is the largest contiguous Pacific coast wetland and is among the most productive and critical shorebird habitats in Alaska. The Copper River Delta is a feeding and resting area for more than 20 million shorebirds, which pass through on their spring migration. Among the migrants are nearly the entire Pacific coast population of dunlins and western sandpipers. During the spring and summer, the area also supports the entire U.S. nesting population of dusky Canada geese and a substantial number of trumpeter swans. The area is also popular for wildlife viewing, hunting and fishing.

For more information see the Cooper River Delta State Critical Habitat Area webpage at http://www.adfg.alaska.gov/index.cfm?adfg=copperriverdelta.main.

State Marine Parks. The Alaska State Legislature has classified certain areas as State Marine Parks (see Part 4.D.7, Recreational Sites and Facilities).

3. *Federal*

Chugach National Forest is the nation's second largest national forest at 5.6 million acres, stretching from the Kenai Peninsula for 200 miles to the Bering Glacier. Sport, subsistence, and commercial fishing; hunting; sightseeing; outdoor recreation; boating; hiking; and wildlife habitat are some of the primary uses of the Chugach. Additional information may be found on the website: http://www.fs.fed.us/r10/chugach/.

Research Natural Areas are set aside on the Chugach National Forest to allow ecological processes to prevail with minimal human intervention and to provide opportunities for research to increase understanding of natural ecosystem processes and sustainability. Areas include:

- --Green Island
- --Kenai Lake/Black Mountain
- --Wolverine Glacier
- --Olsen Creek
- --Copper Sands

Wrangell-Saint Elias National Park and Preserve was established in 1980. The 13 million acre Park and Preserve abuts the border and Canada's Kluane National Park--together they have been designated on the World Heritage List as outstanding natural areas. The area contains the North American continent's largest assemblage of glaciers and its greatest collection of mountain peaks over 16,000 feet in elevation. The Malaspina Glacier is larger than the state of Rhode Island. Mount Saint Elias, at 18, 008 feet, is the second highest peak in the United States. Wilderness backpacking, fishing, and hunting, car camping, river running, cross-country skiing, and mountain climbing are principal uses. The Dall sheep population is considered one of the finest in the world. Additional information may be found on the website: http://www.nps.gov/wrst/index.htm.

Wild and Scenic Rivers. The upper Delta River and West and Middle Forks of the Gulkana River are nationally designated as Wild and Scenic Rivers and are managed by the Bureau of Land Management. The lower Nellie Juan River is proposed for Wild status by the U.S. Forest Service.

Alaska Maritime National Wildlife Refuge. The Gulf of Alaska Unit of the Refuge includes some of the islands, rocks, and forelands along the coast of the Gulf of Alaska. Alaska Maritime 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 is also home to thousands of sea lions, seals, walrus, and sea otters. Wildlife viewing, photography, and backpacking are primary uses of the Refuge. The Refuge was established in 1980. Additional information may be found on the website: http://www.fws.gov/alaska/nwr/akmar/index.htm.

4. *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 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 website at: http://sdms.ak.blm.gov/isdms/imf.jsp?site=sdms and click on the Generalized Land Status layer.

Chugach Alaska Corporation also maintains a website providing on-line access to land status for their corporate holdings: http://www.chugach.com/who-we-are/lands/regional-map.

Prince William Sound Land Management Map Links:
http://www.asgdc.state.ak.us/maps/cplans/base/LegendPage.pdf

http://www.asgdc.state.ak.us/maps/cplans/pws/PWSmap1of4.pdf

http://www.asgdc.state.ak.us/maps/cplans/pws/PWSmap2of4.pdf

http://www.asgdc.state.ak.us/maps/cplans/pws/PWSmap3of4.pdf

http://www.asgdc.state.ak.us/maps/cplans/pws/PWSmap4of4.pdf

vii. SENSITIVE AREAS: ATTACHMENT 1 - WATER INTAKE USE

A. ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

The following table was generated by the Alaska Department of Environmental Conservation, Drinking Water and Water Treatment Section. The list shows "type A" water users, which are those systems serving 25 or more persons using the system for 6 or more months of the year. The table includes permitted water use facilities by index number, source (groundwater, surface water, purchased water), facility name, and facility location. Additional information about facility owners can be obtained from the Drinking Water and Water Treatment Section at 465-5300.

For the table, please note the following codes: GW = Groundwater
GWP = Purchased Groundwater SW = Surface Water
SWP = Purchased Surface Water
GU = Groundwater Under the District Influence of Surface Water

NAME OF SYSTEM	LOCATION	STATE ID NO.	SOURCE
Acres Convenience Store	Valdez	298909	
Ahtna Office Bldg.	Glennallen	294200	
Airport Depot Diner	Cordova	292275	GW
AK Dept. Fish & Game	Glennallen	291423	
AK Bible College	Glennallen	292099	GW
Aleutian Village	Valdez	298608	GW
Bartlett Ferry Terminal	Valdez	291910	
Bishop Water Supply	Glennallen	291499	GW
Blackburn Place Apartments	Glennallen	291261	GW
Brown Bear Roadhouse	Glennallen	291334	
Chitina Fire Well #2	Chitina	292738	GW
Chitina Saloon	Chitina	291651	
City of Valdez Glacier CG	Valdez	298200	GW
Copper Basin Assembly of God	Glennallen	291473	GW
Cordova City Water	Cordova	293205	SW
CRNA Copper Center	Copper Center	291685	
CRNA Office Complex	Copper Center	292608	GW
Cross Road Medical Center	Glennallen	291512	GW
CRSD Copper Center School	Glennallen	291384	GW
CRSD Glennallen Elementary	Glennallen	291392	GW
CRSD Glennallen High School	Glennallen	291407	GW
CRSD Kenny lake Elem	Glennallen	291415	
CRSD Kenny Lake High School	Glennallen	294002	GW
DOTPF Tazlina Station	Glennallen	291871	
Eagle Crest Condos	Valdez	298002	GW
FAA Cordova Well #1	Cordova	293108	
Glacier Spirit M/V	Valdez	292039	
Glennallen Heights	Glennallen	291504	GW
Grizzly Pizza	Copper Center	296802	GW
Kenny Lake Community Hall Well	Copper Center	292194	GW
Kenny Lake Community Well	Copper Center	291596	GW

NAME OF SYSTEM	LOCATION	STATE ID NO.	SOURCE
Kenny Lake Fire Hall	Copper Center	292330	GW
Lake Louise Lodge	Glennallen	226622	
Last Frontier Pizza	Glennallen	292225	
Lu Lu Belle M/V	Valdez	292055	
M/V Nautilus	Valdez	293190	
McCarthy Lodge	Glennallen	291108	SW
McKinley Bldg Water Supply	Copper Center	292186	GW
New Caribou Hotel	Glennallen	291300	GW
PJ's Drive Inn	Copper Center	292063	
Point of View Lodge	Glennallen	224086	
PWSAC - Cannery Creek Hatchery	Cordova	293132	
PWSAC - Esther Hatchery	Cordova	293124	SW
PWSAC - Pt. San Juan Hatchery	Cordova	291758	
Ranch House	Glennallen	291245	GW
Rendevouz	Glennallen	291287	GWP
Send International of Alaska	Glennallen	292110	GW
Solomon Gulch Hatchery	Valdez	292005	
Sweet Things	Glennallen	293176	
Tailor Made Pizza	Glennallen	293253	
Tastee Freeze Glennallen	Glennallen	291342	GW
Tazlina River MHP	Glennallen	291279	GW
Tiekel River Lodge	Valdez	296307	GW
Tiekel River Lodge Campground	Valdez	291978	
Tolsona Lake Resort	Glennallen	291368	GW
Tolson Wilderness Campground	Glennallen	291431	GW
Tsaina Lodge	Valdez	296404	
Two Moon Bay Logging Camp	Cordova	292678	
Valdez Airport Terminal	Valdez	291986	GW
Valdez City Water System Main	Valdez	298103	GW
Valdez Robe River S/D Well	Valdez	291211	GW
Valdez Softball Fields	Valdez	291782	GW
Valdez Southcentral	Valdez	291229	GW
Valdez Spirit M/V	Valdez		
Valdez Zook Loop	Valdez	291203	GU
Whittier City Water System	Whittier	211952	SW
Wolverine Lodge	Glennallen	226478	

viii. SENSITIVE AREAS: ATTACHMENT 2 - HARBOR SEAL AND STELLER SEA LION SITES IN PRINCE WILLIAM SOUND

A. ALASKA DEPARTMENT OF FISH AND GAME AND NATIONAL MARINE FISHERIES SERVICE

NOTE: a map of the sites identified in the table may be obtained from the Alaska Department of Fish and Game office in Anchorage.

Site	Type*	Site Name	N*	Latitude[1]	Longitude[1]	Specific Habitat
1	A	Porpoise Rocks	51	60 19 06 N	146 41 30 W	Entire site
2	B	Bear Camp/Pt. Etches	<10	60 21 12	146 43 54	West shoreline Hinchinbrook Island just north of Port Etches
3	A	Schooner Rocks	67	60 18 24	146 54 30	Entire site
4	A	Rocky Bay	25	60 21 00	147 01 30	Offshore rocks along south shoreline east of Middle Point
5	A	Montague Point	37	60 22 12	147 04 30	Reefs off north shoreline
6	A	Stockdale Harbor	49	60 18 12	147 12 30	2 islets off southwest shoreline
7	A	Port Chalmer	109	60 14 44	147 15 08	Entire site
8	A	Channel Island	116	60 14 30	147 22 42	Entire site
9	A	Little Green Island	88	60 11 54	147 31 30	Entire site
10	A	Green Island	50	60 17 30	147 25 00	Northwest side of island; reefs off northwest shore
11	A	Applegate Rocks	154	60 21 18	147 23 30	Entire site
12	A	Seal Island	71	60 25 42	147 24 48	Entire site
13	A	Big Smith Island	78	60 31 35	147 19 30	Entire site
14	A	Little Smith Island	33	60 31 06	147 25 36	Entire site
15	A	Agnes Island	43	60 36 54	147 23 12	Entire site
16	B	Storey Island	<10	60 44 19	147 22 48	East and southeast shorelines
17	B	Northwest Bay	<10	60 33 42	147 35 54	Mid-bay islet
18	A	Disk Island	17	60 30 00	147 38 12	Entire site
19	A	Herring Bay	36	60 26 36	147 44 18	Numerous sites
20	B	Unnamed Cove	<10	60 26 42	147 38 12	Rocks in southwest part of cove
21	A	Bay of Isles	37	60 23 36	147 40 00	Numerous sites. Rocks and reefs north and east of Short Arm
22	B	Lower Herring Bay	<10	60 23 01	147 47 30	Rocks in mid-bay
23	A	Squire Island	32	60 13 30	147 57 00	Numerous sites - complex of reefs, islets, tidal rocks
24	B	Gage Island	<10	60 11 24	148 01 00	Entire site
25	B	Fleming Island	<10	60 09 48	148 00 35	East shoreline
26	B	Jackpot Bay	<10	60 20 24	148 12 18	North shore outer Jackpot Bay
27	A	Iktua Rocks	39	60 07 12	148 02 30	Entire site
28	A	Iktua Bay	14	60 07 00	148 00 54	Rocks in west part of bay
29	A	Prince of Wales Passage	47	60 05 00	148 04 48	Islets on east side near mid-passage

Site	Type*	Site Name	N*	Latitude[1]	Longitude[1]	Specific Habitat
30	A	Latouche Island	39	59 56 24	148 02 30	Bedrock benches along southwest and west shoreline
31	A	Danger Island	58	59 55 30	148 04 24	Entire site and adjacent southwest tip of Latouche Island
32	A	Procession Rocks	39	60 00 30	148 16 48	Entire site; and south shoreline Bainbridge Island
33	B	Hogg Bay 1	<10	60 04 12	148 12 24	Tidal rocks in southeast bay
		Hogg Bay 2		60 05 00	148 14 42	Northern part of outer bay
34	A	Bainbridge Passage 1	42	60 07 50	148 11 24	Rocks in central passage
		Bainbridge Passage 2		60 08 30	148 06 12	Rocks near islets in east passage
35	A	Icy Bay 1		60 11 00	148 26 30	On drift ice, Tiger Glacier
		Icy Bay 2	314	60 16 30	148 22 00	Nassau Fjord
36	B	Delenia Island	<10	60 20 31	148 07 57	Entire site
37	A	Junction Island	83	60 23 30	147 59 36	Rocks and beaches north of island
38	A	Port Nellie Juan	41	60 28 18	148 20 30	On drift ice and base of Nellie Juan glacier
39	A	Crafton Island	40	60 29 36	147 56 30	Reefs off east, north, and west side of island
40	A	Lone Island	12	60 41 42	147 44 42	Tidal rocks off northeast tip of island
41	A	Dutch Group	104	60 45 30	147 48 30	Entire site
42	A	Perry Island - South	>10	60 40 00	147 53 00	Rocks on east side of south bay
43	B	Applegate Island	<10	60 37 06	148 09 30	Entire site
44	A	Blackstone Bay	>10	60 40 56	148 38 36	South arm on drift ice
45	A	Harriman Fjord	>10	60 58 30	148 26 00	Entire bay, on drift ice near glaciers
46	A	Harriman Fiord	136	61 07 30	148 09 00	North end Barry Arm
47	A	College Fiord 1	218	61 16 30	147 42 30	On drift ice and upper Harvard Arm
		College Fjord 2		61 12 48	147 41 07	On drift ice, Yale Arm
48	A	Unakwik Inlet	293	61 09 00	147 31 30	On drift ice and north end near Mears Glacier
49	A	Columbia Bay	549	61 00 00	147 04 00	On drift ice and behind glacial moraine at head of bay
50	A	Wells Bay	38	60 55 42	147 28 48	Rocks in middle of southern part of bay
51	B	Payday	<10	60 54 18	147 30 00	Shoreline east of Unakwik Point
52	A	Olsen Island	12	60 51 42	147 34 24	Rocks on south side of island
53	A	Point Pellew 1	24	60 50 24	147 39 30	Point Pellew
		Point Pellew 2		60 51 18	147 40 24	Small islets east and north of Point Pellew
54	A	Little Axel Lind	23	60 48 24	147 40 18	Entire site
55	A	Fairmont	42	60 51 00	147 27 30	Southwest shoreline Fairmont Is.; L. Fairmont Is.;

Site	Type*	Site Name	N*	Latitude[1]	Longitude[1]	Specific Habitat
						Outpost Is.
56	A	Gull Island 1	28	60 43 28	146 42 11	Rocks offshore
		Gull Island 2		60 43 02	146 40 44	North of Knowles Head - SUBSISTENCE HUNT AREA
57	A	Upper Jack Bay	>10	61 01 27	146 34 08	Entire site
58	A	Port Fidalgo 1	>10	60 50 24	146 15 12	Rocks on point 2 mi. north of Whalen Bay
59	B	Port Fidalgo 2	<10	60 47 11	146 21 02	Rocks on south shoreline 1 mi. east of Irish Cove
60	A	Hells Hole	>10	60 42 00	146 23 12	Entire site
61	A	Olsen Bay	80	60 43 42	146 10 48	Headland between Olsen and Parshas bays
62	A	Gravina Rocks	42	60 39 48	146 15 54	Entire site
63	A	Gravina Island	24	60 38 24	146 17 30	Entire site
64	A	Canoe Passage	51	60 31 36	146 08 06	Rocks off entrance on north side Hawkins Island
65	A	Sheep Point	12	60 36 54	146 00 24	Entire site
66	B	Hanks Island	<10	60 36 42	145 58 48	Entire site
67	B	Sheep Bay	<10			Southeast portion of Sheep Bay
68	A	Orca Inlet	235	60 32 30 to 60 28 00	145 51 00 to 146 06 30	Tidally submerged sandbars (use on 4 sites varied)
69	A	Hawkins Cutoff	204	60 26 12	146 19 30	Sandbar (also sea otter haulout)
70	A	North Hinchinbrook	>20	60 28 30	146 30 00	Rocks across head of bay
71	A	Middleton Island	1714	59 24 40	146 18 30	Flat-top rocks on east and south sides of island
100	C	Tanker Island		59 52 18	147 22 30	Entire site
101	C	McCleod Harbor		59 54 00	147 48 56	Outer northwest shoreline
102	C	Sawmill Bay		60 03 00	148 01 30	Bettles Island
103	C	Whale Bay 1		60 12 03	148 10 48	Shorelines south of lat/long
		Whale Bay 2		60 13 48	148 13 00	Shorelines west of lat/long

Site	Type*	Site Name	N*	Latitude[1]	Longitude[1]	Specific Habitat
104	C	Pleiades Islands		60 14 00	148 01 00	Entire site
105	C	E. Knight Is. Passage		60 19 00	147 55 00	Bays and inlets along west shore Knight Island
106	C	Rua Cove		60 21 00	147 38 22	Entire site
107	C	Kings Bay 1		60 31 36	148 36 12	Mid-bay along north shoreline
		Kings Bay 2		60 30 42	148 32 12	South shoreline
108	C	SE Culross Passage		60 36 18	148 11 24	Headland between Mink Island and Picturesque Cove
109	C	Culross Island		60 40 12	148 05 00	East shoreline Culross Island 3 mi. south of Hidden Bay
110	C	Cochrane Bay		60 44 52	148 19 34	Entire site
111	C	Passage Canal		60 48 20	148 30 00	South shoreline from Shotgun Cove to Decision Point
112	C	Pigot Bay		60 50 54	148 22 48	Inner bay
113	C	Esther Island		60 52 45	148 06 19	Southwest shoreline of Granite Bay
114	C	Perry Island/W. Twin Bay		60 43 00	147 58 24	Entire site
115	C	Fool Island		60 45 48	147 55 00	Entire site
116	C	Bald Head Chris Island		60 47 30	147 50 42	Entire site
117	C	Axel Lind Island		60 47 30	147 43 24	Entire site
118	C	Long Bay		60 57 30	147 16 00	Rocks east of Shrader Island
119	C	Peak Island		60 42 06	147 21 17	East shoreline
120	C	Naked Island		60 39 00	147 23 30	Western, southern, and eastern shorelines
121	C	Lower Jack Bay		61 01 38	146 38 30	Southwest shoreline of outer bay
122	C	Porcupine Point		60 44 36	146 42 06	Entire site
123	C	Fidalgo Bay		60 48 00	146 30 00	Entire site
124	C	Beartrap Bay 1		60 45 20	146 04 00	Bay mouth
		Beartrap Bay 2		60 44 12	146 05 12	Islets 1 mi. south of bay
125	C	Upper Sheep Bay		60 41 12	145 56 54	Entire site

Site	Type*	Site Name	N*	Latitude[1]	Longitude[1]	Specific Habitat
126	C	Port Etches 1		60 19 05	146 35 00	South shoreline at Etches Creek
		Port Etches 2		60 17 52	146 38 23	Inlet 1 mi. east of English Bay

*NUMBER

N = highest average count for 1988 - 1992 molting or pupping surveys----------Sites 3-16, 51-56, and 61-65

N = highest average count for 1991 - 1992 molting surveys----------Sites 17-21, 27-43, and 46-50

N = maximum counts during 24 - 29 August 1991 surveys (molting)----------Sites 68-71

N = highest recorded count----------For other sites

* TYPE:

A. Significant site;10 or more animals present

B. Minor site; usually fewer than 10 animals

C. Historically used site or current use unknown

Site	Type*	Site Name	Lat./Long.[1]	Other Information
1	B	Middleton Island	59 28 19 N/ 146 18 22 W	Designated Critical Habitat: Haulout, 3000 ft. vertical and landward, 20 nm seaward
2	B	Hook Point	60 20 12 / 146 15 29	Designated Critical Habitat: Haulout, 3000 ft. vertical and landward, 20 nm seaward, 100 animals observed
3	C	Cape Hinchinbrook	60 14 00 / 146 38 09	100 □ animals observed
4	A	Seal Rocks	60 10 00 / 146 50 00	Designated Critical Habitat: Rookery, 3000 ft. vertical and landward, 20 nm seaward, 500 □ pu observed
5	A	Wooded Islands	59 52 55 / 147 20 44	Designated Critical Habitat: Rookery, 3000 ft. vertical and landward, 20 nm seaward, 600 □ pu observed
6	B	The Needle	60 06 41 / 147 36 03	Designated Critical Habitat: Haulout, 3000 ft. vertical and landward, 20 nm seaward
7	B	Point Elrington	59 56 00 / 148 13 30	Designated Critical Habitat: Haulout, 3000 ft. vertical and landward, 20 nm seaward
8	C	Pleiades Island	60 14 25 / 148 00 30	Haulout site used during late winter/early spring, 100 □ animals have been observed on the si
9	B	Perry Island	60 43 32 / 147 53 15	Designated Critical Habitat: Haulout, 3000 ft. vertical and landward, 20 nm seaward
10	C	Glacier Island	60 51 14 / 147 08 29	326 animals sited 8/25/93
11	B	Point Eleanor	60 35 00 / 147 34 00	Designated Critical Habitat: Haulout, 3000 ft. vertical and landward, 20 nm seaward

[1] The latitude and longitude descriptions may differ from some National Marine Fisheries Service publications. The changes were made to more accurately identify the location of the polygons depicted on the accompanying map.

* TYPE:

A. Rookery: Designated Critical Habitat under the Endangered SpeciesAct

B. Haulout: Designated Critical Habitat under the Endangered SpeciesAct

C. Haulouts

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SOUTHEAST ALASKA SUBAREA CONTINGENCY PLAN
SENSITIVE AREAS
SECTION

i. 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 cleanup 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:

U.S. Department of the Interior
Office of Environmental Policy
and Compliance
1689 C Street, Room 119
Anchorage, Alaska 99501
(907) 271-5011
FAX (907) 271-4102

Alaska Department of Fish and Game
Habitat Division
333 Raspberry Road
Anchorage, Alaska 99518
(907) 267-2541
FAX (907) 267-2464

ii. 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 Juneau 907-465-4105
U.S. Department of the Interior	migratory birds, sea otters, 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 marine species and listed anadromous fish in marine waters	Protected Resources Division Juneau 907-586-7235
U.S. Department of Commerce, National Marine Fisheries Service	essential fish habitat	Habitat Conservation Division Juneau 907-586-7636
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
U.S. Department of Agriculture, U.S. Forest Service	national forest lands	Tongass National Forest Ketchikan 907-225-3101
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
U.S. Department of Agriculture, U.S. Forest Service	archaeological/historical sites on national forest lands	Tongass National Forest Ketchikan 907-225-3101

Agency	Resources	Point of Contact
SHORELINE TYPES		
U.S. Department of Commerce, National Oceanic & Atmospheric Administration	Environmental Sensitivity Index (ESI) maps and ESI shoreline habitats	Scientific Support Coordinator Anchorage 907-271-3593
U.S. Department of Commerce, National Marine Fisheries Service	ShoreZone imagery and mapped habitat data	Steve Lewis Juneau 907-596-7858
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 Juneau 907-465-3400
Alaska Department of Fish and Game	state game refuges, state critical habitats	Division of Habitat Juneau 907-465-4105
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 Agriculture U.S/. Forest Service	national forests, national monuments, wild and scenic rivers, wilderness areas, research natural areas	Tongass National Forest Ketchikan 907-225-3101
U.S. Department of Defense	military installations and reservations	Alaska Command Anchorage 907-552-3944

Agency	Resources	Point of Contact
Local Governments: – Angoon – Craig – City of Haines – Hoonah – Hydaberg – City and Borough of Juneau – Kake – Ketchikan Gateway Borough – Klawock – Pelican – Petersburg – City and Borough of Sitka – Skagway – Thorne Bay – Wrangell – City and Borough of Yakutat	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 Juneau 907-465-4210
Alaska Department of Natural Resources	tideland leases, logging on private lands	Division of Mining, Land, and Water Juneau 907-465-3400
Alaska Department of Environmental Conservation	seafood processing	Division of Environmental Health Juneau 907-269-7644
U.S. Department of Commerce National Marine Fisheries Service	groundfish and halibut allocations, seasons, and permits	Sustainable Fisheries Division Juneau 907-586-7228
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 Juneau 907-465-4280
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, National Marine Fisheries Service	subsistence use of: whales, porpoises, seals, sea lions	Protected Resources Division Juneau 907-586-7235

Agency	Resources	Point of Contact
U.S. Department of Commerce National Marine Fisheries Service	subsistence halibut	Sustainable Fisheries Division Juneau 907-586-7228
U.S. Department of Agriculture U.S. Forest Service	Subsistence, personal, and sport uses on National Forest lands and waters	Tongass National Forest Ketchikan 907-225-3101
RECREATION AND TOURISM USES		
Alaska Department of Natural Resources	State parks and recreation areas, anchorages, boat launches, campgrounds, State public lands	Division of Mining, Land, and Water Juneau 907-465-3400
Alaska Department of Fish and Game	sport hunting and fishing	Division of Habitat Juneau 907-465-4105
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 Agriculture U.S. Forest Service	Campgrounds, cabins, recreation areas, trails, within the national forest system	Tongass National Forest Ketchikan 907-225-3101
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 Juneau 907-465-5180
Alaska Department of Fish and Game	hatcheries, ocean net pens and release sites, aquaculture	Division of Habitat Juneau 907-465-4105
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 Juneau Juneau 907-463-2450

iii. SENSITIVE AREAS: PART TWO – AREAS OF ENVIRONMENTAL

A. CONCERN

1. *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.

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

Criteria For Relative Priority Rating

- Human economic disruption -- economic/social value; human food source disruption, health/safety
- 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 and 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:
  - Estuaries
  - Sheltered Tidal Flats
  - Sheltered Rocky Shores
  - Marsh/Supratidal Wet Meadows
  - Kelp Beds
  - Eelgrass Beds
  - Intertidal Areas of High Diversity
- Threatened or Endangered Species Habitat:
  - Sea Lion Rookeries and Haulouts
  - Humpback Whale Year-round Concentrations
- Harbor Seal Haulouts (>50 seals)
- Seabird Colonies (>500 birds)
- Marbled Murrelet Nearshore Feeding Concentrations (>50 birds)

- Waterfowl/Shorebird Migratory, Molting, and Winter Concentrations (>500, any Number of Harlequin Ducks, Loons, Swans, Black Oyster Catchers)
- Large Anadromous Fish Streams (>10,000 fish peak escapement)
- Eulachon Spawning Concentrations (including seal, sea lion and eagle feeding concentrations)
- Herring (including capelin, hooligan, sandlance) Spawning Areas
- Nearshore Juvenile Marine Fish-Rearing in Kelp and Reefs
- Sea Otter Concentrations (>100 individuals)
- Land Management Designations:
  - Federal:
    Wild and Scenic Rivers
    - National Natural Landmarks
    - National Wildlife Refuges
    - National Parks and Preserves
    - Designated Wilderness Areas
    - Resource Natural Areas
  - State:
    - Refuges
    - Sanctuaries
    - Critical Habitat Areas
    - State Park-Managed Lands
  - Municipal:
    - Parks
    - Natural Areas
    - Conservation Easements (intertidal and subtidal)
- Cultural Resources/Archaeological Sites:
  - National Historic Landmarks
  - Burial Sites
  - National Register Eligible Sites
  - Intertidal Sites
- Subsistence and Personal Use Harvest Areas:
  - High-use Salmon Harvest Areas (>10% of local households)
  - High-use Marine Invertebrates Harvest Areas (>10% of local households)
- High Commercial Use Areas:
  - Intensive Commercial Fishing by season
  - Salmon Hatchery and Ocean Pens
  - Shore-based Fish Processing Plants during operation
  - Set-net Fisheries (e.g., Yakutat forelands)
  - Mariculture Farms
- High Recreational Use Areas
  - High-use Commercial Wildlife Viewing (e.g., eagles, bears, marine mammals)
- Waterfront Buildings on Pilings
- Marinas and Harbors
- Floating Camps

C. AREAS OF MODERATE CONCERN

- Shoreline Geomorphology - Coastal Habitat Types:
  - Exposed Tidal Flat

    - Cobble Beaches (overlying and filling bedrock basins in the intertidal zone)
- Cutthroat, Dolly Varden, Steelhead Streams and Estuaries
- Cetacean Concentrations (non-humpback)
- Harbor Seal Haulouts (10-50 seals)
- Sea Otter Established Populations (low density)
- Seabird Colonies (100-500 birds)
- Waterfowl/Shorebird Migratory, Molting, and Winter Concentrations (250-500 birds)
- Osprey Feeding Concentrations (e.g., Wrangell Narrows)
- Anadromous Fish Streams (500-10,000 total escapement or 100-500 pink/chum salmon)
- Subsistence and Personal Use Harvest Areas:
    - Intensive Personal-use Clamming
    - Marine Mammal Subsistence Use
- Commercial Harvest Areas:
    - Intensive Crabbing
    - Abalone Harvesting
- Recreational Use Areas:
    - Moderate-use Commercial Wildlife Viewing
    - Recreation Areas
    - Non-estuarine Sport-fishing Streams
- Land Management Designations:
    - Federal:
        - National Monuments (non-wilderness)
        - Native Allotments
        - Indian Reservations
- Cultural Resources/Archaeological Sites:
    - Un-surveyed, High-probability Sites
    - Shipwreck in Tidal or Beach over 50 Years Old

D. <u>AREAS OF LESSER CONCERN</u>

- Shoreline Geomorphology - Coastal Habitat Types:
    - Sheltered Gravel Beaches
    - Sheltered Sand and Gravel Beaches
- Harbor Seal Haulouts (<10 seals)
- Peregrine Falcon Nesting Cliffs
- Waterfowl Nearshore Molting Areas (<250 birds)
- Bald Eagle Nests
- Seabird Colonies (< 100 birds)
- Waterfowl/Shorebird Migratory, Molting, and Winter Concentrations (< 250 birds)
- Anadromous Fish Streams (<500 total escapement or <100 pink/chum salmon)
- Herring Winter Concentrations
- Subsistence and Personal Use Harvest Areas:
    - Low-use Invertebrates Harvest
- Commercial Harvest Areas:
    - Houseboats (moveable)
    - Log Transfer Facility
    - Log Storage
    - Floating (moveable) Fish Processor

- Recreational Use Areas:
  - Intensive Sport-fishing by Season
  - Recreation facilities (cabin, campground, tent platform, dock/mooring, boat launch)
  - Undeveloped Recreation Areas
- Land Management Designations:
  - Federal:
    - Public Lands
    - National Forests
    - National Preserves
  - State:
    - General Public Lands
- Cultural Resources/Archaeological Sites:
  - Sites Adjacent to Shorelines (inland over 300 feet elevation)
  - Unsurveyed, Low-probability Sites
  - Surveyed with no Sites
  - Shipwreck not Tidal or Beach and Less Than 50 Years Old

E. AREAS OF LOCAL CONCERN

Some areas within the subarea warrant special attention due to the presence of highly productive wildlife habitat, the ability to sustain a large part of a villages subsistence needs, the occurrence of unusual historical sites or large mineral deposits, recreation, energy development, hazardous areas, or the presence of important fisheries. These have been identified as Areas Meriting Special Attention, Important Use Areas, Special Use Areas, or Sensitive Areas through the Hydaburg Coastal Management Program; Angoon Coastal Management Program and Areas Meriting Special Attention Plan for Mitchell, Hood and Chaik-Whitewater Bays; Petersburg and Kupreanof Coastal Management Program; Port of Skagway and Skagway River Area Meriting Special Attention Plans; Sitka District Coastal Management Program; Yakutat Coastal Management Plan Update. This also includes an area identified by the Natioan Marine Fisheries Service. They are summarized below.

Designated Area	Reasons For Designation	Land Ownership/ Villages To Contact
Amalga Trench	The majority of herring in northern Southeast Alaska inside waters overwinter (November-March) between Benjamin Island and Tee Harbor (in the Amalga Trench). This is an important food resource for whales and pinnipeds during this time period.	National Marine Fisheries Service
Berners Bay	Herring, eulachon, and capelin spawning; anadromous streams; high concentration of bird and marine mammals during fish spawning; high recreational use; concern due to commercial infrastructure (Kensington Mine)	Juneau
The Brothers Islands	Sealion haulout (1500 animals year round), abundant forage fish	
Benjamin Island	Seasonally important sealion haulout	

Designated Area	Reasons For Designation	Land Ownership/ Villages To Contact
Chaik-Whitewater Bay	Harbor seal haulout location. Waterfowl shorebirds spring and fall concentration area. Brown bear spring concentration area. Provides bald eagle, fish and marine mammal habitat. Contains anadromous fish streams. Some subsistence activities occur here. Presence of eighteen archaeological sites. Offers recreational opportunities and has traditional value.	Native, State (tidelands and submerged lands), US Forest Service
Hetta Cove-Eek Inlet	Important area for traditional and customary subsistence harvesting of fish and wildlife. Presence of seven historic/archeological sites. Offers recreational opportunities.	Alaska Department of Fish and Game (management of fishery resources), Haida Corporation and US Forest Service (Eek Lake and Eek Inlet uplands), Sealaska Corporation (Hetta Cove and Lake uplands), State (aquatic areas),
Hood Bay (south of Angoon)	Waterfowl shorebirds spring and fall concentration area. Brown bear spring concentration area. Provides bald eagle, fish and marine mammal habitat. Contains anadromous fish streams. Some subsistence activities occur here. Presence of eleven cultural sites. Offers recreational opportunities and has traditional value.	Alaska Pulp Corporation, Federal, Native, Private, State (tidelands and submerged lands), US Forest Service
Hydaburg River Tidelands	Important area for traditional and subsistence usage of fish and wildlife. Spawning and rearing habitat for anadromous fish. Source for all domestic water in Hydaburg. Presence of one historical site. Offers recreational opportunities.	City of Hydaburg, Haida Corporation, private, Sealaska Corporation, Forest Service
Jackson Island (south of Sukkwan Island)	Important area for traditional and subsistence usage of fish and other natural resources (e.g. drift logs and trapping). One historic/archeological site present. Offers recreational opportunities.	State
Mitchell Bay	Waterfowl shorebirds spring and fall concentration area. Nesting and brood rearing concentration areas for the Trumpeter Swan. Brown bear spring concentration area. Provides bald eagle, fish and marine mammal habitat. Contains anadromous fish streams. Some subsistence activities occur here. Presence of 37 prehistoric and historic sites. Offers recreational opportunities and has traditional value.	City of Angoon, Kootznoowoo Corporation, Sealaska, State (tidelands and submerged lands), US Forest Service

Designated Area	Reasons For Designation	Land Ownership/ Villages To Contact
McFarland Islands-Dunbar Inlet	Important area for traditional and subsistence harvesting of herring roe, mink, land otter and drift logs. Presence of historic/archeological sites. Offers recreational opportunities.	State
Mountain Point	Human use area. Off-shore and on-shore fishery. Herring spawn along the shore.	None stated
Port Chilkoot-Portage Cove	None stated	None stated
Port of Skagway	Human use area. Provides habitat for a variety of wildlife and fish. Affords scenic and recreational opportunities.	City of Skagway, Malcolm Moe, State, White Pass and Yukon Route Railroad
Saltery Point-Crab Trap Cove	Important area for traditional and customary subsistence usage of fish and wildlife. Presence of one historic/archeological site. Offers recreational opportunities.	Haida Corporation, State (aquatic areas, tidelands)
Sitka Sound	Diverse nearshore fish assemblages and major herring spawning area	
Skagway River	Human use area. Source of city drinking water. Provides habitat for a variety of wildlife and fish. It is anadromous water. Affords scenic and recreational opportunities.	City of Skagway, private, State, US Forest Service
Swan Lake	Protection of water quality (freshwater ecosystem). Maintenance of local fish and swan populations. Important recreational area.	None stated
Upper George Inlet	Shoreline provides critical winter range for deer. Provides habitat and spawning area for a variety of wildlife and fish (including bald eagles, black bears, harbor seals, herring and salmon).	None stated
West Coon Island	Harbor seals are found in high numbers along the shore. A bald eagle nest is located on the western shore.	None stated
Whitman Lake Area	Shoreline provides critical winter range for deer. Supports recreational sportfishing.	None stated
Wrangell Narrows	None stated	None stated

An August 2000 survey of Native tribes in the subarea conducted by the Environmental Protection Agency yielded additional information about sensitive areas near villages, as viewed from the local perspective. The tribes that responded to the survey, as listed below, have indicated their primary sites of concern and the reasons for their importance.

Craig Community Association

Sensitive Area	Reasons For Designation
Saint Nicholas Lake	Drinking water source
Fish Egg Island	Herring spawning grounds
Saint Nicholas River	Salmon spawning
Crab Creek	Salmon spawning

Hydaburg Cooperative Association

Sensitive Area	Reasons For Designation
Hetta	Subsistence activities
Eek	Subsistence activities
Kasook	Subsistence activities
Hydaburg beachfront and watershed	Subsistence activities
Sakwaan	Subsistence activities

Klawock Cooperative Association

Sensitive Area	Reasons For Designation
All beach areas	Home sites
Perafrovich Island	Old graveyard site
Alberta Island	Subsistence activities
Klawock Narrows	Industry and wastewater treatment plants
Mouth of Klawock River	Subsistence activities

Organized Village of Kasaan

Sensitive Area	Reasons For Designation
Kasaan Bay	Subsistence activities, cultural/traditional uses
Karta Bay	Subsistence activities, cultural/traditional uses
Salt Chuck	Subsistence activities, cultural/traditional uses
12 mile Arm	Subsistence activities, cultural/traditional uses
Cholmndly/Skowl Arm	Subsistence activities, cultural/traditional uses

Sitka Tribe of Alaska

Sensitive Area	Reasons For Designation
Katlian Bay	Salmon streams, important/close watershed
Nakwasina Bay, Sound	Salmon streams, marine mammals
Silver Bay	Hatchery, salmon streams
Indian River	Closest andramous stream, important watershed
Starrigavan Wetland Area	Wetland close to town, spawning habitat

Wrangell Cooperative Association

Sensitive Area	Reasons For Designation
Harbor entrance	Not stated
Public beaches	Not stated
Petroglyph beach	Not stated

Yakutat Tlingit Tribe

Sensitive Area	Reasons For Designation
Monti Bay	Village surrounds bay
Inner Islands	Subsistence activities
Disenchantment Bay	Large seal population
Yakutat coast line	Commercial fishing, recreation
Icy Bay	Subsistence activities

iv. 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.

SHORELINE GEOMORPHOLOGY

CATEGORY	LOW	MEDIUM	HIGH
Coastal Habitat Types	Fine-grained sand beaches Exposed wave-cut platforms Exposed rocky shores	Gravel beaches Mixed sand & gravel beaches Exposed tidal flats Coarse grained sand beaches Riprap structures	Marshes Eelgrass beds Sheltered tidal flats Sheltered rocky flats
Lake And River Habitat Types	Exposed rocky cliffs & banks Bedrock shores & ledges, rocky shoals Eroding scarps/bank in unconsolidated sediment Exposed man-made structures	Sand beaches & bars Mixed sand & gravel beaches/bars Gravel beaches/bars Gently sloping banks Exposed flats Riprap	Sheltered scarps in bedrock Vegetated steep sloping bluffs Sheltered man-made structures Vegetated low banks Sheltered sand & mud & muddy substrates Marshes
Upland Habitat Types	Alpine tundra Mesic/dry tussock tundra	Low shrub vegetation Dwarf shrub mat and cushion tundra	Riparian willow

SEA OTTERS

CATEGORY	LOW	MEDIUM	HIGH
Abundance		< 20	> 100
Susceptibility			Year around
Human Harvest	Year around		

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

STELLER SEA LIONS

CATEGORY	LOW	MEDIUM	HIGH
Abundance			
Susceptibility		Year around	
Human Harvest	June 1 – Aug 31	April 1 – May 31	Sept 1 – July 31

Critical Life Periods	**J F M A M J J A S O N D**
Pupping	===
Molting	==========
On rookeries	==========
On haulouts	==========

HARBOR SEALS

CATEGORY	LOW	MEDIUM	HIGH
Abundance (on Haulouts)			10 or more
Pups Present on Haulouts			Pups present
Susceptibility		Year around	
Human Harvest	June 1 – July 31	Jan, May, Aug, Sept	Feb 1 – Apr 30 Oct 1 – Dec 31

Critical Life Periods	**J F M A M J J A S O N D**
Pupping	===
Molting	====
On haulouts	==========

WHALES and PORPOISES

(Killer and Humpback Whales, Dall and Harbor Porpoise)

CATEGORY	LOW	MEDIUM	HIGH
Abundance	< 10	10 +	
Susceptibility	Oct 1 - May 1	Aug 1 -Sept 30	
Human Harvest	No Harvest		

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

BEARS

CATEGORY	LOW	MEDIUM	HIGH
Susceptibility[1, 2]	Nov 1 - April 30	May 1 - June 30 Sept 1 - Oct 31	July 1 - Aug 30
Commercial Value	Nov 1 - May 31 July 1 - Aug 31	June 1 - June 30	Sept 1 - Oct 31
Human Harvest	Nov 1 - April 15		April 15 – Oct 31

1. Bear densities and susceptibility to oil impacts increases through spring as more individuals emerge from dens and move to coastal areas.
2. Bear densities and susceptibility to oil impacts decreases through the summer depending upon the availability of fish in lower reaches of streams.
3. Black bear hunting season closed July and August, brown bear hunting season closed June-August

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

Denning ========= ======

Spring coastal concentrations =====

Salmon stream concentrations =====

SITKA BLACK-TAILED DEER

CATEGORY	LOW	MEDIUM	HIGH
Susceptibility	May 1 - Nov 15		Nov 15 - April 30
Human Harvest	Jan 1 – July 31		Aug 1 - Dec 31

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

Fawning period ===

Foraging along coast ======== ====

MARBLED MURRELET NEARSHORE FEEDING CONCENTRATIONS

CATEGORY	LOW	MEDIUM	HIGH
Abundance			>50
Susceptibility		year around	

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

Nesting/rearing ========

Nearshore feeding ==========

SEABIRDS

CATEGORY	LOW	MEDIUM	HIGH
Abundance	< 100	100 - 500	> 500
Susceptibility	Nov 1 - Jan 31	Feb 1 - March 31	April 1 – Oct 31
Species Diversity	1 – 3	4 – 6	> 6
Human Harvest*	June 1 - April 19		April 20 - May 31
* Seabird eggs utilized by Native communities.			

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

On colonies ========

Feeding near colonies ==========

RAPTORS (generally eagles)

CATEGORY	LOW	MEDIUM	HIGH
Abundance	< 1 nest/3 coastal miles	1 nest/1 to 3 coastal miles	> 1 nest/coastal mile
Susceptibility			year around

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

Nesting/rearing ==========

Present near coast ==========

WATERFOWL AND SHOREBIRDS

CATEGORY	LOW	MEDIUM	HIGH
Abundance	< 250	250 – 500	> 500
Susceptibility	Nov 1 - Jan 31*	Feb 1 - April 14 May 16 - Aug 14	April 15 – May 15 Aug 15 - Oct 31
Species Diversity	1 – 3	4 – 6	> 6
Human Harvest	June 1 – Aug 31	Dec 1 - Dec 31	(season closed) Sept 1 - Nov 30
* In unique locations where waterfowl concentrate during the winter, their susceptibility would be high.			

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

Spring migration ===

Nesting/rearing ========

Fall migration ======

Winter concentrations ======== ==========

HERRING, CAPELIN, HOOLIGAN, SANDLANCE

CATEGORY	LOW	MEDIUM	HIGH
Abundance (Biomass in Tons)	< 500	500 - 5,000	> 5,000
Susceptibility	Oct 1 - Feb 28	March 1 - March 31	April 1 - Sept 30
Human Harvest	Jan 1 - Feb 28	June 1 - Dec 31	March 1 - May 31

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

Spawning ====
Present nearshore ==========
Winter aggregations ===== ====

SALMON (Including hatchery fish)

CATEGORY	LOW	MEDIUM	HIGH
Abundance	< 500 spawners (pink & chum) < 50 spawners (sockeye) < 1,000 spawners (coho)	500 - 25,000 (pink & chum) 50 - 1,000 (sockeye) 1,000 - 5,000 (coho)	> 25,000 (pink & chum) > 1,000 (sockeye) > 5,000 (coho)
Susceptibility	Dec 1 - Jan 31	Feb 1 - April 30 Nov 1 - Nov 30	May 1 - Oct 31
Species Diversity	2 or less	2 – 3	4 and greater
Human Harvest		Oct 10 - May 15	May 15 - Oct 10

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

Adults nearshore ==========
Spawning in streams ===== ==========
Spawning intertidally ==========
Eggs/young development ==========
Smolt outmigration ==========

FRESHWATER FISH SPECIES

Arctic Grayling			
CATEGORY	**LOW**	**MEDIUM**	**HIGH**
Susceptibility	Nov 1 – March 31	June 1 - Oct 31	April 1 - May 31
Human Harvest	Nov 1 – March 31	Oct 1 - Oct 31	April 1 - Sept 30

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

Adults Near Shore =========
Spawning in Lakes ====
Eggs/Young Development =========

Dolly Varden

CATEGORY	LOW	MEDIUM	HIGH
Susceptibility	Dec 1 - Feb 28	June 1 - Aug 31	March 1 - May 31 Sept 1 - Nov 30
Human Harvest	Jan 1 - Feb 28	June 1 - Aug 31 Nov 1 - Dec 31	March 1 - May 31 Sept 1 - Oct 31

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

Adults Near Shore ====== =====
Spawning in Streams =====
Eggs/Young Development ===== ========

Cutthroat Trout

CATEGORY	LOW	MEDIUM	HIGH
Susceptibility	Dec 1 - Feb 28	June 1 - Aug 31	March 1 - May 31 Sept 1 - Nov 30
Human Harvest	Jan 1 - Feb 28	June 1 - Aug 31 Nov 1 - Dec 31	March 1 - May 30 Sept 1 - Oct 31

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

Adults Near Shore ====== ======
Spawning in Streams =======
Eggs/Young Development ======

Rainbow Trout/Steelhead

CATEGORY	LOW	MEDIUM	HIGH
Susceptibility	Oct 16 - Nov 30	Dec 1 - Feb 28	March 1 - Oct 15
Human Harvest	Oct 16 - Nov 30	Dec 1 - Feb 28	March 1 - Oct 15

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

Adults Near Shore ==== ======
Spawning in Streams =====
Eggs/Young Development =======

CLAMS AND OTHER MARINE INVERTEBRATES (CHITONS)

CATEGORY	LOW	MEDIUM	HIGH
Susceptibility			year around
Human Harvest		June 1 - Aug 31	Sept 1 - May 31

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

Spawning ======
Planktonic larvae ==========

LAND MANAGEMENT DESIGNATIONS

CATEGORY	LOW	MEDIUM	HIGH
FEDERAL LANDS	Public Lands National Forest Preserves	National Parks Wildlife Refuges	Wild & Scenic Rivers National Natural Landmarks Wilderness Areas
STATE LANDS	Public Lands[1]	State Parks	Critical Habitats Refuges Sanctuaries

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

CULTURAL RESOURCES/ARCHAEOLOGICAL SITES

CATEGORY	LOW	MEDIUM	HIGH
HISTORICAL 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 Burial sites National Register eligible village sites Intertidal sites

v. SENSITIVE AREAS: PART FOUR - BIOLOGICAL 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.

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/subareas.html.

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*

Benthic (near bottom) habitats have lower vulnerability to oil than the intertidal zone, but contamination by floating slicks (dissolved and particulate fractions) is likely at depths less that 100 feet if oil remains in the area for several days. Areas continually exposed to floating oil (e.g. harbors) show accumulation of hydrocarbon fractions (PAHs) in sediments and biota at 100 feet depth. Kelp beds are susceptible to floating oil because the fronds of bull kelp reach near or to the surface, depending on tide stage. Eelgrass beds are also subject to oil exposure because of their proximity to surface spilled oil at low tide (a few feet) and their extension into the intertidal zone. Benthic submerged aquatic vegetation in or near intertidal zoned is at risk by oil slicks.

2. *Shoreline Habitats*

Habitats (estuarine, large lacustrine and riverine) ranked by ESI standards from least (#1) to most (#10) 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: permeable with oil penetration up to 25 cm, slope from 5 to 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 flat mud to sand substrate--highly organic mud is common.

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/

The Nature Conservancy, an Alaska ShoreZone partner, also hosts an informative online website which has links to ShoreZone information. It can be accessed at: http://www.shorezone.org

ESI Habitat Ranking

ESI No.	Estuarine (Marine)	Lacustrine (Lake)	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
"Environmental Sensitivity Index Guidelines" (October 1995) NOAA Technical Memorandum NOS ORCA 92			

ESI Index Map

http://www.asgdc.state.ak.us/maps/cplans/se/pdfs/ESI_DATA/INDEX.PDF

Eelgrass beds. Eelgrass (*Zostera marina*) beds are a habitat of special concern. Eelgrass beds provide important habitat for fish and invertebrates, especially juveniles, and are susceptibile to nearshore disturbance. Eeegrass beds are particularly vulnerable to degradation from marine hydrocarbon spills and chronic pollution from shore-based development because oil has a longer residency time in typical eelgrass habitat, fine grained sediments on protected beaches. Eelgrass habitat maps created with the Alaska ShoreZone mapping project data (link above) can provide eelgrass distribution maps throughout the subarea.

Eelgrass is found on approximately 8% of the shoreline of southeastern Alaska Iestimate based on the approximately 60% of the SE coastline that has been mapped by the ShoreZone project as of 2008). A table and map of selected eelgrass beds sampled for fish assemblages and eelgrass characteristics by the National Marine Fisheries Service Auke Bay Laboratories in Juneau, follows. A map of beach seine sample locales 1998-2010 as well as fish species caught may be found at:

http://www.fakr.noaa.gov/habitat/fishatlas.

Eelgrass (*Zostera marina*) sites sampled by Auke Bay laboratories, NOAA fisheries 1998-2010. "Map number" indicates the location of general sampling locales on the figure following. Each locale may have several sampling sites. "Priority" indicates eelgrass meadows of particular interest (M= monitoring sites, that have been sampled over several years, R = sites adjacent residential or recreational areas, E = sites adjacent commercial or public development, H= sites with high habitat value). Priority designations do not imply that other sites do not have importance. Latitude and longitude are reported in decimal degrees.

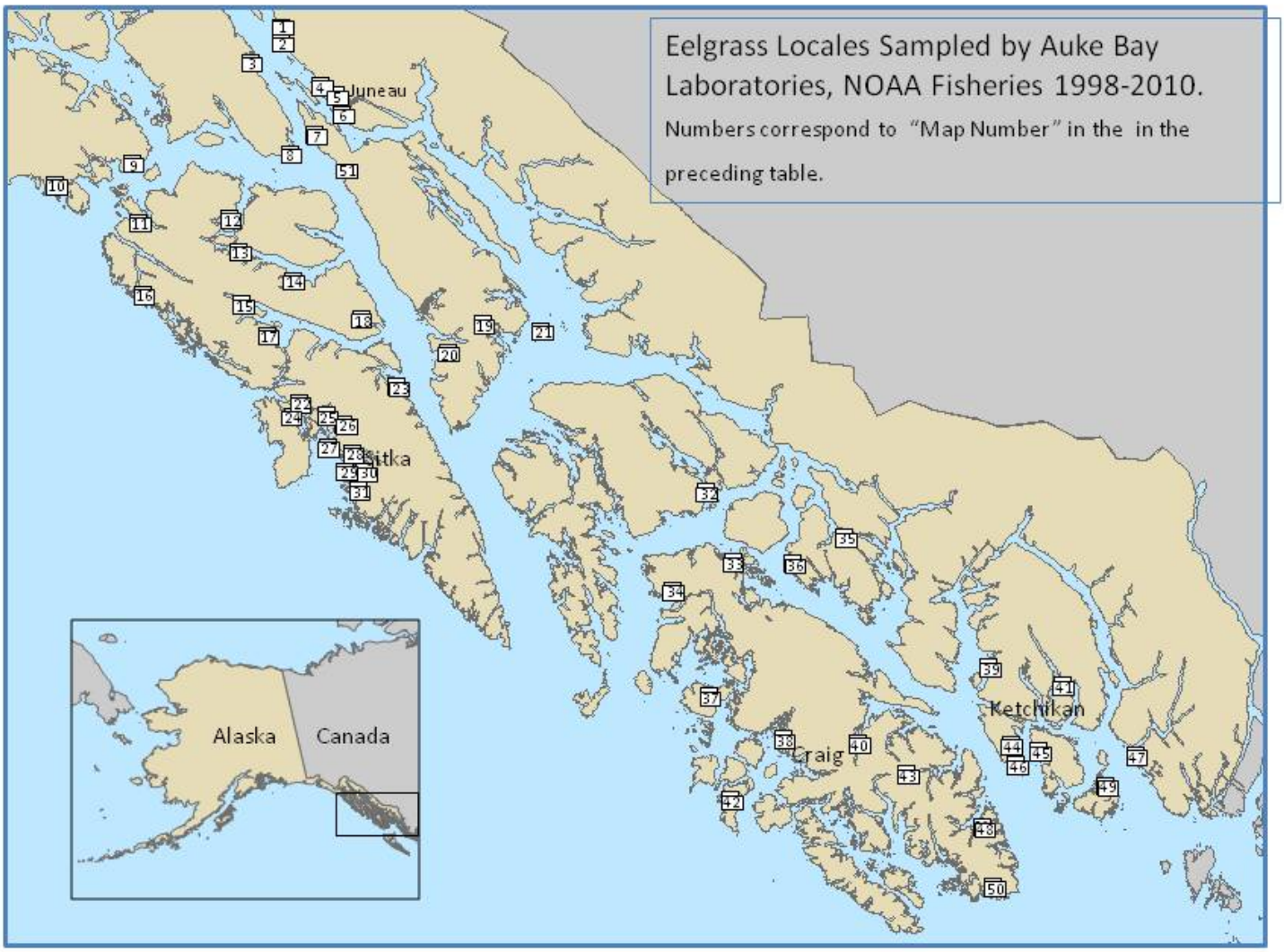
Eelgrass (*Zostera marina*) sites sampled by Auke Bay laboratories, NOAA fisheries 1998-2010.

Map #	Locale	Sub Locale	Priority	Latitude	Longitude
1	Mainland/ Juneau	Berners Bay		58.6719	134.9148
1	Mainland/ Juneau	Berners Bay		58.6693	134.9127
1	Mainland/ Juneau	Berners Bay	M	58.6686	134.9121
2	Mainland/ Juneau	Bridget Cove	R	58.6421	134.9556
2	Mainland/ Juneau	Bridget Cove	M,R	58.6348	134.9480
2	Mainland/ Juneau	Bridget Cove	R	58.6303	134.9449
2	Mainland/ Juneau	Bridget Cove		58.6285	134.9425
2	Mainland/ Juneau	Bridget Cove		58.6274	134.9453
3	Mainland/ Juneau	St. James Bay	R	58.6100	135.2094
3	Mainland/ Juneau	St. James Bay	R	58.5731	135.1825
2	Mainland/ Juneau	Sunshine Cove	R	58.6084	134.9326
4	Mainland/ Juneau	Tee Harbor	R	58.4309	134.7648
5	Mainland/ Juneau	Waydelich Creek	R	58.3819	134.6603
5	Mainland/ Juneau	Auke Nu Cove	M,E	58.3809	134.6918
5	Mainland/ Juneau	Indian Cove	R	58.3774	134.7009
5	Mainland/ Juneau	Auke Village	R	58.3757	134.7256
5	Mainland/ Juneau	Bay Creek	M,E,R	58.3853	134.6517
5	Mainland/ Juneau	Mendenhall Pen.	R	58.3603	134.6462
9	Mainland	Dundas Point		58.3355	136.2052
6	Douglas Island	Fish Creek		58.3315	134.6080
10	Mainland	Torch Bay		58.3306	136.7715
6	Douglas Island	Peterson Creek	M	58.3018	134.6813
7	Admiralty Island	Funter Bay	M, R	58.2569	134.9003

Map #	Locale	Sub Locale	Priority	Latitude	Longitude
7	Admiralty Island	Funter Bay		58.2553	134.9106
7	Admiralty Island	Funter Bay	M, R	58.2553	134.9097
7	Admiralty Island	Funter Bay		58.2550	134.9058
11	Chichagof Island	Port Althorp		58.1111	136.2789
11	Chichagof Island	Port Althorp		58.1094	136.2750
12	Chichagof Island	Neka Bay		58.0500	135.6725
12	Chichagof Island	Neka Bay		58.0497	135.6706
12	Chichagof Island	Neka Bay		57.9894	135.5976
13	Chichagof Island	Tenakee Inlet		57.9445	135.7302
13	Chichagof Island	Tenakee Inlet		57.8936	135.6225
13	Chichagof Island	Tenakee Inlet		57.8714	135.6157
16	Chichagof Island	Islas Bay		57.8437	136.3763
16	Chichagof Island	Islas Bay		57.8310	136.3945
14	Chichagof Island	Tenakee Springs		57.7758	135.1911
14	Chichagof Island	Tenakee Springs		57.7756	135.1914
15	Chichagof Island	Hoonah Sound		57.7597	135.7931
15	Chichagof Island	Hoonah Sound		57.7431	135.7931
14	Chichagof Island	Tenakee Springs		57.7387	135.2709
14	Chichagof Island	Tenakee Springs	M	57.7367	135.3836
14	Chichagof Island	Tenakee Springs		57.7366	135.3847
14	Chichagof Island	Tenakee Springs	M	57.7364	135.3875
15	Chichagof Island	Hoonah Sound		57.6166	135.6247
17	Chichagof Island	Ushk Bay		57.5705	135.6400
17	Chichagof Island	Ushk Bay		57.5656	135.6544
17	Chichagof Island	Ushk Bay		57.5628	135.6572
17	Chichagof Island	Ushk Bay		57.5618	135.6116
18	Chichagof Island	Sitkoh Bay		57.5325	134.9761
18	Chichagof Island	Sitkoh Bay		57.5303	134.9767
19	Admiralty Island	Pybus Bay		57.3872	134.1761
19	Admiralty Island	Pybus Bay		57.3764	134.1836
20	Admiralty Island	Chaik Bay	M	57.3142	134.4711
20	Admiralty Island	Chaik Bay	M	57.3133	134.4728
21	Brothers Islands	Brothers Islands	H	57.2928	133.8150
22	Baranof Island	St. John Baptist Bay	H	57.2834	135.5501
22	Baranof Island	St. John Baptist Bay	H	57.2834	135.5502
23	Baranof Island	Cosmos Cove		57.2428	134.8811
23	Baranof Island	Cosmos Cove		57.2425	134.8717
24	Baranof Island	Krestof Sound		57.2417	135.6227
25	Baranof Island	Nakwasina Sound		57.1975	135.3842
25	Baranof Island	Nakwasina Sound	M	57.1975	135.3833
25	Baranof Island	Nakwasina Sound		57.1964	135.3853
25	Baranof Island	Nakwasina Sound	M	57.1964	135.3847
26	Baranof Island	Katlian Bay		57.1859	135.3478
26	Baranof Island	Katlian Bay		57.1645	135.3112
26	Baranof Island	Katlian Bay		57.1644	135.3104
26	Baranof Island	Katlian Bay		57.1640	135.3144
26	Baranof Island	Katlian Bay		57.1529	135.3610
27	Baranof Island	Middle Island	R	57.0931	135.4494

Map #	Locale	Sub Locale	Priority	Latitude	Longitude
27	Baranof Island	Middle Island	R	57.0923	135.4481
28	Baranof Island	Sitka	R	57.0494	135.32194
28	Baranof Island	Sitka		57.0436	135.3037
29	Baranof Island	Pirate Cove		56.9853	135.3753
29	Baranof Island	Pirate Cove		56.9852	135.3753
29	Baranof Island	Pirate Cove	M	56.9849	135.3713
29	Baranof Island	Pirate Cove	M	56.9844	135.3717
29	Baranof Island	Pirate Cove		56.9853	135.3756
30	Baranof Island	Sandy Cove		56.9788	135.3172
30	Baranof Island	Sandy Cove	M	56.9786	135.3108
30	Baranof Island	Sandy Cove		56.9782	135.3117
30	Baranof Island	Sandy Cove	M	56.9781	135.3119
31	Baranof Island	Redoubt Bay		56.9110	135.3260
31	Baranof Island	Redoubt Bay		56.9106	135.3246
31	Baranof Island	Kanga Bay		56.8788	135.3411
32	Kupreanof Island	Kah Sheets Bay		56.5183	133.0969
32	Kupreanof Island	Kah Sheets Bay		56.5167	133.0958
33	Prince of Wales I.	Exchange Cove		56.2478	133.0781
33	Prince of Wales I.	Exchange Cove		56.2111	133.0683
34	Prince of Wales I.	Calder Bay		56.1950	133.5167
34	Prince of Wales I.	Calder Bay		56.1936	133.5169
35	Etolin Island	Olive Cove		56.1917	132.3033
35	Etolin Island	Olive Cove		56.1886	132.3164
36	Etolin Island	Steamer Bay		56.1575	132.6978
36	Etolin Island	Steamer Bay		56.1531	132.6911
37	Heceta Island	Warm Chuck Inlet		55.7758	133.5319
37	Heceta Island	Warm Chuck Inlet		55.7708	133.5361
37	Heceta Island	Warm Chuck Inlet		55.7581	133.4708
37	Heceta Island	Warm Chuck Inlet		55.7564	133.4711
38	Prince of Wales I.	Klawock Inlet		55.5778	133.0941
38	Prince of Wales I.	Klawock Inlet		55.5772	133.0944
38	Prince of Wales I.	Klawock Lagoon	M , R	55.54796	133.0937
39	Revillagigedo I	Naha Bay		55.5446	131.7032
38	Prince of Wales I.	Klawock Inlet		55.5361	133.1056
38	Prince of Wales I.	Klawock Inlet		55.5358	133.1053
38	Prince of Wales I.	Klawock Inlet		55.5208	133.1617
38	Prince of Wales I.	Klawock Inlet		55.5003	133.1647
38	Prince of Wales I.	Klawock Inlet		55.5000	133.1644
38	Prince of Wales I.	Klawock Inlet		55.4875	133.1414
38	Prince of Wales I.	Klawock Inlet		55.4872	133.1414
38	Prince of Wales I.	Ballena Island		55.4764	133.1881
40	Prince of Wales I.	Twelve Mile Arm		55.4283	132.6594
40	Prince of Wales I.	Twelve Mile Arm		55.4156	132.6881
41	Revillagigedo I.	Thorne Arm		55.3868	131.2886
42	Baker Island	Port San Antonio		55.3658	133.5856
42	Baker Island	Port San Antonio		55.3575	133.5869
43	Prince of Wales I.	Cholmondeley S.		55.2541	132.4418
44	Gravina Island	Bostwick Inlet		55.2364	131.7500

Map #	Locale	Sub Locale	Priority	Latitude	Longitude
44	Gravina Island	Bostwick Inlet		55.2342	131.7300
45	Annette Island	Sylburn Harbor		55.1782	131.5791
46	Gravina Island	Dall Bay		55.1561	131.7498
47	Mainland	Kah Shakes Cove		55.0426	130.9995
47	Mainland	Kah Shakes Cove		55.0418	130.9973
48	Prince of Wales I.	Moira Sound		54.9711	132.0924
49	Duke Island	Reef Harbor		54.9684	131.2492
50	Prince of Wales I.	Nichols Bay		54.7401	132.1536


Eelgrass Locales Sampled by Auke Bay Laboratories, NOAA Fisheries 1998-2010.
Numbers correspond to "Map Number" in the in the preceding table.
Juneau
Sitka
Ketchikan
Craig
Alaska
Canada

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/

Wetland Status Map

http://alaska.fws.gov/fisheries/nwi/index.htm

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[f] and critical habitat occur in this subarea:

Endangered Species Act of 1973 Protected Species and Critical Habitat

Listed species	Stock	Latin Name	Status*
Short-tailed albatross**		*Diomedea albatrus*	Endangered
Yellow-billed loon**		*Gavia adamsii*	Candidate
Kittlitz's murrelet**		*Brachyramphus brevirostris*	Candidate
Sperm whale*		*Physeter catodon*	Endangered
Fin whale*		*Balaenoptera physalus*	Endangered
Blue whale*		*Balaenoptera musculus*	Endangered
Sei whale*		*Balaenoptera borealis*	Endangered
Humpback whale*		*Megaptera novaeangliae*	Endangered
Northern right whale*		*Eubalaena japonica*	Endangered
Gray whale*	W N Pacific	*Eschrichtius robustus*	Endangered
Steller sea lion*		*Eumetopias jubatus*	Threatened
Snake River Sockeye Salmon*		*Onchorynchus nerka*	Endangered
Snake River Fall Chinook Salmon*		*Onchorynchus tshawytscha*	Threatened
Snake River Spring/Summer Chinook Salmon*		*Onchorynchus tshawytscha*	Threatened
Puget Sound Chinook Salmon*		*Onchorynchus tshawytscha*	Threatened
Lower Columbia River Chinook*		*Onchorynchus tshawytscha*	Threatened
Upper Willamette River Chinook Salmon*		*Onchorynchus tshawytscha*	Threatened
Upper Columbia River Spring Chinook Salmon*		*Onchorynchus tshawytscha*	Endangered
Upper Columbia River Steelhead*		*Onchorynchus mykiss*	Endangered
Snake River Basin Steelhead*		*Onchorynchus mykiss*	Threatened
Lower Columbia River Steelhead*		*Onchorynchus mykiss*	Threatened
Upper Willamette River Steelhead*		*Onchorynchus mykiss*	Threatened
Middle Columbia River Steelhead*		*Onchorynchus mykiss*	Threatened

Designated Critical Habitat	
Species Group	**General Reference Area**
Steller Sea Lions	See the following table and map

[f] 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."

*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 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

For Steller sea lion critical habitat and no-entry zones, please visit the NMFS website:
http://www.fakr.noaa.gov/protectedresources/stellers/habitat.htm.

Steller Sea Lion Rookery & Haulout Locations

Site	Latitude	Longitude
Akwe River	59.282 N	139.041 W
Benjamin[2]	58°33.7' N	134°54.8' W
Berners Bay	58.757 n	135.017 W
Biali Rock[1, 2, 4]	56°42.7' N	135°20.5' W
Biorka (Kaiuchali)[2, 3]	56°50.0' N	135°34.0' W
Cape Addington[2]	55°26.3' N	133°49.3' W
Cape Bartolome	55°13.8' N	133°37.0' W
Cape Bingham	58°05.6' N	136°32.5' W
Cape Cross[2]	57°54.7' N	136°34.1' W
Cape Fairweather	58°47.5' N	137°56.3' W
Cape Ommaney[2]	56°10.5' N	134°42.3' W
Circle Point	58°07.5' N	134°04.8' W
Coronation[2]	55°55.7' N	134°17.0' W
Dorothy	58°14.2' N	134°03.4' W
Dry Bay	59.130 N	138.264 W
Easterly	55°53.7' N	132°05.3' W
Eldred Rock	58°58.3' N	135°13.3' W
Emmons	57°36.4' N	135°31.4' W
Etolin	56°20.2' N	132°31.9' W
False Point	57°22.0' N	133°51.6' W
Forrester Complex[1]	54°50.3' N	133°31.6' W
Forrester/Forrester Island	54°50.3' N	133°31.6' W
Forrester/Sea Lion Rk.	54°50.6' N	133°32.1' W
Forrester/C Horn Rk.	54°50.8' N	133°33.0' W
Forrester/Lowrie	54°51.7' N	133°32.2' W
Forreste/North Rk	54°52.4' N	133°33.7' W
Funter bay	58.217 N	134.918 W
Gran Point[2]	50°08'2" N	135°14'6" W
Graves Rock[1, 2, 4]	58°14.3' N	136°45.4' W
Grindall	55°26.4' N	132°06.5' W
Grindle Island	55°26'5" N	132°07'5" W
Harbor Point	58°36.3' N	137°38.2' W
Hazy[1]	55°52.0' N	134°34.0' W
Horn Cliff	56°50.7' N	132°47.2' W
Inian	58°16.3' N	136°24.0' W
Jacob Rock	56°47.3' N	135°29.8' W
Larch Bay	56°12.6' N	134°44.2' W
Ledge Point[2]	58°48'5" N	130°45'5" W
Ledge (Gran) Point	59°08.0' N	135°14.4' W
Little Island	58.541 N	135.042 W
Lull Point[2]	57°18'0" N	135°48'5" W
Met Pt. (Lynn Canal)	58°56.0' N	135°10.0' W
Mist	57°59.3' N	133°50.7' W
Patterson Point	56°32.4' N	134°38.2' W

Steller Sea Lion Rookery & Haulout Locations

Site	Latitude	Longitude
Pinta Rocks	57°05.2' N	134°00.7' W
Point Carolus	58°22.0' N	136°02.0' W
Point Lull	57°18.6' N	134°48.4' W
Point Marsden	58°03.0' N	134°48.5' W
Point Marsh	54°42.6' N	132°17.1' W
Point Rock (Point Islet)	55°09.2' N	132°38.3' W
Rocky island	58.176 N	135.034 W
Round Rock	57°15.6' N	133°56.1' W
Sail	57°21.1' N	133°43.3' W
Sakie Point	55°03.3' N	133°14.2' W
Sea Lion Island	57°17.0' N	135°53.0' W
Sea Lion Rock (Puffin Bay)	56°15.1' N	134°49.9' W
St. Lazaria Island	56°59.2' N	135°42.3' W
Sitkagi Bluffs	58.708 N	140.650 W
South Marble	58°38.7' N	136°02.8' W
Stephens Passage (Point League)	57°36.4' N	133°38.5' W
Sunset[2]	57°30.0' N	133°35.2' W
Sukoi Islets	56°55.0' N	132°59.0' W
Tenakee Cannery Pt.	57°46.5' N	135°04.3' W
The Brothers	57°16.3' N	133°52.4' W
The Sisters	58°10.3' N	135°15.4' W
Timbered[2]	55°41.8' N	133°47.7' W
Tlingit (Case) Point	58°45.2' N	136°14.9' W
Turnabout	57°07.8' N	133°58.3' W
Turnaround Island	57°08'0" N	133°59'0" W
Venisa	58°18.7' N	136°51.0' W
West Rock	54°48.8' N	131°29.7' W
White Sisters[1]	57°38.1' N	136°15.4' W
Wolf Rock	55°01.2' N	133°29.2' W
Yasha	56°57.8' N	134°33.5' W

1 Rookery Sites
2 Haulout with more than 200 animals counted
3 Haulout currently located at Kaiuchali Island, Dennis McAllister, Alaska Department of Fish and Game, personal communication, March 1993
4 Added as rookeries in 2002

Steller Sea Lion Critical Habitat Map

http://www.fakr.noaa.gov/protectedresources/stellers/maps/se_ssl_ch.pdf

2. *Fish and Wildlife*

(a) Fish

The subarea is rich in biological resources. Dense concentrations of marine organisms are present, including five species of salmon, halibut, herring, crab, shrimp, and clams. Abundant marine vegetation, such as kelp, seagrass, and salt marsh plants are critical components of the coastal ecosystem. In addition to supporting sizeable commercial fisheries, those resources are used for subsistence and by sport hunters and fishermen. More information can be obtained on the Alaska Department of Fish and Game internet site at: http://www.adfg.state.ak.us/.

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://www.habitat.noaa.gov/protection/efh/habitatmapper.html

FINFISH

Fish species most vulnerable to an oil spill are those with life stages that use intertidal habitat and more than 100 species of fish were identified in recent nearshore habitat surveys. Those species include: anadromous fish, such as salmon, trout, Dolly Varden char, and eulachon; groundfish such as walleye pollock, Pacific cod, rock sole, yellowfin sole, starry flounder, English sole, butter sole, and copper, dusky, brown, black, dark, and quillback rockfish, and; forage fish such as Pacific herring, Pacific sandlance, capelin, eulachon, shiner perch, Pacific sandfish, and surf smelt. Useful survey information, nearshore species distribution, and nearshore habitat information can be found at:

http://www.fakr.noaa.gov/habitat/fishatlas/

Anadromous fish migrate to and from marine areas from spring through fall, using coastal lagoons, estuaries and river deltas as habitat while making physiological adjustments to travel between marine and fresh water. River deltas are also important rearing and wintering areas for pink and chum salmon that spawn intertidally. Estuaries and lagoons provide important summer habitat for juvenile anadromous fish, but are generally not used in winter. 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=SEA

Salmon produced in Southeast Alaska support important commercial fisheries ranging from stock specific nearshore fisheries to mixed stock fisheries offshore. Adult salmon are in freshwater from mid-April through early December, depending on the species of salmon and the stream system. Salmon eggs

incubate in stream gravels over the winter. Juvenile salmon emerge from the gravel in spring and may rear in fresh water for up to four years before migrating to sea. Attachment two of this document provides average salmon escapement or average peak index counts for salmon streams in the Southeast Alaska area.

Pink and chum salmon fry have only a brief period of freshwater residence and enter salt water soon after emergence from the spawning beds. The fry reside in nearshore areas for several weeks before migrating offshore. Pink salmon spend one year at sea and chum salmon spend three or four years at sea before returning to spawn. They feed primarily on zooplankton.

Sockeye salmon are most often present in stream systems with lakes that they can access from salt water. Juveniles usually spend one to three years rearing in lakes before migrating to sea in the spring as smolts. Sockeye salmon spend one to four years at sea before returning to their natal stream to spawn. Sockeye salmon feed primarily on zooplankton throughout their life history.

The chinook salmon is Alaska's state fish and is the largest of all Pacific salmon, with weights of individual fish commonly exceeding 30 pounds. Adult chinook salmon enter fresh water from July to September and juveniles spend one year in fresh water before going to sea. Only a few spawning populations of chinook salmon occur in southeast Alaska, but many rear for two to five years in inshore marine waters of the subarea. In fresh water they feed on plankton and insects while at sea they eat relatively large prey such as fish and squid. Unlike other salmon species, they are available to commercial and sport fishers all year which also makes them vulnerable to inshore marine pollutants year round.

Coho salmon occur in nearly all accessible bodies of fresh water from large transboundary watersheds to small tributaries throughout Southeast Alaska. Coho salmon enter spawning streams from July to November, usually during periods of high runoff. Juvenile coho salmon rear from one to four years in freshwater and may spend summers in estuaries. Coho salmon go to sea between March and June and spend eighteen months at sea before returning to natal streams to spawn. Coho feed primarily on insects in freshwater and on fish in marine areas.

Rainbow trout, cutthroat trout, and Dolly Varden char have both resident and anadromous life history forms in southeast Alaska. Resident fish complete their entire life cycle in fresh water and anadromous fish return to freshwater spawning and wintering areas from April through December.

Resident rainbow trout generally spawn during May and June. The anadromous form (steelhead) spawn from mid April to June and adults that survive spawning return to the ocean in mid-May to June. Fry emerge several weeks to months later. Steelhead rear two to five years in freshwater before emigrating to offshore rearing areas where they spend one to four years before returning to spawn. Drainages supporting the most significant populations in Southeast Alaska include the Situk, Naha, Karta, Thorne, and Ahrnklin River. In addition to sport fisheries for steelhead, there are also directed Federal subsistence fisheries in all streams in Southeast according to conditions specified on a Federal subsistence fishing permit.

Cutthroat trout are the most common trout in the subarea and occur as both resident and anadromous (sea-run) forms in streams and lakes throughout Southeast Alaska. They spawn from March to early June. Sea-run cutthroat trout usually winter in lakes, and adults and smolts migrate to nearshore marine feeding areas and natal stream spawning areas in early spring.

Dolly Varden char spawn from September to October; fry emerge in April and May. All but the smallest streams provide habitat for resident and rearing Dolly Varden, which feed primarily on insects. After several years in fresh water Dolly Varden may become anadromous. Anadromous fish reside in nearshore marine areas during the summer feeding on small fish and invertebrates, but spend winters in lakes after spawning.

Forage Fish – Fish considered forage species are typically small schooling fish found in open water. However, juveniles of many forage fish species spend part of their lives in the shallow vegetated nearshore areas and there would be more vulnerable to effects of an oil spill. Forage fish are critically important in the subarea food web as many seabirds, fish, and marine mammals rely on them as prey. These fish feed primarily on plankton and provide the trophic link between primary production (plankton) and the apex predator species (e.g., salmon and groundfish) that commercial fisheries rely on. Some of these species also support important commercial fisheries.

Eulachon are among the most common forage fish in the Gulf of Alaska and are also anadromous, migrating to streams throughout the subarea to spawn in April or May. Spawning eulachon provide a spring feast for bears, eagles, killer whales, seals, sea lions, gulls, and humans. Drainages with eulachon migrations include the Unuk (Eulachon), Stikine, Taku, Mendenhall, Chilkat, Antler, and Lace rivers in Southeast; and the Situk near Yakutat.

Pacific herring occur widely across the subarea in water depths from 50 to 100 meters. In Alaska, spawning is first observed in the southeastern archipelago during mid-March. Spawning is confined to shallow, vegetated areas in the intertidal and subtidal zones. Juvenile herring hatch in about two weeks and may rear in nearshore areas for several months before moving offshore.

Herring are an important food source for many marine mammals in Southeast Alaska. Steller sea lions, humpback whales, gray whales, and killer whales are all known to forage on herring. Steller sea lions, and probably harbor seals, aggregate at herring spawning areas to feed.

Capelin are not as numerous in southeast Alaska as in other areas of the State, but are important forage for higher trophic predators such as seabirds and marine mammals because of their high oil content. They spawn on sandy to small gravel beaches, but the timing and location of spawning varies considerably from year to year.

Pacific sandlance are another abundant forage species in southeast Alaska. Sand lance generally spawn from mid Novemberto mid December along sandy shorelines.

Other Forage Fish -- Other species in nearshore areas that contribute to the forage base include Pacific sandfish and smelt. Adult Pacific sandfish generally occur at depths of 100 to 200 meters over sand or mud bottoms but enter nearshore areas to spawn among algaes and may school in bays throughout the subarea. Smelt, including surf smelt and longfin smelt are common but not abundant throughout the subarea and enter nearshore areas to spawn along sandy shorelines at widely varying times and locations. Krill are a very important source of food for marine mammals and birds in Southeast Alaska, including Endangered Species Act-listed species. Krill are also an important source of food for other forage fish upon which marine mammals and bird rely.

Groundfish are defined for the purpose of management by the State of Alaska as any marine finfish except halibut, osmerids, herring, and salmonids. Several species in this group support important commercial sport and subsistence fisheries in the subarea and juveniles rearing in southeast Alaska also contribute to offshore fisheries. Juvenile pollock, greenling, and sculpin make up a significant portion of the diet of species such as salmon and marine mammals.

Pacific halibut are not considered groundfish because they are managed exclusively by the International Pacific Halibut Commission. For the purpose of this discussion, however, we include Pacific halibut with groundfish.

Groundfish species common in Southeast Alaska include: Pacific halibut, arrowtooth flounder, flathead sole, yellowfin sole, starry flounder, rock sole, Pacific cod, Pacific tomcod, walleye pollock, copper rockfish, dusky rockfish, quillback rockfish, yelloweye rockfish. sablefish, kelp greenling, rock greenling, whitespotted greenling, lingcod, and sculpin.

Flatfish such as flounder, sole, and halibut live on low gradient bottoms throughout the subarea. Large species such as Pacific halibut and arrowtooth flounder generally inhabit deeper more open water areas while smaller flatfish species are more likely to inhabit shallow bays.

Pacific halibut are found throughout southeastern Alaska and support important commercial, sport, and subsistence fisheries. They spawn in deep water from 180 to 460 meters from November to January. Older halibut spend winters in deep water along the continental shelf. In summer, adult halibut move to shallow coastal waters (depths of 30 to 300 meters) to forage on fish and invertebrates.

Yellowfin sole and starry flounder spawn and rear in shallow subtidal areas of bays and estuaries. Yellowfin sole juveniles stay in the nearshore area for 3 to 5 years. Starry flounder are resident in shallow flats, estuaries, and lagoons throughout their life. These fish feed intertidally on clam siphons, small fish, and invertebrates.

Rock sole and flathead sole inhabit deeper areas of bays, but often move into nearshore areas to forage.

Pacific cod and walleye pollock are common in the subarea, primarily inhabiting straits, channels, and deep bays in the region. Adults are pelagic and are most abundant in water depths from 100 to 300 meters, but commonly occupy a much larger depth range. Juveniles are also pelagic and generally occupy the upper 60 meters of the water column. They feed primarily on pelagic invertebrates (e.g., euphasids) and small fish. These fish spawn in late winter or early spring and due to their abundance, they are extremely important to the ocean's food web.

Rockfish in the subarea are most abundant along the outer Pacific coast, but also inhabit nearshore reefs and high current areas in inside waters. There are about 30 different species of rockfish in the subarea. Rockfish are long-lived, ovoviparous fish, which become sexually mature between 5 and 15 years of age. *Copper rockfish* commonly inhabit shallow bays and often feed and rear in eelgrass. *Quillback, black, dark,* and *dusky rockfish* inhabit nearshore areas characterized by kelp beds, but may also be found with *yelloweye rockfish* on deeper reefs. The juveniles of many rockfish, that as adults live in deep offshore waters are found on nearshore reefs. These fish feed on small fish and invertebrates.

Adult sablefish are demersal species that generally inhabit depths greater than 200 meters. Adult sablefish inhabit some of the deeper straits in the subarea. Sablefish spawn at depth in late winter and

the pelagic larvae and juveniles migrate inshore over the next few months. Juvenile sablefish rear for 2 to 3 years in nearshore waters, including the bays and channels in southeast Alaska. Adults feed opportunistically on live prey or as scavengers, while juveniles feed on pelagic invertebrates and small fish.

Greenling are generally abundant in the subarea and the common species are generally separated by habitat. As you might expect, *Kelp greenling* are abundant in kelp and algae beds and *rock greenling* are most common adjacent to nearshore reefs. *Whitespotted greenling* are most common in bays and estuaries. Juvenile greenling are pelagic and are important as forage in some areas.

Lingcod typically inhabit nearshore rocky reefs and high current areas from 10 to 100 meters in depth. They migrate inshore to spawn in the fall and return to areas farther offshore in winter. Along the Pacific coast juvenile lingcod are common in shallow bays, but they rarely use such areas in inside waters. Lingcod are increasingly popular as sport fish and from 1990-1999 an average of 2,259 fish were harvested in Southeastern Alaska sport fishery.

Literally dozens of sculpin species are abundant in southeast Alaska. Most are benthic, inhabiting bottoms ranging from vertical rock faces to mud bottom bays. Some, such as the crested sculpin, are pelagic. Nearly all feed on invertebrates and small fish. Their abundance makes them important as forage for some commercially harvested species.

Sharks and skates – Species in the subarea include the *spiny dogfish shark*, *Pacific sleeper shark*, *salmon shark*, *Alaska skate*, *big skate*, and *longnose skate*. Spiny dogfish are common throughout the subarea and are locally abundant in water less than 150 meters deep over soft bottoms near current junctions. Spiny dogfish are opportunistic feeders and will scavenge or eat many kinds of live prey. The Pacific sleeper shark may grow to 10 meters in length and is one of the largest sharks in the world. Generally considered a scavenger, the sleeper is often one of the first animals to show up at sunken whale carcasses. Salmon sharks are often found near the surface and feed mostly on fish. Skates are common in bays and shallow flats where there is not too much current. Skates feed primarily on clams and other infauna.

SHELLFISH

Crustaceans (including shrimp and crabs) are important in the diet of many species ranging from forage fish to baleen whales.

Dungeness Crabs are found from the intertidal region to a depth of 230 meters in Southeast Alaska. Dungeness crabs are most common on sand or muddy-sand bottoms in the subtidal region, and are often found in or near eelgrass beds. However, they can also be found on a number of other substrata including various mixtures of silt, sand, pebble, cobble, and shell. Juvenile Dungeness crabs are found in similar habitats to adults, but they generally occupy shallower depths than adults. Juvenile crabs can be very abundant in the intertidal zone, but also occur in shallow subtidal areas. Survival of young crabs is greatest in habitats such as intertidal zones and eelgrass beds, where they can gain refuge from predators. It is widely distributed and can be found as far north as Cook Inlet and Prince William Sound and south to Magdalena Bay, Mexico. This crab supports both a commercial fishery and a personal use fishery in Alaska. Commercial Dungeness crab harvests from Southeast Alaska have averaged 2.2 million pounds per season.

Three species of King Crab are located in Southeast Alaska: red, blue, and brown. Red king crab larvae generally exhibit a diel movement being most abundant in the upper water column during the day and deeper at night. Young of the year crab occur at a depth of 50 meters or less. They are solitary and need high relief habitat or coarse substrate such as boulders, cobble, shell hash, and living substrates such as bryozoans and stalked ascidians. Between the ages of two and four years, there is a change in habitat needs and a tendency for the crab to form pods consisting of thousands of crabs. Podding generally continues until four years of age (about 6.5 centimeters), when the crabs move to deeper water and join adults in the spring migration to shallow water for spawning. Adult red king crabs occur to a depth of 365 meters; preferred habitat for reproduction is water less than 90 meters. Red and blue kings can occur from the intertidal zone to 180 meters or more. Golden king crabs live mostly between 180–730 meters, but can occur from 90–900 meters.

A near peak harvest of red king crabs occurred in the 1980/81 season, but three years later the fishery crashed, as harvests were down sixty-fold, and the four top historical producing areas were closed completely to red king crab fishing for the first time. Red king crab populations have remained depressed statewide (except in Southeast Alaska) since 1983.

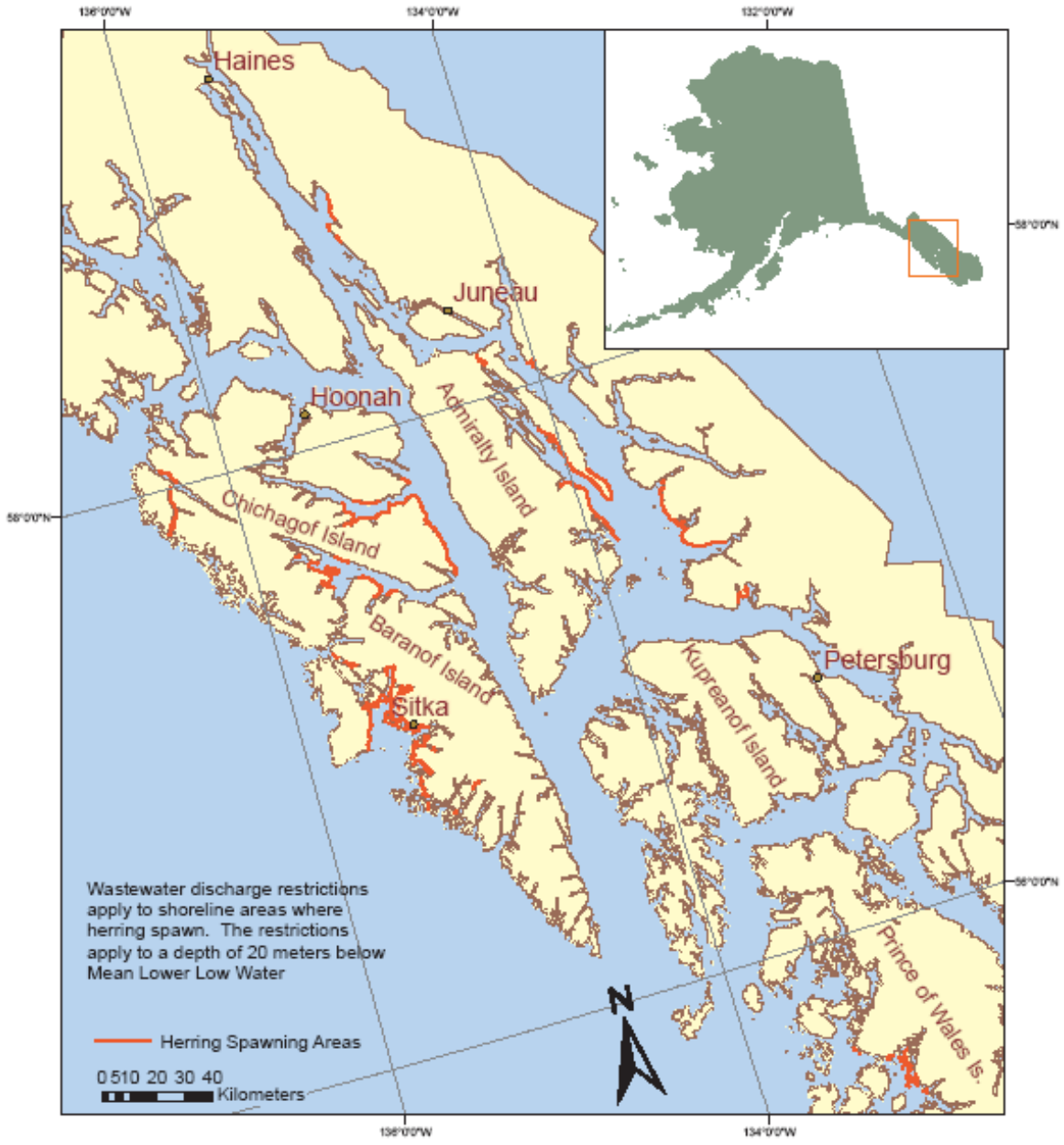
Tanner Crab larvae are strong swimmers and perform diel vertical migrations in the water column (down at night). They usually stay near the depth of the chlorophyll maximum during the day. The length of time larvae take to develop is unknown, although it has been estimated at only 12 to 14 days. After settling to the bottom, Tanner crabs are widely distributed at depths up to 473 meters. Females are known to form high density mating aggregations consisting of hundreds of crabs per mound at depths less than 30 meters. The mounds likely form in the same general location each year, but the location of the mounds is largely undocumented. They form the basis of a thriving domestic fishery from Southeastern Alaska north through the Bering Sea. The peak hatching period for tanner crabs is usually between April and June.

Pacific Weathervane scallops are found on sand, gravel, and rock bottoms from 45-180 meters throughout Southeast Alaska. Sexually maturity occurs at age 3 or 4 and scallops are of commercially harvestable size at 6 to 8 years. Scallops are found in beds (areas of abundant numbers). Scallops are dioecious and they spawn in June and July where the spermatozoa and ova are released into the water. Around one month later, hatching occurs and the larvae drift with the tides and currents. After two or three weeks the larvae will have gained shell weight, settled to the bottom, and attached to seaweed. Scallops may live to age 18 and they feed by filtering microscopic plankton from the water. They have been commercially harvested throughout Alaska on a sporadic basis due to overharvesting of scallop beds, more lucrative fisheries, and market conditions.

Bay scallops occur shallower than weathervane scallops (15-60 meters). They are more easily collected by divers and are frequently harvested in this manner. They are more vulnerable to oil exposure than weathervane scallps as adults.

Herring Spawning Areas
Northern Southeast Alaska

Alaska Department of Environmental Conservation, November 2005

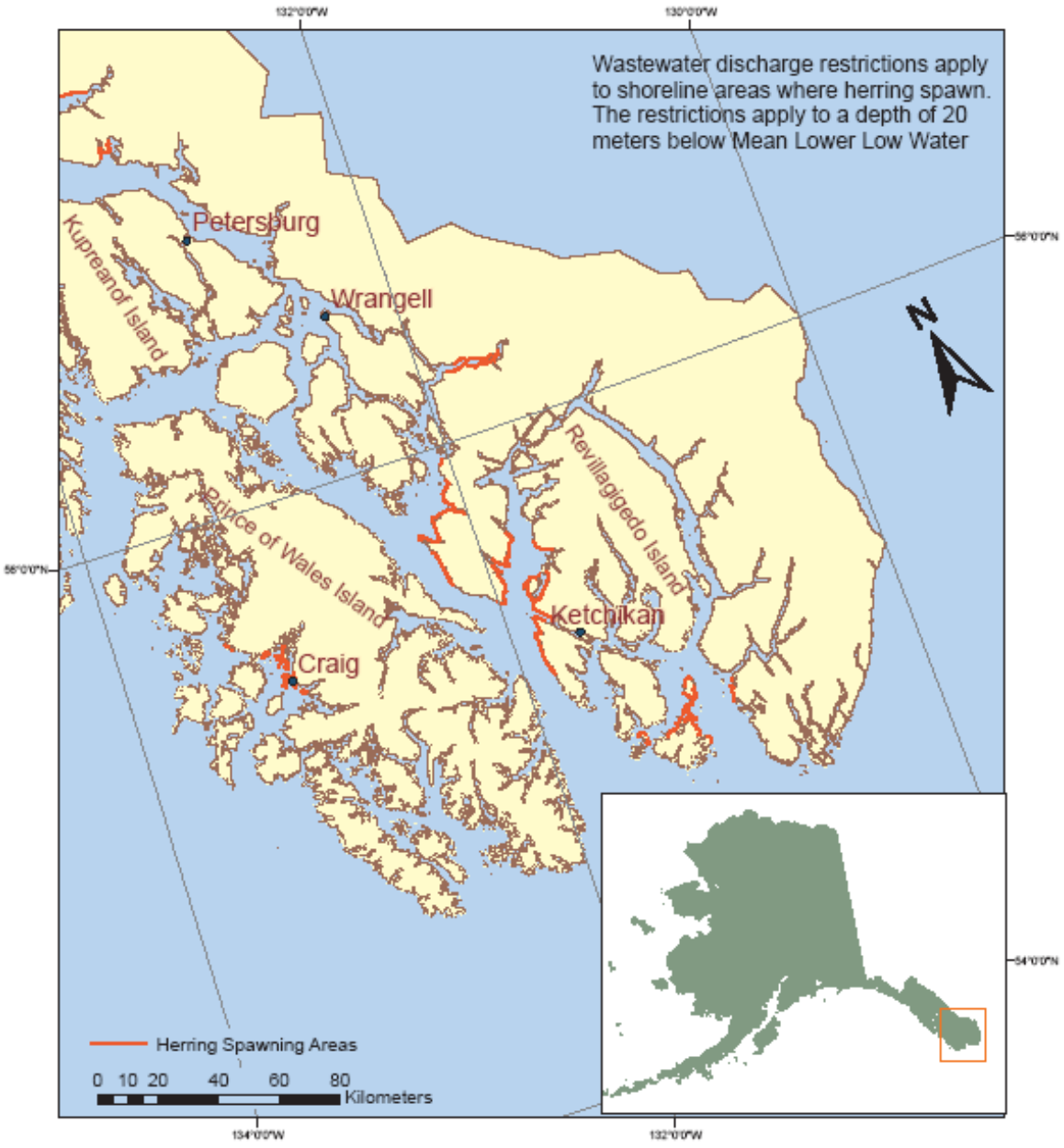


Not for Navigational purposes, map for identification of the herring spawning areas only

Data source: Alaska Department of Fish and Game, Commercial Fisheries Division

Herring Spawning Areas
Southern Southeast Alaska

Alaska Department of Environmental Conservation, November 2005



Not for Navigational purposes, map for identification of the herring spawning areas only

Data source: Alaska Department of Fish and Game, Commercial Fisheries Division

Shrimp. Pandalid shrimp (northern pink shrimp, humpy/flexed shrimp, coonstripe shrimp, spot shrimp and sidestripe/giant red shrimp) are distributed throughout most major bays and certain nearshore and offshore areas in Southeast Alaska. Coonstripes and spot shrimp are generally associated with rock piles, coral, and debris-covered bottoms, whereas pinks, sidestripes, and humpies typically occur over muddy bottom. Pink shrimp occur over the widest depth range (18-1500 meters). Humpies and coonstripes usually inhabit shallower waters (5-370 meters). Spot shrimp seem to be caught in the greatest concentrations around 110 meters, but range from 3 to 460 meters. Sidestripes are typically found from 45 to 640 meters, but most concentrations occur in waters deeper than 73 meters. Most shrimp migrate seasonally from deep to shallow waters. The major pot shrimp fisheries occur in Cook Inlet, Prince William Sound, and Southeast Alaska and usually total less than 500,000 pounds annually. Spot shrimp are the primary species caught in the waters of Southeast Alaska.

Clams Razor clams are filter feeders subsisting on plankton. They live in surf-swept and somewhat protected sand beaches of the open ocean throughout Southeast Alaska. They are found from approximately 1 meter above the mean low water level down to depths of 55 meters. Pacific little neck clams are commercially harvested throughout Southeast Alaska.

Blue mussels are found throughout the Southeastern Alaska and are found through the intertidal zone up to a depth of five meters densely packed around rock, wood, or other solid structure.

(b) Birds

Important Bird Habitats/Communities

Large numbers of waterfowl, seabirds and shorebirds are present during the spring and fall migrations. The Stikine and Mendenhall river deltas and Yakutat and Bering Glacier forelands areas are particularly important staging areas. Many birds also breed in the region during the summer and a large duck population overwinters in sheltered areas. Major seabird breeding colonies are located on St. Lazaria, Forrester and Hazy Islands. Smaller colonies are also present throughout the region. Recent surveys have also been completed by the Fish and Wildlife Service for marbeled and Kittlitz's murrelets and wintering water birds in Southeast.

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 Southeast Alaska are summarized from the catalog. The maps display colony locations. The Alaska Seabird Colony Catalog is maintained by the U.S. Fish and Wildlife Service, Division of Migratory Bird Management. The database may be accesed at:
http://alaska.fws.gov/mbsp/mbm/northpacificseabirds/colonies/default.htm

Important Bird Species/Groups

Common Birds: Many of the Southeast's birds are water birds. Some are year-round residents, and many more species pass through the area during spring and fall migration periods. Some northern breeding seaducks spend the winter in Southeast Alaska. In May, large concentrations of seabirds feed on the dense concentrations of prey fish and shorebird flocks feed on invertebrates in coatal mudflats and marshes. Nesting of the Southeast's birds occurs in a wide variety of habitats: cliffs, gravel bars in streams, peatland bogs, hollows in dead trees, rockpiles, burrows, trees and at the base of tree trunks, or marsh grasses along the edges of lakes. An Alaskan bird list may be found at:

http://www.npwrc.usgs.gov/resource/othrdata/chekbird/r7/alaska.htm

A Juneau bird checklist may be found at:
http://www.npwrc.usgs.gov/resource/othrdata/chekbird/r7/juneau.htm

A checklist for Glacier Bay National Park and Preserve is available at:
http://www.nps.gov/glba/InDepth/learn/about/nature/animals/bird_list.pdf

Waterfowl. Spring and fall concentration areas for waterfowl include the Blacksand Island and Situk River tial flat areas, Dry Bay, Chilkat Inlet, Mendenhall Wetlands State Game Refuge, Stikine River Flats, and Buroughs Bay. Winter residents and migrants include common loon, yellow-billed loon, Pacific loon, red-throated loon, horned grebe, red-necked grebe, western grebe, and pelagic cormorant. Wintering seaducks include Barrow's and common goldeneye, harlequin duck, long-tailed duck, white-winged scoter, surf scoter, and black scoter. Large flocks of non-breeding scoters reside in coastal waters all summer. Harlequin ducks are the only seaduck that nests in Southeast Alaska. Nesting waterfowl are Vancouver Canada geese (that also winter in the subarea), mallard, and common and red-breasted merganser. Green-winged and blue-winged teal may nest in the extensive freshwater wetlands in the Yakutat area.

Seabirds. Common gull and gull-like birds include the glaucous-winged, mew, herring, and Thayer's and Boneparte's gulls, black-legged kittiwake, Arctic tern and forked-tailed and Leach's storm petrel. Aleutian tern and the caspian tern are less commonly found. Common murre, pigeon guillemot, Cassin's and rhinocerous auklets, horned and tufted puffins, and marbled and Kittlitz's murrelets are also found along the coast.

Shorebirds-Southeastern Alaska's shorelines provide a varied assortment of invertebrates for shorebirds to feed on. Shorebirds present, particularly during migration periods, include black oystercatcher; black and ruddy turnstones; dunlin; western, rock, least and pectoral sandpipers; surfbird; black-bellied and semipalmated plover; red knot; greater and lesser yellowlegs; spotted sandpiper; common snipe; and long and short-billed dowitchers. Spring migratory species include: Hudsonian and marbled godwit and whimbrel. Great blue herons reach the northern limit of their breeding range in southern Southeast Alaska.

Passerines. The upland mosaic of Southeast Alaska habitats provide nesting, resting and feeding areas for a variety of birds. Species most closely associated with coastal areas include the rufous hummingbird, belted kingfisher, violet-green swallow, tree swallow, common raven, northwestern crow, American dipper, winter wren, yellow warbler, Wilson's warbler, savannah sparrow, fox sparrow, Lincoln's sparrow, and song sparrow. Sandhill cranes regularly pass through the subarea during migration, using Mendenhall Wetlands Refuge, for example, and Sandhill cranes use the Stikine Flats as a stopover during fall migration (they are usually present from mid-September through early October).

Raptors known to inhabit Southeast Alaska coastal areas include bald eagle, northern harrier, and osprey. Less common are short-eared owl, merlin, gyrfalcon and Peale's peregrine falcon. Although Alaskan bald and golden eagles are not on the endangered species list, they are fully protected (including their nests and nest trees) under the Bald Eagle Protection Act of 1940 and the Migratory Bird Treaty Act of 1918 as amended. Spill response activities that could affect these species should be coordinated with the U.S. Fish and Wildlife Service.

A large population of bald eagles nest along the coastal areas during spring and summer and many are year-round residents. Concentrations of bald eagles are commonly found in association with major spawning events by species including salmon, herring and eulachon. The largest eagle concentrations are found near Haines, along the Chilkat River from September through January, and along the lower Stikine River from April through early May.

(c) Marine Mammals

The Marine Mammal Protection Act of 1972 affords protections to all marine mammals. Any oil spill response activities that could affect marine mammals should be coordinated with the National Marine Fisheries Service or the U.S. Fish and Wildlife Service. Marine mammals that occur in Southeast Alaska and under the jurisdiction of the National Marine Fisheries Service are: harbor seal, elephant seal, Steller sea lion, California sea lion, Northern fur seal, humpback whale, gray whale, killer whale, sei whale, sperm whale, beluga whale, Cuvier's beaked whale, harbor porpoise, Dall's porpoise, and Pacific white-sided dolphin. The Northern sea otter is the one marine mammal in Southeast Alaska that is under the jurisdiction of the U.S. Fish and Wildlife Service.

The harbor seal, Steller sea lion, Northern sea otter, humpback whale, Dall's porpoise, harbor porpoise, and killer whale are present in Southeast Alaska waters year around. Sperm whales are probably in Southeast Alaska waters year around as well. Their numbers are highest on the outer coast of Southeast Alaska and in Chatham Strait during the summer months. Several species of baleen whale, including the gray whale, migrate through Southeast Alaska in the spring, summer, and fall on their way to and from feeding areas. Dense aggregations of humpback whales are present in Southeast Alaska from March-December, with smaller numbers present in January and February.

Humpback Whales are the large whales most frequently observed swimming or feeding close to shore along the coast in Southeast Alaska (see map). Nearly 3-5,000 humpback whales can be found in Southeast Alaska, with higher numbers occurring between March-December. Although very few humpback whales skip annual winter migration, humpback whales are present in Southeast Alaska year around. The year around presence of humpback whales in Southeast Alaska is due to whales leaving late to migrate to the breeding grounds overlapping with whales returning early to Alaska from the breeding grounds. Winter aggregations of humpback whales in Southeast Alaska are related to the availability of krill and herring.

In Southeast Alaska humpback whales primarily feed on krill. Fish such as herring, capelin, and sandlance are also important. To a lesser extent, other zooplankton, salmon fry, and juvenile pollock are part of their diet. See the following distributrion map based on Southeast Alaska Humpback Whale distribution from boat-based surveys, 2004-2009. This map was compiled by the National Park Service using data collected from 2004 through 2009. The data used are not corrected for survey effort, but the map does provide a relatively accurate picture of humpback whale hotspots in Southeast Alaska.

Gray Whales feed predominately on infaunal invertebrates. They appear to feed by lying on their sides and suctioning sediment from the sea floor, which they then filter for invertebrates. Gray whales are known to feed on herring eggs in Southeast Alaska. The eastern North Pacific population of gray whale has been delisted, but the western North Pacific population is still listed as endangered under the Endangered Species Act.

Harbor Seals are found year around in Southeast Alaska in nearshore waters all the way out to the shelf break on the outer coast (see following maps). Harbor seals tend to concentrate in estuaries, protected

waters, and tidewater-glacier fjords. Habitats used for haulouts include cobble and sand beaches, tidal mud flats, offshore rocks and reefs, and ice when available. Harbor seals enter lakes and river on a seasonal basis.

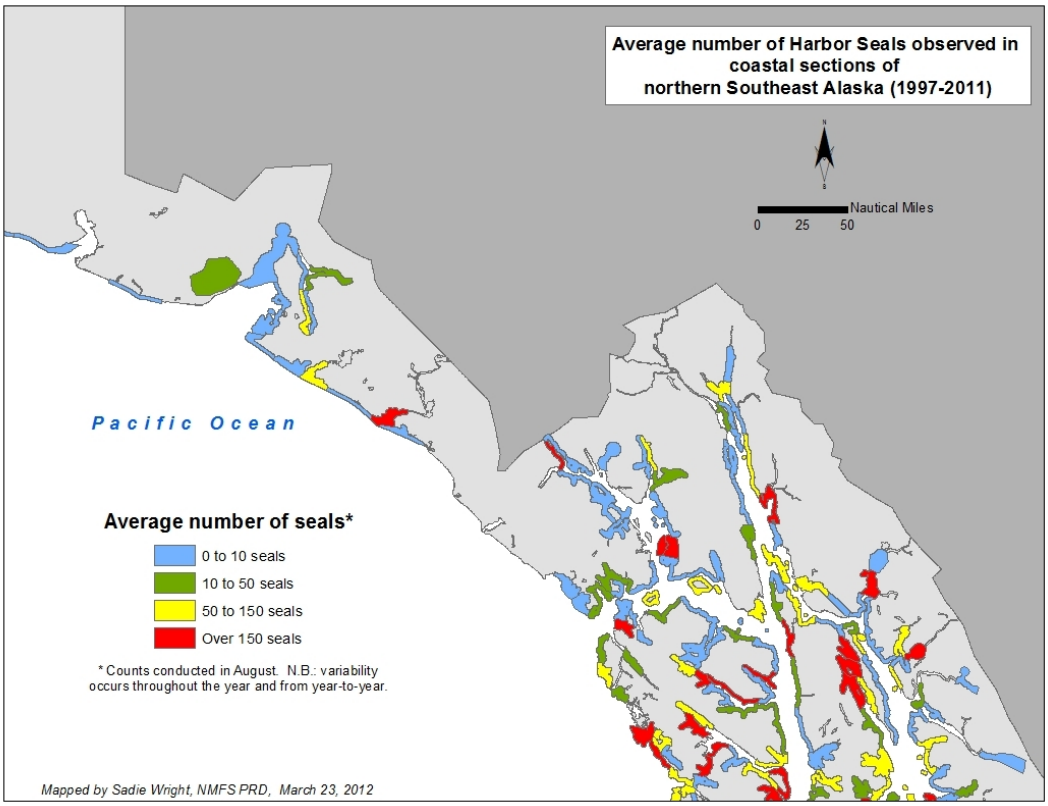
Harbor seal haulouts are used for pupping, molting and resting, and may be used year around; peak haulout use occurs during June through early October. Pupping occurs between late May and early July; most pups are born during the first three weeks of June, and pups nurse for about three weeks. Births of harbor seals are not restricted to a few major sites (as is the case for many other species of pinnipeds), but occur at many haulout sites. Some areas or particular haulout sites (e.g., glacial fjords) have disproportionately high numbers of pups, which may be especially vulnerable to the fouling effects of oil spills. The total Alaska harbor seal population is estimated at 150,000.

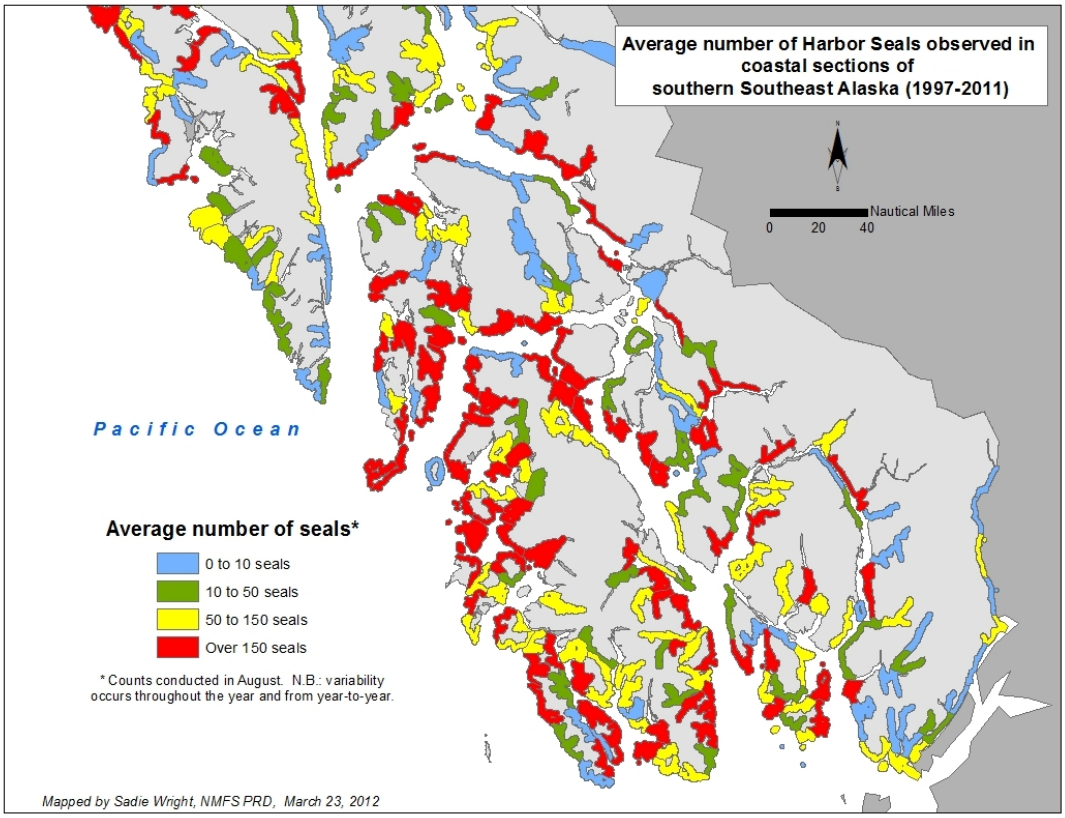
Sea Otters are generally found in shallow (< 40m), nearshore areas where they feed on bottom-dwelling invertebrates (see the following maps). Sea otters depend on their fur to thermoregulate since they lack an insulating layer of fat (blubber). Although perhaps as few as 2,000 total animals existed in 1911 due to over harvest, most of the sea otter habitat in Alaska has now been repopulated. The principal exception is Southeast Alaska where numbers are increasing rapidly. This is in part due to reintroduction of otters in the 1960's. See the following sea otter distribution map.

The Steller Sea Lion from both the threatened Eastern distinct population segment and the endangered Western distinct population segment occur in Southeast Alaska. The Eastern Distinct Population Segment is more common. Territorial breeding behavior occurs on the rookeries from May through August, and pupping occurs from late May to early July, with most pups born in June. Steller sea lions show a high fidelity to rookeries and often return to the same rookery to breed year after year. Major rookeries and haulouts are designated as critical habitat for this listed species. See the map at: http://www.fakr.noaa.gov/protectedresources/stellers/maps/se_ssl_ch.pdf

Seabird Colonies Map

http://www.asgdc.state.ak.us/maps/cplans/se/se35seabird.pdf


Average number of Harbor Seals observed in coastal sections of northern Southeast Alaska (1997-2011)
Nautical Miles
0 25 50
Pacific Ocean
Average number of seals*
0 to 10 seals
10 to 50 seals
50 to 150 seals
Over 150 seals
* Counts conducted in August. N.B.: variability occurs throughout the year and from year-to-year.
Mapped by Sadie Wright, NMFS PRD, March 23, 2012


Average number of Harbor Seals observed in coastal sections of southern Southeast Alaska (1997-2011)
Nautical Miles
0 20 40
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Over 150 seals
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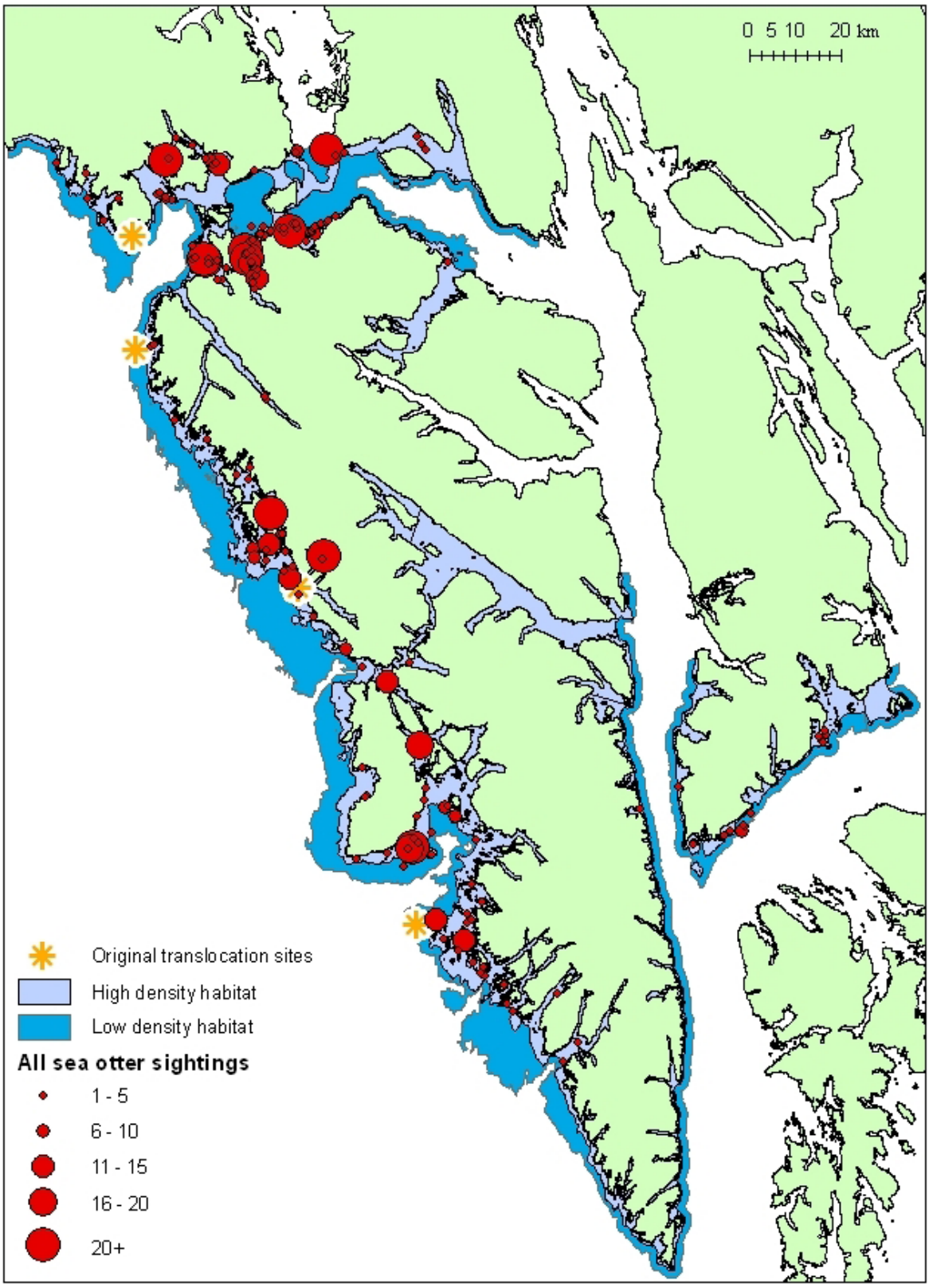
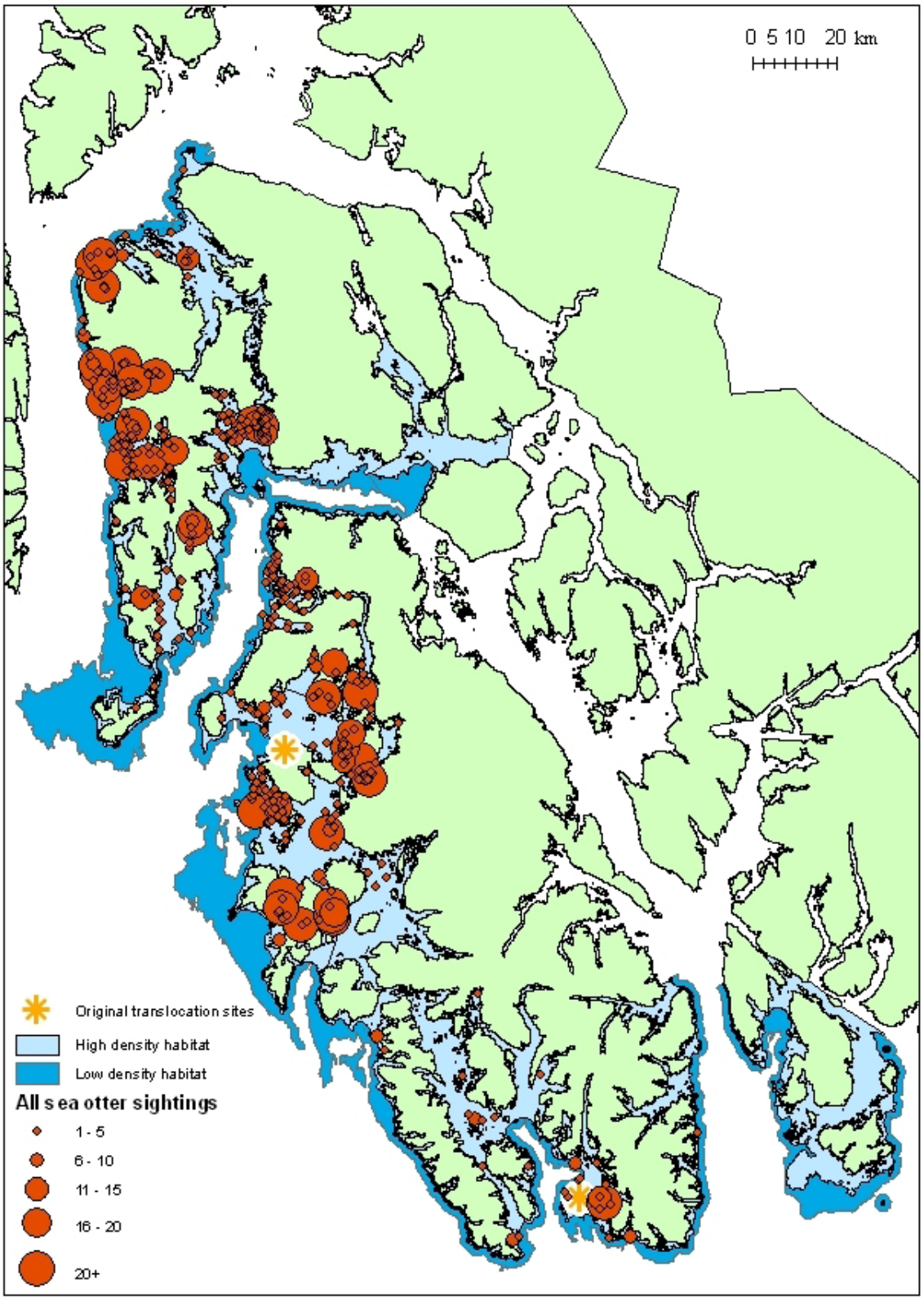
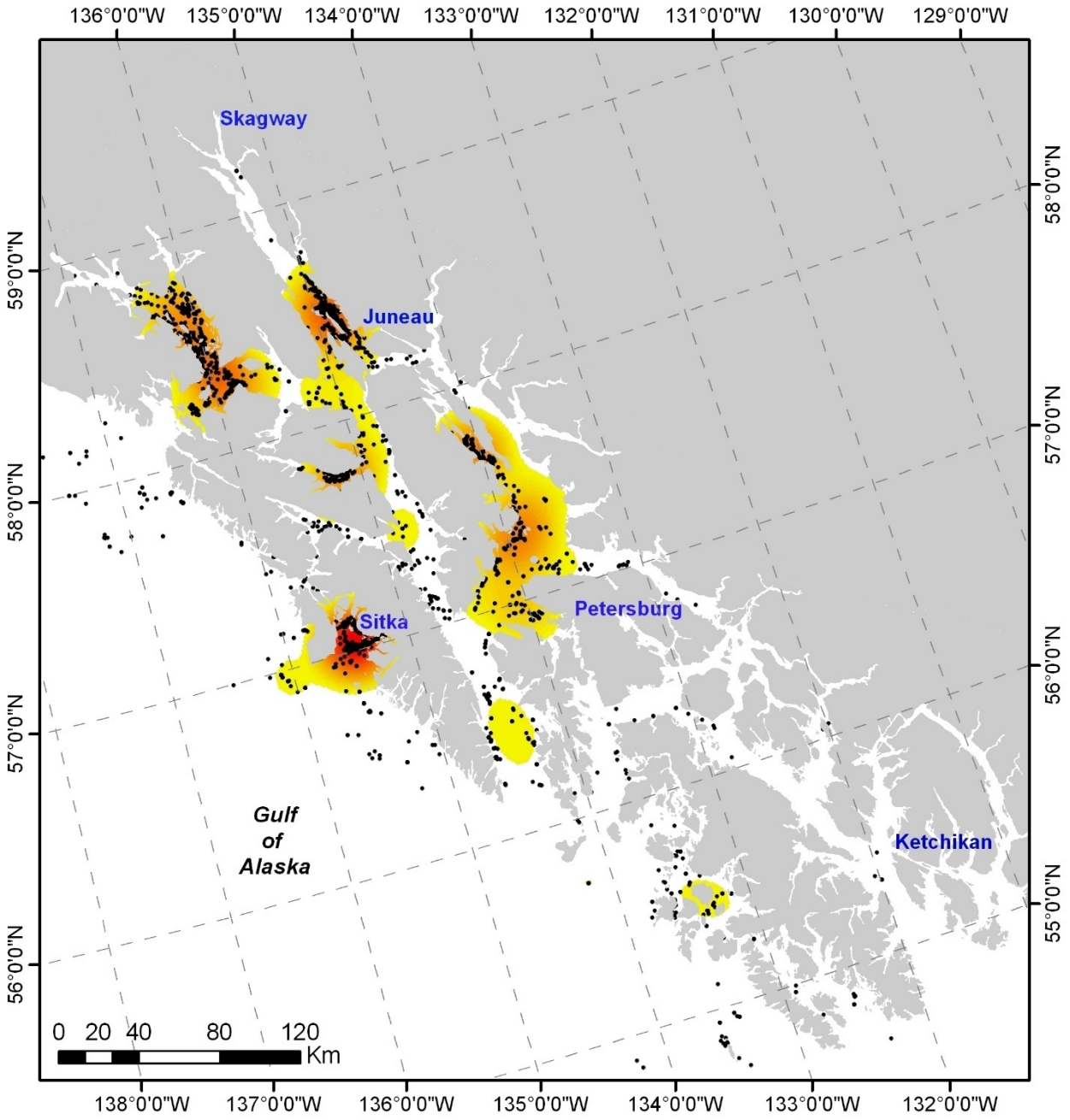
Sea Otters in Southeast Alaska—Map 1 of 2



Sea Otters in Southeast Alaska—Map 2 of 2



Humpback Whale Distribution, 2004-2009



(d) Terrestrial Mammals

Several species of terrestrial mammals are present. Brown and black bear, moose, Sitka black-tailed deer, wolves, mountain goats, river otter, mink and weasels are common in coastal areas. It should be noted that several of these mammals are transient through coastal areas (bear, deer, goats, wolves) on a daily basis, but their fleeting presence should not influence management decisions for oil spill response. These mammals may spend more time in coastal areas during winter months when forage becomes scarce at high elevations. River otter, mink and weasels are an exception to this general statement.

Sitka black-tailed deer is native to the coastal rain forests of Southeast Alaska. During summer, deer generally feed on herbaceous vegetation and the green leaves of shrubs and evergreen forbs and woody browse in the winter. During low snow years, evergreen forbs such as bunchberry and trailing bramble are preferred. During periods of deep snow, woody browse such as blueberry, yellow cedar and hemlock, and arboreal lichens are used. Also during heavy snow years, deer use the intertidal areas to feed on fucus and various macroalgae.

Roosevelt and Rocky Mountain Elk were successfully transplanted to Etolin Island near Petersburg in 1987. Sightings of elk have been documented on several adjacent islands.

Moose occur in habitats throughout much of the Southeastern Alaskan region, ranging from aquatic and riparian floodplains 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 where they feed on sedges, equisetum, pond weeds, and grasses. Important winter habitat includes shrub-dominated alpine and riparian areas, and forested areas. During fall and winter, moose consume large quantities of willow, birch, and aspen twigs. Calving occurs in mid May and early June, frequently in isolated marshy lowlands after a gestation of about 230 days.

Brown Bears occur throughout Southeastern Alaska except on the islands south of Frederick Sound. Bear concentrations may be found along rivers when spawning salmon are present. Brown bears consume a wide variety of foods including: berries, grasses, sedges, horsetails, cow parsnip, fish, ground squirrels, carrion, and roots of many kinds of plants. Brown bears enter dens beginning in late October, with most bears denned by mid December. Bears emerge from their dens as early as mid March, depending on weather conditions. Brown bears visit tidal flats from mid-late April through late June to graze on the grass and sedge communities. Use of intertidal areas decreases during mid-summer, although individuals will visit to dig clams or scavenge beached carcasses. Once the salmon return to streams in August, bears concentrate along the streams near tidewater to feed. Brown bears will stay near salmon streams until the runs play out, sometimes into October. Brown bear spring concentration areas include the Blacksand Spit near Situk, on Bear Island around Dry Bay, by the Chilkat and Lutak Inlet, Dry Strait, Stikine River, Pack Creek and the Stan Price State Wildlife Sanctuary, and Grant Creek. Brown Bear concentrations along fish streams include the Chilkat River, Stikine River, Situk River, Pack Creek, Unuk River, Klahini River and dozens of smaller rivers and streams throughout their range.

Black Bears -In Southeast Alaska, black bears occupy most islands with the exceptions of Admiralty, Baranof, Chichagof, and Kruzof. These are inhabited by brown bears. Both species occur on the southeastern mainland. The black bear is omnivorous, and consume freshly sprouted green vegetation, carrion, fresh kills of young moose and deer, and berries. Black bears have similar concentration areas as mentioned above for brown bears.

Furbearers- Beavers, coyotes, red foxes, lynx, marten, mink, muskrats, land otters and wolverines are all present in the Southeastern Alaska. Historical information on population status is mostly anecdotal. Sealing monitors harvests of beavers, lynx, land otters and wolverines. Lynx, wolverines, and coyotes are relatively scarce in the area.

In the Southeastern Alaska area, beaver, mink, and river otter are common inhabitants of aquatic and riparian floodplain and wetland areas, including marshes, ponds, lakes, streams, and rivers. Mink are considered to be common to abundant throughout the subarea. They prey on a variety of animals and feed on anything they can capture and kill. They are adapted to capture aquatic and terrestrial prey including mammals, fish, birds, amphibians, crustaceans, and insects. Fish are their main food item. Diet of the river otters consist of fish, crustaceans, amphibians, insects, birds, and mammals.

Wolves and Foxes are found throughout Southeastern Alaska, including the major islands where deer would be adequate prey. Wolves are carnivores, and in most of mainland Alaska moose and/or caribou are their primary food, with Dall sheep being important in limited areas. In Southeast Alaska, Sitka black-tailed deer, mountain goats, beaver, and fish are the most important sources of food. During summer, small mammals including voles, snowshoe hares, beaver, and occasionally birds are supplements in the diet. Wolves and foxes select den sites where unfrozen, well-drained soils occur (e.g., dunes, river banks, and moraines). Wolves may initiate den construction in mid-April with pups being born from mid May through early June. Dens may be occupied until August. Red foxes have a reproductive pattern similar to that of wolves.

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 Southeast Alaska Subarea

Global Rank	State Rank	Scientific Name	Common Name
G1	S1	*Botrychium sp 1*	
G1G2Q	S1	*Isoetes truncata*	Truncate quillwort
G2G3	S2	*Polystichum setigerum*	Alaska holly fern
G3	S1	*Cirsium edule*	Edible thistle
G3	S1	*Ligusticum calderi*	Calder's lovage
G3	S1S2	*Glyceria leptostachya*	Slim-head manna grass
G3	S2	*Phyllospadix serrulatus*	Serrulate surf-grass
G3	S2	*Poa laxiflora*	Loose-flowered bluegrass
G3	S2	*Senecio moresbiensis*	
G3	S2S3	*Phacelia mollis*	Coffee creek scorpion-weed
G3	S3	*Draba ruaxes*	Ranier whitlow-grass
G3	S3	*Romanzoffia unalaschensis*	Alaska mistmaiden
G3	S3	*Thlaspi arcticum*	Arctic pennycress
G3	S2	*Botrychium ascendens*	Upward-lobed moonwort
G3G4	S3	*Platanthera chorisiana*	Choriso bog-orchid
G4	S1	*Polystichum kruckebergii*	
G4	S1S2	*Phyllodoce empetriformis*	Pink mountain-heath

Rare Plants Known from the Southeast Alaska Subarea

Global Rank	State Rank	Scientific Name	Common Name
G4	S2	*Eleocharis kamtschatica*	Kamchatka spike-rush
G4	S2	*Galium kamtschaticum*	Boreal bedstraw
G4	S2	*Taxus brevifolia*	Pacific yew
G4	S2S3	*Malaxis paludosa*	Bog adder's-mouth
G4	S3	*Abies amabilis*	Pacific silver fir
G4	S3	*Asplenium viride*	
G4	S3S4	*Draba lacteal*	Milky whitlow-grass
G4	S4	*Euphrasia mollis*	Subalpine eyebright
G4	S1	*Hymenophyllum wrightii*	Wright's filmy fern
G4	S2S4	*Castilleja parviflora*	Small-flowered indian-paintbrush
G4G5	S1	*Cypripedium montanum*	Mountain lady's-slipper
G4G5	S1	*Scirpus subterminalis*	Water bulrush
G4G5	S1S2	*Isoetes occidentalis*	
G4G5	S2	*Lonicera involucrate*	Fly honeysuckle
G4G5	S4	*Cassiope lycopodioides*	Clubmoss bell-heather
G4Q	S3	*Pedicularis macrodonta*	Muskeg lousewort
G4T2T3	S2S3	*Stellaria ruscifolia ssp aleutica*	
G5	S1	*Arnica mollis*	Hairy arnica
G5	S1	*Campanula scouleri*	Scouler's bell-flower
G5	S1	*Carex bebbii*	Bebb's sedge
G5	S1	*Carex interior*	Inland sedge
G5	S1	*Carex praegracilis*	Clustered field sedge
G5	S1	*Dulichium arundinaceum*	Three-way sedge
G5	S1	*Lactuca biennis*	Tall blue lettuce
G5	S1	*Listera convallarioides*	Broad-leaved twayblade
G5	S1	*Melica subulata*	Alaska onion grass
G5	S1	*Polygonum minimum*	Leafy dwarf Knotweed
G5	S1	*Rorippa curvisiliqua*	Curve-pod yellowcress
G5	S1	*Salix prolixa*	MacKenzie willow
G5	S1	*Stachys emersonii*	
G5	S1S2	*Carex athrostachya*	Joint-spike sedge
G5	S2	*Agrostis thurberiana*	Thurber bentgrass
G5	S2	*Mimulus lewisii*	Lewis monkeyflower
G5	S2	*Minuartia biflora*	Mountain stitchwort
G5	S2	*Mitella nuda*	Naked bishop's-cap
G5	S2	*Mitella trifida*	Pacific bishop's-cap
G5	S2	*Phacelia sericea*	Silky scorpion-weed
G5	S2	*Poa leptocoma*	Bog bluegrass
G5	S2	*Salix hookeriana*	Hooker willow
G5	S2	*Spiraea douglasii*	Douglas spirea
G5	S2	*Vicia Americana*	American purple vetch
G5	S2S3	*Draba incerta*	Yellowstone whitlow-grass

Rare Plants Known from the Southeast Alaska Subarea

Global Rank	State Rank	Scientific Name	Common Name
G5	S2S3	*Phacelia franklinii*	Franklin's phacelia
G5	S2S3	*Physocarpus capitatus*	Pacific ninebark
G5	S3	*Crassula aquatica*	Water pygmy-weed
G5	S3	*Cystopteris Montana*	Mountain bladder fern
G5	S3	*Lycopodium inundatum*	
G5	S3	*Lycopus uniflorus*	Northern bugleweed
G5	S3	*Sedum oreganum*	Oregon stonecrop
G5	S3	*Zannichellia palustris*	Horned pondweed
G5	S3S4	*Malaxis monophyllos*	White adder's-mouth
G5	S4	*Primula eximia*	
G5	S4	*Stellaria crassifolia*	Fleshy stitchwort
G5	S4	*Woodsia glabella*	Smooth woodsia
G5	S1	*Sedum divergens*	Spreading stonecrop
G5	S2	*Platanthera orbiculata*	Large roundleaf orchid
G5	S3	*Viola selkirkii*	Great-spurred violet
G5T2	S1	*Salix reticulata ssp glabellicarpa*	Smooth-fruited netleaf
G5T2Q	S2	*Arnica lessingii ssp norbergii*	Norberg arnica
G5T2Q	S2	*Dodecatheon pulchellum ssp alaskanus*	Alaskan pretty shooting-star
G5T2T4	S2S4	*Gentianella propinqua ssp aleutica*	Aleutian four-parted gentian
G5T3Q	S3	*Carex lenticularis var dolia*	Goose-grass sedge
G5T4	S1S2	*Crataegus douglasii var douglasii*	
G5T5	S1	*Nymphaea odorata ssp odorata*	
G5T5	S1	*Poa douglasii ssp macrantha*	
G5T5	S1	*Salix planifolia ssp planifolia*	
G5T5	S1S2	*Geum aleppicum var strictum*	
G5T5	S2	*Betula papyrifera var commutata*	Western paper birch
G5T5	S2S3	*Cypripedium calceolus ssp parviflora*	Small yellow laddyslipper
G5T5	S3	*Glehnia littoralis ssp leiocarpa*	
G5T5Q	S2	*Glyceria striata ssp stricta*	Fowl manna-grass
G5T5Q	S2	*Symphoricarpos albus ssp laevigatus*	
GU	S2	*Platanthera gracilis*	Slender bog-orchid

Species Ranks used by The Alaska Natural Heritage Program:

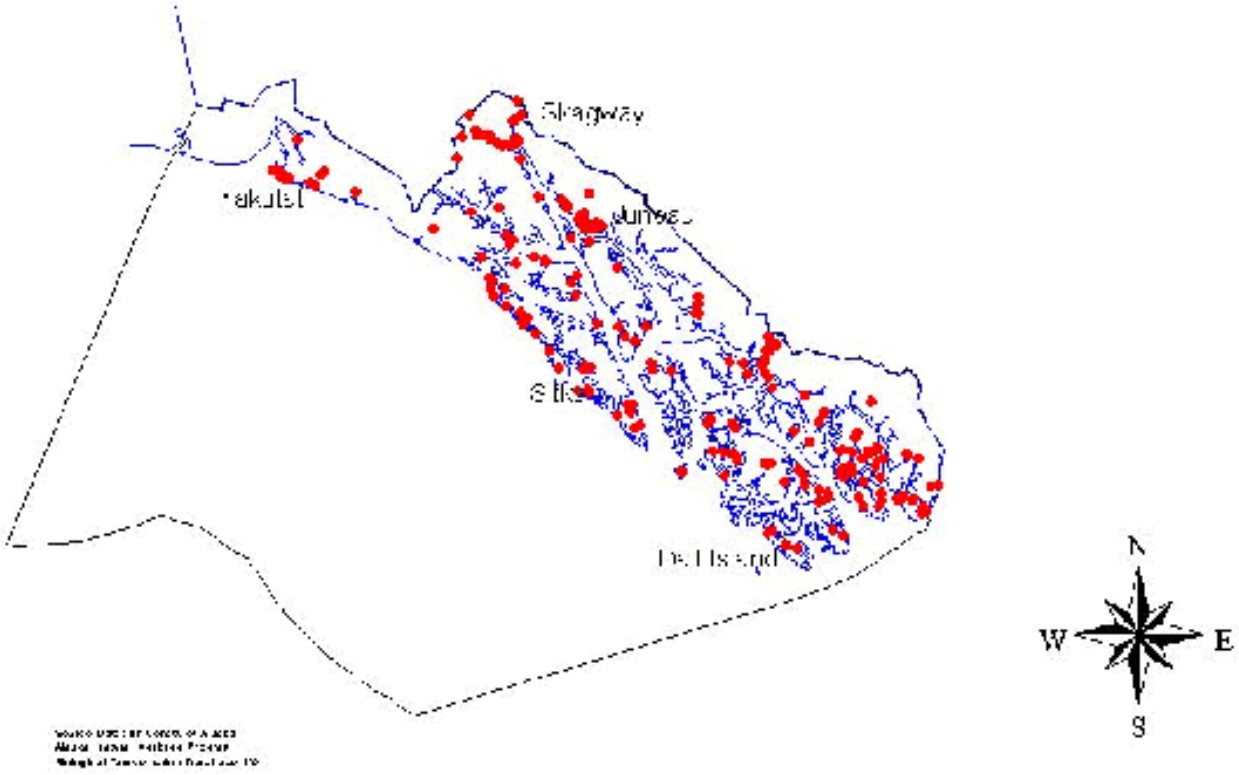
Species Global Rankings		Species State Rankings	
G1:	Critically imperiled globally. (typically 5 or fewer occurrences)	S1:	Critically imperiled in state. (usually 5 or fewer occurrences)
G2:	Imperiled globally. (6-20 occurrences)	S2:	Imperiled in state. (6-20 occurrences)
G3:	Rare or uncommon globally. (21-100 occurrences)	S3:	Rare or uncommon in state. (21-100 occurrences)
G4:	Apparently secure globally, but cause for long-term concern (usually more than 100 occurrences)	S4:	Apparently secure in state, but with cause for long-term (usually more than 100 occurrences)
G5:	Demonstrably secure globally.	S5:	Demonstrably secure in state.

Rare Plants Known from the Southeast Alaska Subarea

Global Rank	State Rank	Scientific Name	Common Name

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

Known Rare Plant Locations for the Southeast Alaska Subarea Contingency Plan



D. HUMAN USE RESOURCES

1. *Fish Hatcheries and Associated Ocean Net Pens*

There are currently 24 operating hatcheries in the Southeast Alaska Subarea. The species raised include trout and all five species of Pacific salmon. Hatcheries and their associated ocean net pen release sites are shown in the following tables and figures. Ocean net pens are located at:

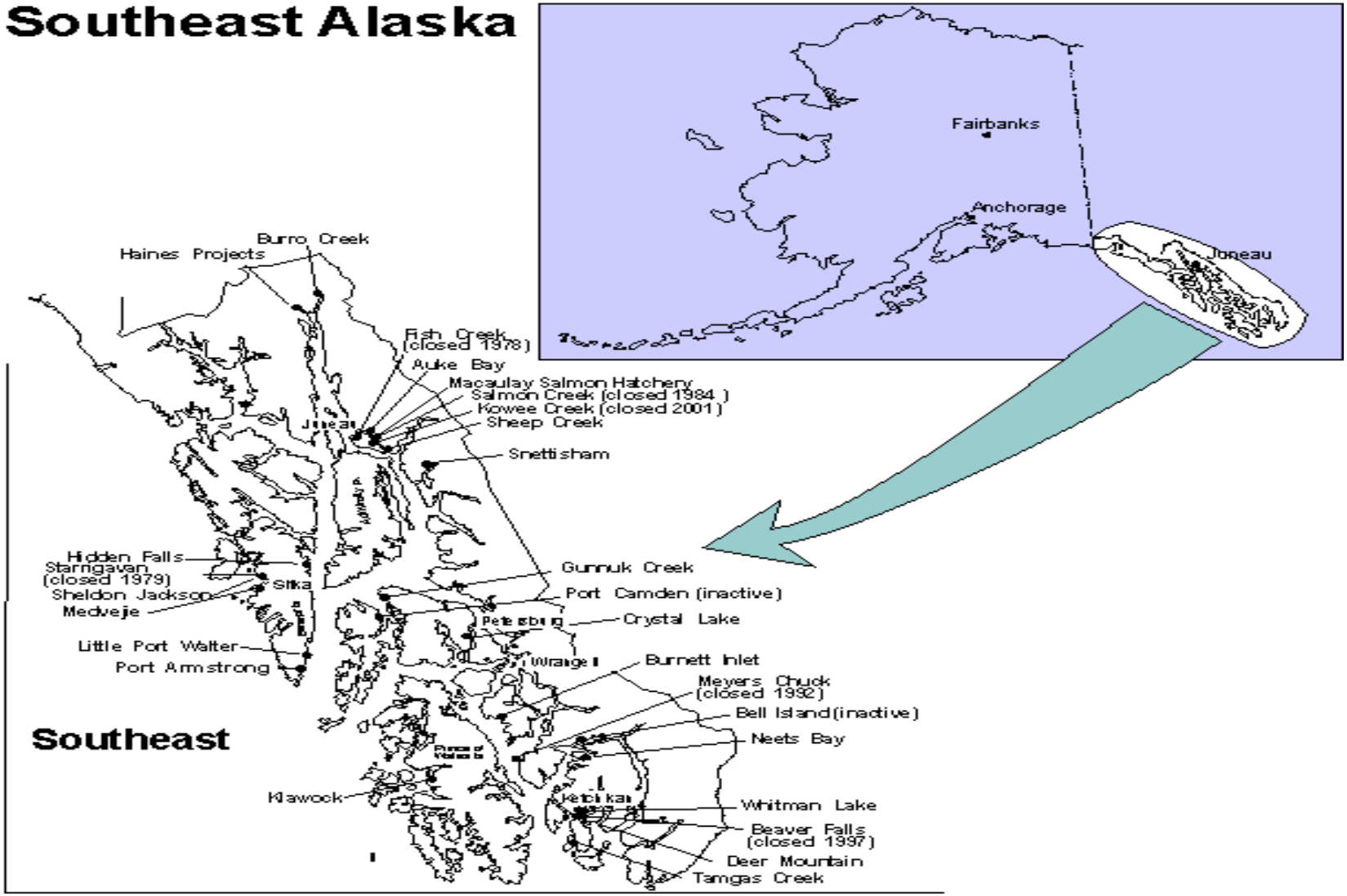
- Auke Bay
- Fritz Cove
- Gilbert Bay
- Etolin Island
- Shrimp Bay

The hatchery activities most vulnerable to spill injury include fry rearing and release at the hatcheries or associated ocean net pen sites, terminal harvests, and egg takes. However, since the timing of these activities varies by hatchery and species, it is difficult to generalize about what activity occurs, and when, although spring and summer tend to be the most critical times. Hatchery managers should be contacted for specific information. Contact numbers are listed in the following table. Additional information on hatcheries and ocean net pens may be obtained from the Alaska Department of Fish and Game.

Fish Hatcheries

Operator, Hatchery, City, Phone	Species
Southern Southeast Regional Aquaculture Association:	
Whitman Lake Hatchery, Ketchikan (225-2635)	chum, coho, chinook and sockeye
Beaver Falls Hatchery, Ketchikan (225-9605)	sockeye and coho
Neets Bay Hatchery, Ketchikan (247-8790)	chum, coho and chinook
Crystal Lake Hatchery, Petersburg, 772-4772	chinook, coho and steelhead
Burnett Inlet Hatchery, Wrangell (874-2250)	pink, chum, coho, and chinook
American Aquaculture Corp.:	
Bell Island Hatchery (not operational), Ketchikan, (214-363-2070)	chinook, coho, and steelhead trout
Ketchikan Tribal Hatchery Corp.:	
Deer Mountain Hatchery, Ketchikan, (225-6760)	chinook, Coho, steelhead, and rainbow trout
Prince of Wales Hatchery Association:	
Klawock River Hatchery, Craig (755-2231)	coho, sockeye, and steelhead
Northern Southeast Regional Aquaculture Association:	
Hidden Falls Hatchery, Sitka, (788-3215)	chum, coho and chinook
Medvejie Creek Hatchery, Sitka (747-5863)	chum, coho, pink, and chinook
Port Camden Hatchery (no longer operational) Kuiu Island (747-6850)	chum
Haines Hatchery, Haines (766-3110)	chum and sockeye
Sheldon Jackson College Aquaculture Program:	
Sheldon Jackson Hatchery, Sitka (747-5209)	pink, chum, coho, chinook and steelhead
Douglas Island Pink and Chum, Inc.:	
Snettisham Hatchery, Douglas (586-3838, dial 11 at the tone)	sockeye
Gastineau Channel Hatchery, Juneau (463-5113)	pink, chum, coho, and chinook
Kowee Creek Hatchery, Juneau (463-5113)	steelhead trout
Sheep Creek Hatchery, Juneau (586-3663)	pink, chum and coho
Kake Nonprofit Fisheries Corp.:	
Gunnuk Creek Hatchery, Kake (789-2964)	pink, chum and coho
Burro Creek Farms:	
Burro Creek Hatchery, Skagway (983-2355)	pink, chum, coho, and chinook
Armstrong-Keta, Inc.:	
Port Armstrong Hatchery, Sitka (568-2228)	pink, chum, coho, and chinook
National Marine Fisheries Service:	
Little Port Walter Research Station Sitka Borough (Marine Radio WRY8219) 723-4457	Chinook, coho, pink, and chum salmon; Dolly Varden char, and steelhead
Auke Creek Research Station, Juneau, 789-6064	Sokeye, coho, pink, and chum salmon; Dolly Varden char, cutthroat trout, and sculpin

Locations of Hatcheries in Southeast Alaska



2. *Aquaculture Sites*

Several aquatic farms are currently operating in Southeast. Most are growing oysters, although there is also interest in blue mussels, scallops, and kelp. The number of farms may increase. The locations of currently permitted farms are indicated on the following map and chart. Aquatic farms are vulnerable to spill injury on a year-round basis since the organisms are continuously submerged in the water column or are being held intertidally. The timing of the harvest varies. For more information contact the Alaska Department of Fish and Game or the Alaska Department of Natural Resources. For detailed maps of aquatic farms, go to the internet site at:
http://www.asgdc.state.ak.us/maps/cplans/subareas.html#southeast

3. *Historic Properties*

The subarea contains a multitude of known and unidentified archaeological and historic sites. These sites are not identified here, in order to protect them from scavenging. Oil spills and hazardous substance releases may result in direct and/or indirect impacts to those sites. On-Scene Coordinators are responsible for ensuring that response actions take the protection of historic properties into account and that the statutory requirements for protecting them are met. Annex M of the Unified Plan outlines Federal On-Scene Coordinator responsibilities for protecting historic properties 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 Harvests*

Subsistence-related uses of natural resources play an important role in the economy and culture of many communities in Southeast Alaska. 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 opportunities. In 1990, however, Federal agencies became responsible for assuring a Federal subsistence priority on Federal public lands, and in 1999 on Federal reserved waters. The Federal Subsistence Board adopts subsistence regulations that are administered by 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 regulating subsistence uses has increased. Therefore, in the event of a spill, more extensive coordination will be required in order to address subsistence resources. Regulations regarding subsistence harvest can also be expected to undergo regular modification. Current information on harvest regulations can be obtained from the Alaska Department of Fish and Game Subsistence Division or the U.S. Fish and Wildlife Service Office of Subsistence Management.

In the event of a spill, communication and coordination related to marine mammal species and subsistence harvest should occur through the existing co-management structure maintained between the National Marine Fisheries Service and various Alaska Native Organizations to cooperatively manage marine mammal subsistence resources in Alaska. Co-management agreements between the agency and these organizations set forth operational structures for the conservation and management of marine mammal populations, with the goal of maintaining population levels which allow for sustainable subsistence use by Alaska Natives, while carrying out the goals of the Marine Mammal Protection Act to maintain these populations as significant functioning elements of the ecosystem upon which they depend. This partnership and management structure relies on shared decision-making based on

consensus to promote the sustained health of marine mammals, and to promote scientific research, identify and resolve conflicts, and provide information to harvesters and the public. Alaska Native Organizations with species of concern in this sub-area plan are the Alaska Native Harbor Seal Commission, and The Sea Otter and Steller Sea Lion Commission.

The following charts showing seasonal rounds of activity, are included for several of the many rural subsistence-using communities in order to illustrate the species harvested and the times of year when harvesting occurs. This information can be used during a spill event in order to determine the communities threatened or impacted by the discharge, and the specific food sources at risk of contamination. Contacts for many potentially affected communities are identified in the Response Section, Part One.

Southeast Personal Use Harvest
Personal use harvests in Southeast Alaska may potentially* occur as follows:

Shrimp fishery	all year
Dungeness crab fishery	all year
Brown king crab fishery	all year
Red & blue king crab fishery	all year (west of Cape Spencer)
	July 1-March 31 (east of Cape Spencer)
Tanner crab fishery	all year
Clam fishery	all year
Abalone fishery	all year
Herring fishery	all year
Bottomfish fishery	all year
Halibut fishery	February 1-December 31
Smelt fishery	all year
Salmon fishery	all year (in most waters)

***NOTE:** All personal use fisheries occur under sport fishing regulations and may be opened or closed by emergency order, if Alaska Department of Fish and Game ascertains that conditions warrant such actions. Also, harvest regulations and seasons can change from year to year. The dates given above indicate periods when fisheries are commonly, but not always, open.

Yakutat Personal Use Harvest
Personal use harvests in the Yakutat region may potentially* occur as follows:

Shrimp fishery	all year
Dungeness crab fishery	all year
King crab fishery	all year
Tanner crab fishery	all year
Clam fishery	all year
Herring fishery	all year
Bottomfish fishery	all year
Halibut fishery	February 1-December 31
Smelt fishery	all year
Salmon set gill net fishery	July 1-September 30

***NOTE:** All personal use fisheries occur under sport fishing regulations and may be opened or closed by emergency order, if the Alaska Department of Fish and Game ascertains that conditions warrant such actions. Also, harvest regulations and seasons can change from year to year. The dates given above indicate periods when fisheries are commonly, but not always, open.

Aqua Farm Map

http://www.asgdc.state.ak.us/maps/cplans/se/se35aqua.pdf

Southeast Alaska Authorized Aquatic Farmsites
(Alaska Department of Natural Resources)

File Number	Customer Name Business Name	Address Phone	Acreage	Species	Mtrs* Lat/Long	Bay/Cove
105287	MUNHOVEN, DONALD	PO BOX 6335 KETCHIKAN AK 99901	2.78	OYSTERS	C067S083E15 560358-1323317	UNNAMED BAY/MOSMAN ISLAND
105303	NICHOLSON, DON CANOE LAGOON OYSTER COMPANY	PO BOX 18062 COFFMAN COVE AK 99918 907-329-2253	6.4	OYSTERS	C066S081E28 560750-1325329	CANOE LAGOON/FOOLS BAY, CLAM GULCH, WEST PASS
105308	PUGH, JR., JOHN KAHLI COVE SHELLFISH, LLC	BOX NKI #357 KETCHIKAN AK 99950 907-789-5866	4.22	OYSTERS	C068S079E31 559252-1332590	CANOE LAGOON AND FOOLS BAY
105899	LYLE, ALEXANDER EMILY ISLAND OYSTERS	BOX 1775 PETERSBURG AK 99833 907-772-4697	2.53	OYSTERS	C061S079E07 563543-1330807	LITTLE DUNCAN BAY
106146	MOTTET, MADELON SOUTHEAST ALASKA BIORESEARCH	704 SAWMILL CREEK SITKA AK 99835 907-747-3862	6	OYSTERS	C056S063E02 570240-1352200	WHITING HARBOR
106252	HENDERSON, TOM PEARL OF ALASKA	PO BOX 505 KAKE AK 99830 907-723-2469	13.8	OYSTERS	C058S074E34 567963-1337448	STEDMAN COVE
106258	BELK, DORIS J TOKEEN BAY SEAFOODS	PO BOX 358 CRAIG AK 99921 9078742687X2355	3.79	OYSTERS	C068S078E07 555911-1332445	UNNAMED BAY/MARBLE ISLAND
106571	LACROIX, STEPHAN SEA FARMS ALASKA/COHO COVE AQUAFARM	PO BOX 5686 KETCHIKAN AK 99901	6.48	GEODUCK	C 076S 092E 24 552721-1313680	COHO COVE
106572	ZAUGG, GARY PAC ALASKA/SOUTH SYKES AQUAFARM	519 PITTENGER ST KETCHIKAN AK 99901	7.5	GEODUCK	C 077S 095E 27 551662-1310840	SOUTH SYKES
106576	MORIN, KURTIS ALASKA SHELLFISH AQUACULTURE PROJECT/APE PT AQUAFA	PO BOX 619 WARD COVE AK 99928	4.8	GEODUCK	C076S094E26 552412-1310947	N OF APE PT.
106577	MORIN, KURTIS ALASKA SHELLFISH AQUACULTURE PROJECT/PT ALAVA	PO BOX 619 WARD COVE AK 99928	6.45	GEODUCK	C 077S 095E 07 552004-1311660	PORT ALAVA
106584	MUNHOVEN, DON ROCKY BAY OYSTERS/MOSEMAN INLET AQUAFARM	PO BOX 6335 KETCHIKAN AK 9990907-225-5328	7.53	OYSTERS	C067S083E03 560512-1323326	MOSMAN INLET
106834	MANNING, THOMAS KRESTOF CLAM COMPANY	622 HEMLOCK WAY JUNEAU AK 99801 907-463-3431	1	GEODUCK	C054S062E03 572106-1355426	KRESTOF SOUND

Southeast Alaska Authorized Aquatic Farmsites
(Alaska Department of Natural Resources)

File Number	Customer Name Business Name	Address Phone	Acreage	Species	Mtrs* Lat/Long	Bay/Cove
106835	MANNING, THOMAS KRESTOF CLAM COMPANY	622 HEMLOCK WAY JUNEAU AK 99801 907-463-3431	1	GEODUCK	C037S063E25 586360-1349478	BRIDGET COVE
106843	PUGH, JR., JOHN KAHLI COVE SHELLFISH LLC	BOX NKI #357 KETCHIKAN AK 99950 907-321-0844	2	LITTLENECK CLAMS	C068S078E36 559283-1332525	KAHLI COVE
106844	BAKKER, CORNELIUS	PO BOX 282 OLYMPIA WA 98507 360-791-2833	8.6	GEODUCK	C078S095E14 551004-1310555	SLATE ISLAND
106845	BAKKER, CORNELIUS	PO BOX 282 OLYMPIA WA 98507 360-866-7159	1	GEODUCK	C075S089E34 553284-1318637	GRAVINA ISLAND
106848	ZAUGG, GARY PAC ALASKA	519 PITTENGER ST KETCHIKAN AK 99901 907-225-5566	5.1	GEODUCK	C075S089E27 553319-1318635	GRAVINA ISLAND
106850	LACROIX, STEPHEN SEA FARMS ALASKA	PO BOX 5686 KETCHIKAN AK 99901	5.4	GEODUCK	C 075S 089E 34 553253-1318658	GRAVINA ISLAND
106991	WYATT, ERIC BLUE STARR ALASKAN OYSTERS	PO BOX NKI #441 KETCHIKAN AK 99950 907-594-6334	0.95	OYSTERS	C068S078E05 560019-1333797	TOKEEN BAY
106994	KING, ART NAUKAT WEST HOMEOWNERS ASSOC.	PO BOX NKI #1 KETCHIKAN AK 99950 907-629-4266	0.08	FLUPSY	C069S080E19 558695-1332160	TUXEKAN NARROWS
107001	LACROIX, STEPHEN SEA FARMS ALASKA	PO BOX 5686 KETCHIKAN AK 99901 907-247-5687	3.88	GEODUCK	C077S094E14 551936-1312150	PT ALAVA #1
107002	MORIN, KURT ALASKA SHELLFISH AQUACULTURE PROJECT	PO BOX 619 WARD COVE AK 99928 907-247-4865	3.5	GEODUCK	C076S092E23 552634-1313916	COHO COVE
107075	LACROIX, STEPHEN SEA FARMS LLC	PO BOX 5686 KETCHIKAN AK 99901 907-247-5687	4.71	GEODUCK	C077S094E14 551957-1312165	PT ALAVA #2
107077	LACROIX, STEPHEN SEA FARMS LLC	PO BOX 5686 KETCHIKAN AK 99901 907-247-5687	4.93	GEODUCK	C077S095E34 551527-1310812	BLACK ISLAND
107577	LYLE, ALEXANDER EMILY ISLAND OYSTERS	BOX 1775 PETERSBURG AK 99833 907-772-4697	.93	OYSTERS	C061S079E07 563543-1330807	LITTLE DUNCAN BAY

Southeast Alaska Authorized Aquatic Farmsites
(Alaska Department of Natural Resources)

File Number	Customer Name Business Name	Address Phone	Acreage	Species	Mtrs* Lat/Long	Bay/Cove
	TOTAL FILES:	26		*meridian, township, range, section		

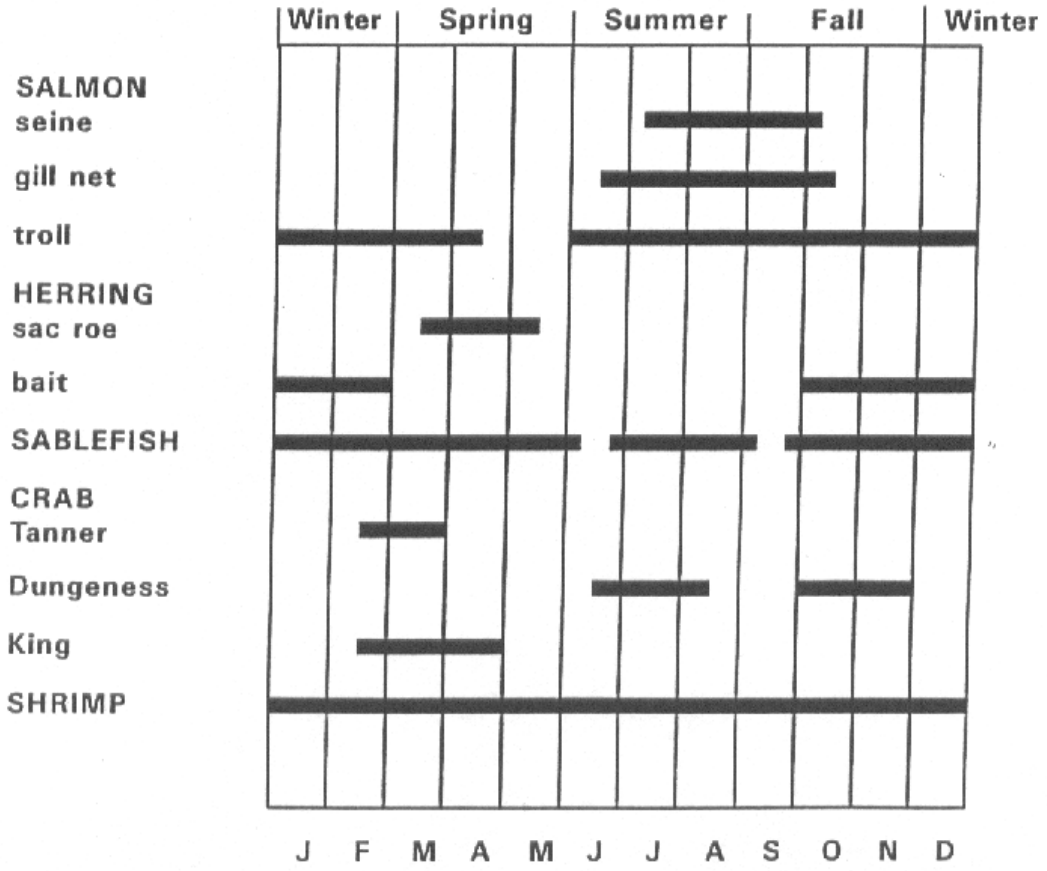
5. ***Commercial Fishing***

The following tables provide seasonal information on the major commercial fisheries in the subarea. It must be remembered, however, that all fishing seasons are subject to emergency openings and closures. Most seasons are only open for a portion of the seasons specified in the regulations. Also, fishing regulations and seasons can change from year to year. Specific information on which species are currently being harvested may be obtained from the Alaska Department of Fish and Game Division of Commercial Fisheries. As fishing periods are adjusted yearly by emergency openings and closures, contact Alaska Department of Fish & Game for current fishing periods. Updated information may be found at their Commercial Fisheries web site:
http://www.adfg.alaska.gov/index.cfm?adfg=fishingCommercial.main

Salmon are the most important commercial species in the subarea, with pink salmon comprising the majority of the catch. Other profitable fisheries target herring; sablefish; Tanner, Dungeness and brown king crab; shrimp; and sea cucumbers.

COMMERCIAL FISHING SEASONS

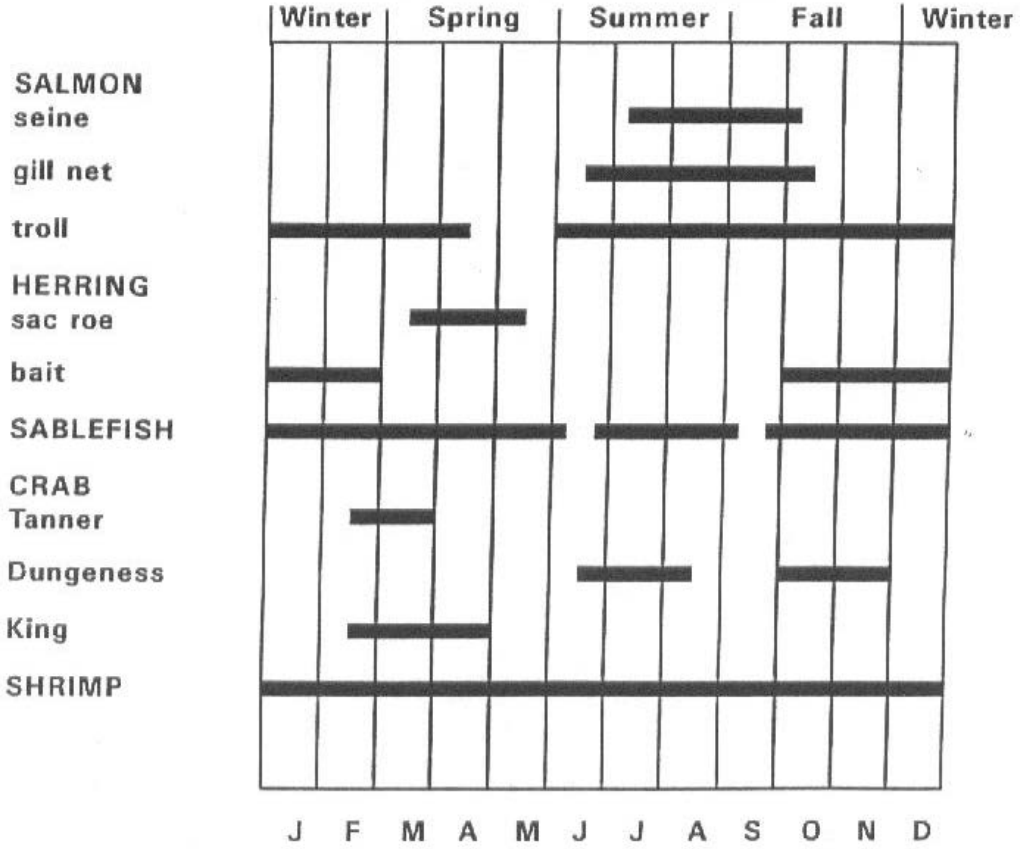
SOUTHEAST ALASKA



Times are approximate

COMMERCIAL FISHING SEASONS

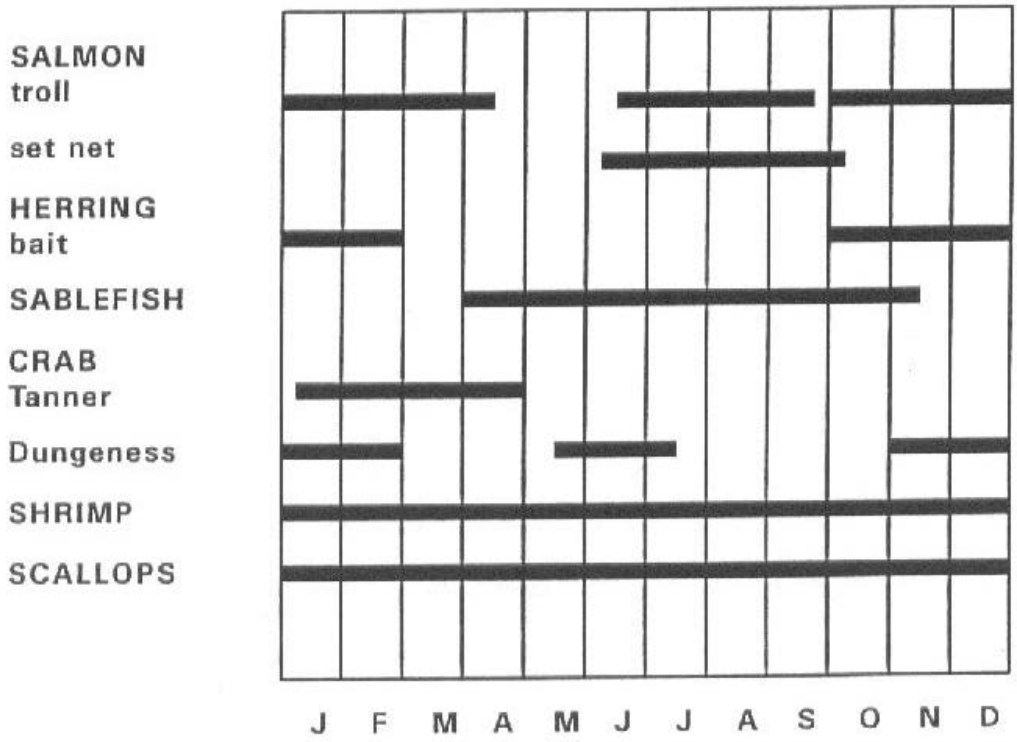
SOUTHEAST ALASKA



Times are approximate

COMMERCIAL FISHING SEASONS

YAKUTAT AREA



Times are approximate

6. *Sport Fishing and Hunting*

Brown and black bears concentrate in coastal marshes from April to mid-June to feed on the newly emergent sedges and grasses. They are commonly hunted in these coastal areas during the spring hunting season, from mid-March to end of May. A high proportion of the bear hunts are by guided hunters. Oiled beaches could interfere with these guided hunts through general fouling of the coastline and possible impacts to bears from ingestion of oiled vegetation. Popular bear hunting areas also indicate areas with potential safety issues during response to an oil spill.

Sport fishing in marine waters occurs year-round for king salmon, Dolly Varden, rockfish, and shellfish. Sport fishing for halibut is closed during January. However, fishing pressure is greatest from May to October due to calmer waters, warmer weather conditions, and more abundant sport fish in nearshore waters. Contact the Alaska Department of Fish & 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*

(a) Parks, Picnic Areas, and Campgrounds

National Forests

Recreational sites and facilities found throughout southeast Alaska on the Tongass National Forest have been mapped on the forest's Geographic Information System. For a variety of recreation maps and information for the Tongass, see the web site at:
http://www.fs.fed.us/r10/tongass/recreation/recreation.shtml.

For information contact:

Forest Supervisor, Tongass National Forest, KTN	228-6281
Admiralty National Monument, Juneau	586-8790 or 790-7472
Craig Ranger District, Craig	826-3271 or 826-1600
Hoonah Ranger District, Hoonah	945-3631 or 945-1209
Juneau Ranger District, Juneau	586-8800 or 790-7443
Ketchikan-Misty Fiords Ranger District, KTN	225-2148 or 228-4100
Petersburg Ranger District, Petersburg	772-3871 or 772-5900
Sitka Ranger District, Sitka	747-4218
Thorne Bay Ranger District, Thorne Bay	828-3304 or 828-3210
Wrangell Ranger District, Wrangell	874-2323 or 874-7500
Yakutat Ranger District, Yakutat	784-3359

National Parks

Glacier Bay National Park and Preserve contact: Superintendent, Gustavus, 697-2230. High use recreation areas are noted below.

- **Upper West and East Arms of Glacier Bay**. Most popular destination for all park visitors, including cruise, tour, charter and private motorboats and kayaks.
- **Lower Glacier Bay, including Bartlett Cove and Berg Bay**. Popular for sportfishing and boating due to proximity to park headquarters at Bartlett Cove.
- **Beardslee Islands**. Second most popular destination for sea kayaks. Also popular for small motorboats.

- **Hugh Miller/Scidmore/Charpentier Inlets and Adams Inlet**. Popular destination for small boats, including kayaks.
- **Marble Islands**. Most popular tour and charter boat stop for watching seabirds.
- **Tour boat camper drop-off points**. The park designates three points where the day tour boat drops-off kayakers and campers up-bay. The sites are normally rotated after two years to allow site impacts to heal. the oil spill coordinator could get the current sites from the park.
- **Dundas Bay**. Most popular destination for small boats and kayaks outside Glacier Bay proper.
- **Dry Bay/Alsek River/East Alsek River**. Most use of Dry Bay is related to commercial fishing - a set gillnet fishery in the East and Alsek rivers and along the beach either side of the mouth of both rivers. A large number (1,000+) of rafters also float the Alsek River, which is tidally influenced for at least 5 miles from the mouth.

Wrangell-St. Elias National Park and Preserve contact: Superintendent, Glennallen, 822-5235.

Sitka National Historic Park contact: Superintendent, Sitka, 747-6281.

Klondike Gold Rush National Historic Park contact: Superintendent, Skagway, 983-2921.

State Parks

For an index map of the State Parks in the subarea (and for more detailed information of each park), go to the web link at: http://dnr.alaska.gov/parks/aspunits/soeastmappage.htm The following park units have significant ocean and beach frontage, and would be adversely affected by any oil or hazardous substance in the water:

Totem Bight State Historical Park, 12 acres, T74S, R90E, CRM. A small historic site with totems and a clan house that provides excellent roadside views of Tongass Narrows, located 12 miles north of Ketchikan on the highway.

Refuge Cove State Recreation Site, 13 acres, T74S, R90E, CRM. A small sandy beach area with heavy local community use, located about 10 miles north of downtown Ketchikan.

Settlers Cove State Recreation Site, 38 acres, T73S, R90E, CRM. A very popular sandy beach area for children and adults, located about 18 miles north of Ketchikan on the road system.

Petroglyph Beach State Historic Site, 7 acres, T62S, R83E, CRM. A small beach site with ancient petroglyphs in the sand, gravel and rocky shore, located within downtown Wrangell and often a destination for tours.

Halibut Point State Recreation Site, 22 acres, T65S, R63E, CRM. A small local community park with heavy use and extensive sandy and rocky beaches, within 5 miles of downtown Sitka.

Old Sitka State Historical Park, 264 acres, T65S, R63E, CRM. A boat launch and trail system are used extensively by locals and tourists, located within 10 miles of downtown Sitka.

Point Bridget State Park, 2800 acres, T37S, R63E, CRM. A large park with extensive beaches and rocky shores along Lynn Canal 39 miles north of Juneau on the road system. Two public cabins are available for use, and one is on the shoreline.

Chilkat State Park, 6,045 acres, T30, 31, 32S, R59,60E, CRM. A large peninsula 5 miles south of Haines on the road system with camping, boat launch and trails along rocky coast line with some beaches.

Eagle Beach State Recreation Area, 640 acres, T38 & 39S, R64E, CRM. A large estuarine system of beaches and rivers located 28 miles north of Juneau on the road system.

The following Marine Parks all have good anchorages, protected waters, and good landing beaches. All of the Marine Parks are to be included as a series of anchorages that stretch the full length of the Panhandle and connect with a similar system in British Columbia.

St. James Bay State Marine Park, 10,220 acres, T375 R62E CRM. This is a large bay with several islands, coves salmon streams, and an extensive area of tideflats. The bay supports a large population of shrimp and crab that are harvested commercially. There is also an associated harbor with only a narrow passage for entry. This harbor is the site of a large hatchery release of salmon. High use.

Sullivan Island State Marine Park, 2,163 acres, T34S R61E. This park is on the southern tip of Sullivan Island which has two important anchorages and several sandy beaches. Low use.

Chilkat Islands State Marine Park, 6,560 acres, T32S R60E. T33S R61E, This is a series of islands off the tip of the Chilkat Peninsula. Low use.

Magoun Islands State Marine Park, 1135 acres, T54S R62E CRM. This park is a group of tightly knit islands with many small coves and beaches west of Sitka. There is also one large lagoon that is only accessible by boat at high tides. This area is primarily used for fishing, clamming, and hunting. Moderate use.

Big Bear/Baby Bear State Marine Park, 1023 acres, T51S R61E CRM. This park is a series of protected islands and bays in Peril Straits north of Sitka. Good fishing and hunting. Moderate use.

Grindall Island State Marine Park, 484 acres, T47S R87E CRM. This park is an isolated island west of Ketchikan that has a public use cabin on it. The area is mainly used for diving fishing, and other intertidal activities. The southern tip of the island is an established sealion haulout. Moderate use.

Dall Bay State Marine Park, 585 acres, T77S, R91E, CRM. A bay providing sheltered anchorage on Gravina Island, about 20 miles south of Ketchikan.

Thom's Place State Marine Park, 1198 acres, T66S, R86E, CRM. A bay providing sheltered anchorage on Wrangell Island, about 20 miles south of Wrangell.

Beecher Pass State Marine Park, 660 acres, T72S, R74E, CRM. A group of islands along a sheltered portion of the inland passage about 25 miles south of Petersburg.

Joe Mace Island State Marine Park, 62 acres, T64S, R75E, CRM. A small island near the community of Point Baker, used for community recreation.

Security Bay State Marine Park, 500 acres, T58S, R70E, CRM. A large bay with protected anchorages off Chatham Strait on the north end of Kuiu Island.

Taku Harbor State Marine Park, 700 acres, T44S, R70E, CRM. A large protected bay with a state-maintained float for medium sized yachts up to 60 feet, located about 35 miles south of Juneau.

Oliver Inlet State Marine Park, 560 acres, T43S, R68E, CRM. A small lagoon bay at low tide levels with a public use cabin situated on the head end of Seymour Canal. A small tram on steel rails is available to transport gear about ½ mile to the cabin from Oliver Inlet. Located about 15 miles south of Juneau.

Funter Bay State Marine Park, 162 acres, T42S, R64E, CRM. A large protected bay on the northwest end of Admiralty Island about 40 miles west of Juneau. Two floats are available for boat tie-up.

Channel Islands (Shelter, Bird, Gull, Aaron, Lincoln, Little, Battleship, Benjamin, Portland Caugland, etc. Islands) State Marine Park, 3560 acres, T39S, R64E, CRM. The park is located 25 northwest of Juneau in Auke Bay and Favorite Channel. A cabin is available on Shelter Island and the area is accessible by small boat.

Black Sands Beach State Marine Park, 640 acres, T76S, R91E, CRM. A small beach and several islands within six miles of downtown Ketchikan.

Sealion Cove State Marine Park, 630 acres, T53S, R60E, CRM. A beautiful open coast sandy beach with a trail from Kalinin Bay, located about 35 miles north of Sitka.

Fort Rosseau Causeway State Historical Park, Township 56 South, Range 63 East, CRM.

In addition, the following State Parks areas are undeveloped:

1. Mill Creek near Wrangell
2. Pavlov Harbor near Freshwater Bay/ Chichagof Island
3. High Island near Kuiu Island
4. Salmon Bay near Prince of Wales Island
5. Joe/Grant Island near Grant Island/ Clover Passage
6. Hole in the Wall near Prince of Whales Island
7. Benton Island near Clover Passage

Local Parks

This document does not include most city or borough parks at this time. Three city park/recreation areas that were former federal surplus properties are: Shoemaker Bay Recreational Area (City of Sitka), Totem Square (City of Sitka), and Seaplane Ramp/Turnaround Site (City of Wrangell).

Wildlife Viewing

There are many people, including charter and tour operators, that participate in wildlife viewing in the subarea. In addition to the parks listed above, there are sites within the Alaska Maritime National Wildlife Refuge that are visited, including:

- Saint Lazaria Island
- Hazy Island group
- Forrester Island complex
-

Other wildlife viewing areas include:

- Stikine River Flats
- Anan Creek
- Fish Creek (Hyder)
- Pack Creek

(b) Public Use Cabins

For information go to the internet at: http://www.alaskacenters.gov/cabins.cfm

ALASKA STATE PARK MAPS

Alaska State Parks in the Southeast Subarea (maps/charts) by city:

http://www.dnr.state.ak.us/parks/aspbro/statemap.htm

1. Haines 2. Juneau 3. Ketchikan 4. Sitka 5. Wrangell

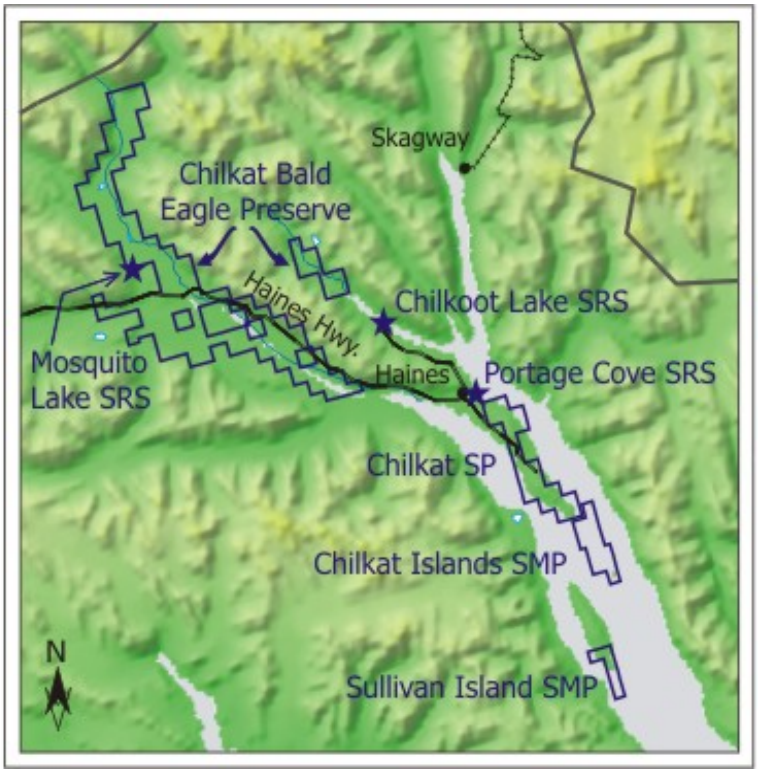
Chart Key

CS = Camp sites	**W** = Water, drinkable	**C** = Cabins
CL = Camping limit	**S** = Picnic shelter	**D** = Daily parking fee
CF = Camping fee	**Tr** = Trails	**F** = Fishing
P = Picnic sites	**H** = Historical feature	***** = Tent camping only
T = Toilet	**B** = Boat launch	**** = Annual passes not accepted
/a = Facilities are ADA accessible		***** = Sanitary dump station
SRA = State Recreation Area	**SP** = State Park	**DU** = Day Use
SRS = State Recreation Site	**SMP** = State Marine Park	**GU** = Group Use
SHP = State Historical Park	**SWP** = State Wilderness Park	**CG** = Campground
SHS = State Historic Site	**TH** = Trailhead	**BL** = Boat Launch

For further information: http//www.dnr.state.ak.us or call 269-8700 (Alaska Division of Parks and Outdoor Recreation)

Alaska State Parks near Haines in Southeast Alaska

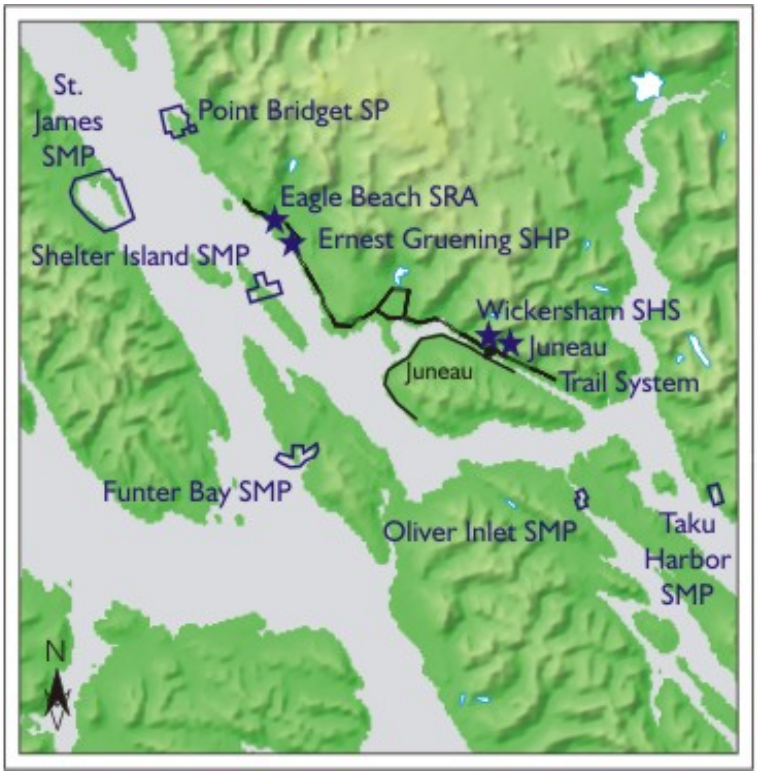
This map is not intended to be used as a navigational aid.



Park Unit	Acres	CS	CL	CF	P	T	W	S	Tr	H	B	C	D	F	Location
Chilkat Bald Eagle Preserve	49,320					T	W		Tr/a					F	8-30 Haines Hwy.
Chilkat Islands SMP	6,560				Undeveloped									F	No road access
Chilkat SP	9,837	15	15	CF	4	T/a	W	S	Tr		B			F	7 Mud Bay Rd.
Chilkoot Lake SRS	80	32	7	CF		T/a	W	S			B			F	10 Lutak Rd.
Mosquito Lake SRS	10	5	15	CF		T	W				B			F	27.2 Haines Hwy
Portage Cove SRS *	7	9	7	CF	3	T	W							F	1 Beach Rd.
Sullivan Island SMP	2,163				Undeveloped									F	No road access

Alaska State Parks near Juneau in Southeast Alaska

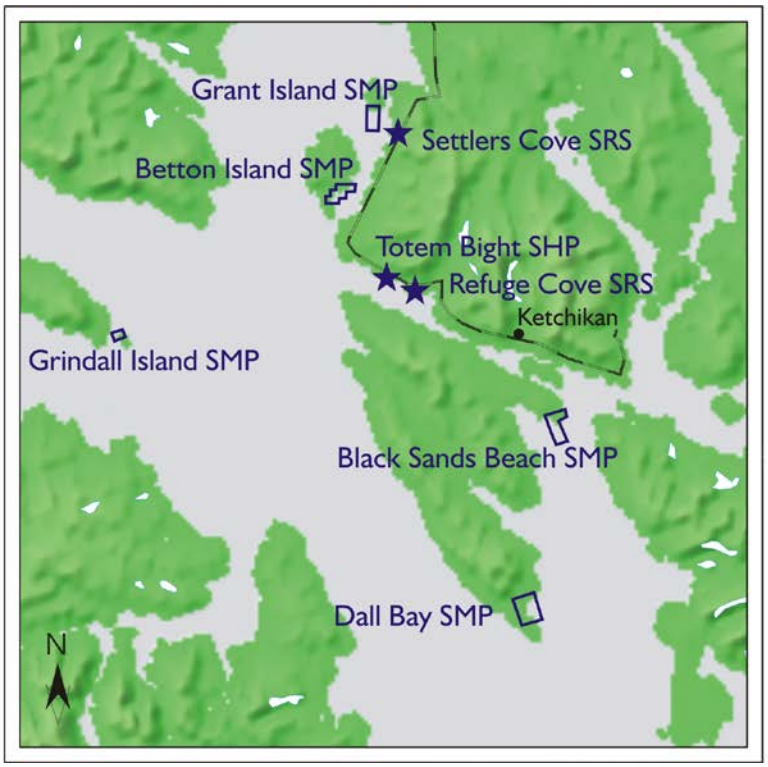
This map is not intended to be used as a navigational aid.



Park Unit	Acres	CS	CL	CF	P	T	W	S	Tr	H	B	C	D	F	Location
Eagle Beach SRA	590				10	T			Tr				D	F	29 Glacier Hwy.
Ernest Gruening SHP	12									H				F	24 Glacier Hwy.
Funter Bay SMP	162				Undeveloped									F	No road access
Johnson Creek SRS	8				Undeveloped									F	5.5 N Douglas Hwy.
Juneau Trail System	15 mi.								Tr	H					Juneau Area
Oliver Inlet SMP	560					T			Tr			C		F	No road access
Point Bridget SP	2,800					T			Tr			C		F	38.5 Glacier Hwy.
Shelter Island SMP	3,560				6	T			Tr					F	No road access
St. James Bay SMP	1,022				Undeveloped									F	No road access
Taku Harbor SMP	700				Undeveloped									F	No road access
Wickersham SHS	.5					T/a				H/a					213 - 7th Street

Alaska State Parks near Ketchikan in Southeast Alaska

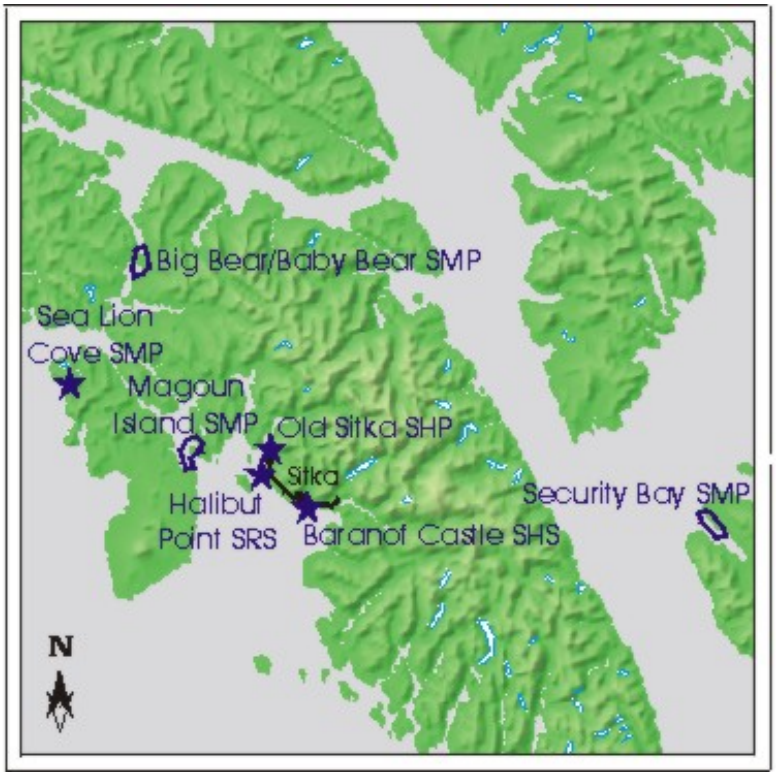
This map is not intended to be used as a navigational aid.



Park Unit	Acres	CS	CL	CF	P	T	W	S	Tr	H	B	C	D	F	Location
Black Sands Beach SMP	640				Undeveloped									F	No road access
Dall Bay SMP	585				Undeveloped									F	No road access
Grindall Island SMP	240					T			Tr			C		F	No road access
Refuge Cove SRS	13				14	T								F	8.7 N Tongass Rd
Settlers Cove SRS	76	14	7	CF	12	T/a	W/a	S/a	Tr/a					F	18 N Tongass Rd
Totem Bight SHP	33					T/a	W/a		Tr/a	H/a					10 N Tongass Rd

Alaska State Parks near Sitka in Southeast Alaska

This map is not intended to be used as a navigational aid.



Park Unit	Acres	CS	CL	CF	P	T	W	S	Tr	H	B	C	D	F	Location
Baranof Castle SHS	1									H/a					Lincoln St.
Big Bear/Baby Bear SMP	1,023				Undeveloped									F	No road access
Halibut Point SRS	40				9	T/a	W	S	Tr					F	4.4 Halibut Rd.
Magoun Islands SMP	1,135				Undeveloped									F	No road access
Old Sitka SHP	212					T/a			Tr/a	H/a	B			F	7.5 Halibut Rd.
Sea Lion Cove SMP	630								Tr					F	No road access
Security Bay SMP	500				Undeveloped									F	No road access

Alaska State Parks near Wrangell in Southeast Alaska

This map is not intended to be used as a navigational aid.

Park Unit	Acres	CS	CL	CF	P	T	W	S	Tr	H	B	C	D	F	Location
Beecher Pass SMP	660				Undeveloped									F	No road access
Joe Mace Island SMP	62				Undeveloped									F	No road access
Petroglyph Beach SHS	7								Tr	H				F	Grave St.
Thom's Place SMP	1,198				Undeveloped									F	No road access

8. *Commercial Tourism*

A mail survey of commercial wildlife tour operators in Southeast Alaska in 1989 documented the level and types of wildlife viewing areas important to tourism in coastal areas. There were at least 120 businesses offering wildlife viewing in the region in 1989.

The following organizations can be contacted with requests for specific information on location and timing of recreation and tourism activities. Although the primary function of these organizations is not to provide such information, the individual members will be quite knowledgeable about environmental conditions and will often be willing to share information.

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
Tongass National Forest	747-4236

9. *Marinas and Ports*

(See the *Resources Section*: the Community Profiles and the Information Directory)

10. *Fish Processing*

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.

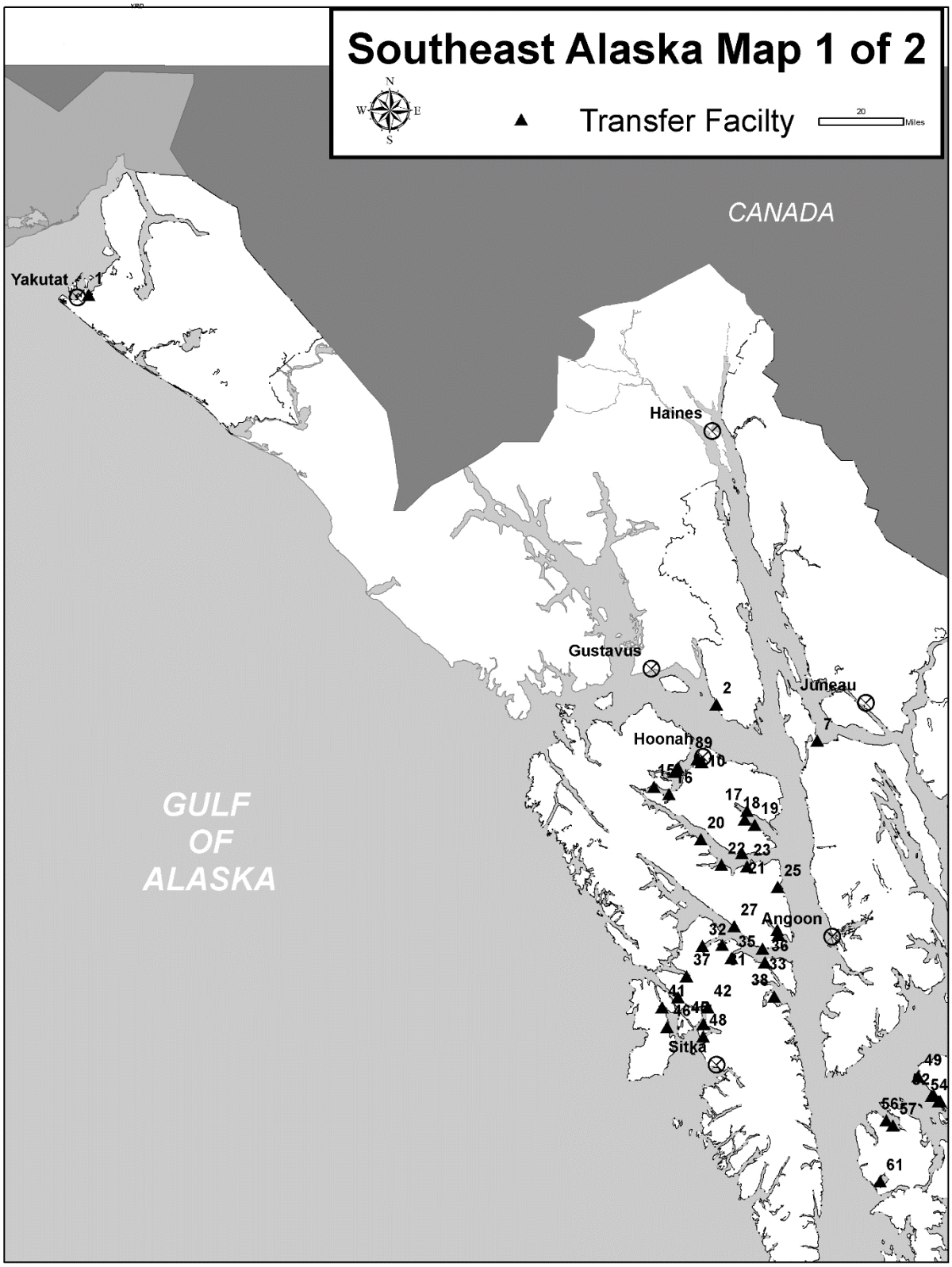
11. *Logging Facilities*

All logging facilities on the Tongass National Forest are mapped on the U.S. Forest Service's Geographic Information System (GIS). See the following maps and the tables in Appendix A.

The following organizations can be contacted with requests for specific information on location and timing of logging activities. Although the primary function of these organizations is not to provide such information, the individual members will be quite knowledgeable about environmental conditions and will often be willing to share information.

Tongass National Forest, Timber Staff Officer
Petersburg
772-5882

Alaska Forest Association
Ketchikan
225-6114


Southeast Alaska Map 1 of 2
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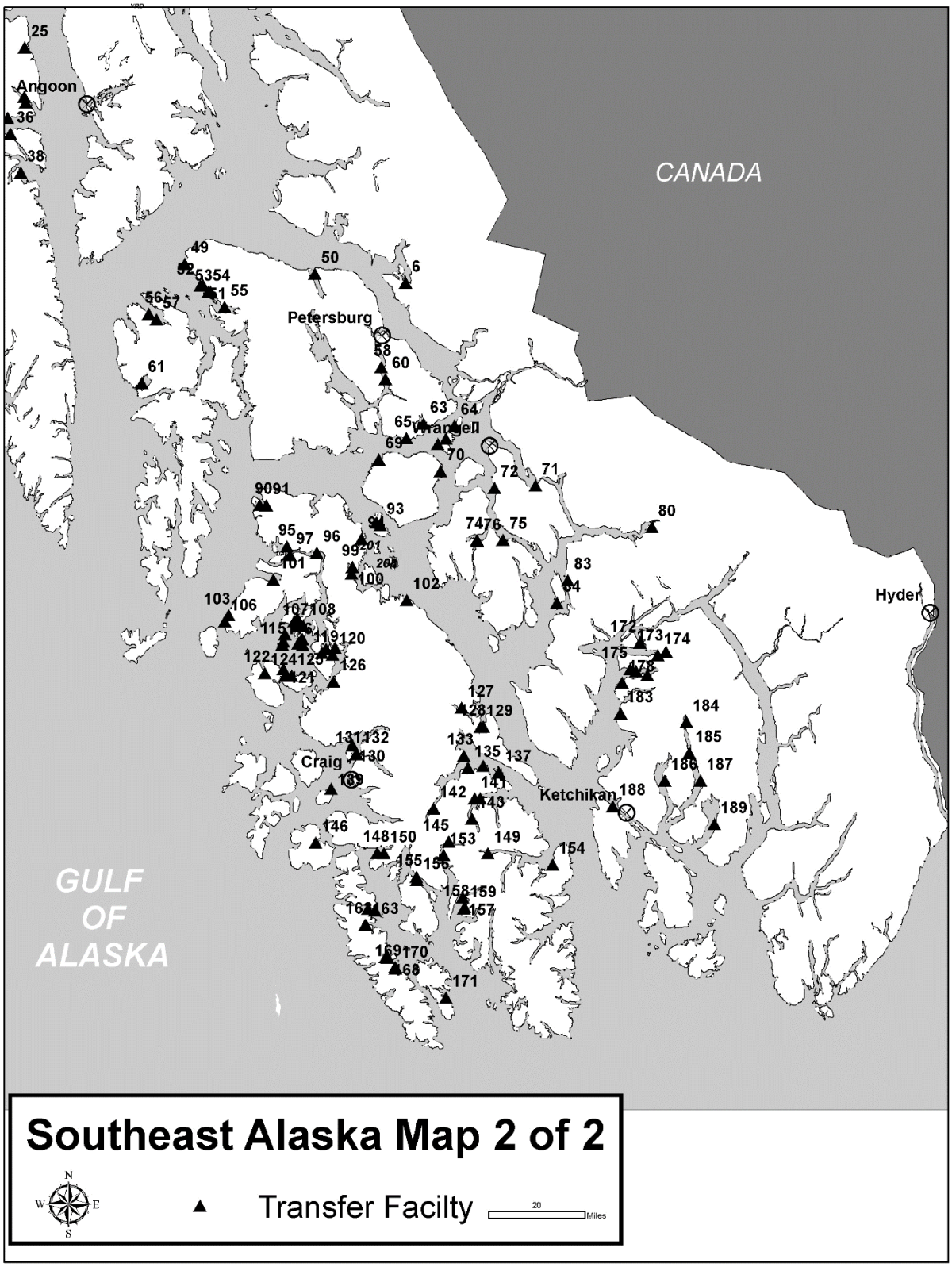
CANADA
GULF OF ALASKA
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Petersburg
Wrangell
Craig
Ketchikan
Hyder
Southeast Alaska Map 2 of 2
Transfer Facilty
20
Miles

12. *Water Intake and Use*

The table on the following pages was generated by the Alaska Department of Environmental Conservation, Division of Health, Drinking Water Program. The table includes all regulated sources, as well as community systems:

- Community Water Systems, Non-Transient/Non-Community Community Waters Systems (Formerly referred to as Class A Public Water Systems)
- Transient/Non-Community (Formerly referred to as Class B Water Systems)
- Non-Public (Class C Public Water Systems)

This list is best used when combined with the internet web map applications:

- Internet Web Map Application: http://dec.alaska.gov/eh/dw/DWP/protection_areas_map.html

By typing the ID number from this list into the web application, one is able to visually see where the public water systems are located. The information can be viewed in ArcMap, ArcGIS Explorer, ArcGIS JavaScript, and Google Earth.

The ADEC's Drinking Water Watch (http://146.63.9.103:8080/DWW/) provides contact information for each public water system. Additional information about facility owners may be obtained from the ADEC Drinking Water Program at 866-956-7656.

SOUTHEAST SUBAREA WATER INTAKE / USE / WELL SYSTEMS

Facility_ID	State ID	Name	Location	State Identifier	Local Name	Federal Designation	Source
29610	AK2110106	Echo Ranch Bible Camp	Juneau	WL001	WI Well-Dining Hall	Transient/Non-Community Water System	Groundwater
29604	AK2110106	Echo Ranch Bible Camp	Juneau	WL002	WI Bath House	Non-Community Water System	Groundwater
29566	AK2110106	Echo Ranch Bible Camp	Juneau	WL003	WI Well-Health Station	Transient/Non-Community Water System	Groundwater
29571	AK2110110	Taku Glacier Lodge	Juneau	WL001	WI Well	Transient/Non-Community Water System	Groundwater
29592	AK2110318	Churchill Park	Juneau	WL001	WI Switzer Spring	Community Water System	Groundwater
29570	AK2110342	Juneau	Juneau	WL002	Last Chance Basin Well #2	Community Water System	Groundwater
48185	AK2110342	Juneau	Juneau	WL004	Last Chance Basin Well #4	Community Water System	Groundwater
48186	AK2110342	Juneau	Juneau	WL005	Last Chance Basin Well #5	Community Water System	Groundwater
48184	AK2110342	Juneau	Juneau	WL003	Last Chance Basin Well #3	Community Water System	Groundwater
48183	AK2110342	Juneau	Juneau	WL001	Last Chance Basin Well #1	Community Water System	Groundwater
30134	AK2110342	Juneau	Juneau	IN001	In Salmon Creek Reservoir	Community Water System	Surface Water
29545	AK2110449	Thunder Mountain Mobile Park	Juneau	WL001	WI Well 1	Community Water System	Groundwater
47453	AK2110449	Thunder Mountain Mobile Park	Juneau	WL003	WI Well 3	Community Water System	Groundwater
47452	AK2110449	Thunder Mountain Mobile Park	Juneau	WL002	WI Well 2	Community Water System	Groundwater
47592	AK2110449	Thunder Mountain Mobile Park	Juneau	WL004	WI Well 4	Community Water System	Groundwater
29556	AK2110520	Rainbow Glacier Camp	Haines	WL001	WI Well	Transient/Non-Community Water System	Groundwater
29528	AK2110562	Chilkat Indian Village	Klukwan	WL001	WI Spring	Community Water System	Groundwater Under Direct Influence of Surface Water
29597	AK2110601	Skagway-Well No. 1	Skagway	WL003	WI Well #3	Community Water System	Groundwater
29619	AK2110601	Skagway-Well No. 2	Skagway	WL002	WI Well #2	Community Water System	Groundwater
29608	AK2110601	Skagway-Well No. 3	Skagway	WL001	WI Well #1	Community Water System	Groundwater
29555	AK2110619	Haines	Haines	WL002	WI Piedad Loop Overflow	Community Water System	Groundwater
30479	AK2110619	Haines	Haines	IN001	In Lilly Lake	Community Water System	Surface Water
29675	AK2110643	Eaglecrest Ski Area	Juneau	IN001	In Infiltration Gallery	Non-Community Water System	Surface Water
29567	AK2110821	Covenant Life Center	Glacier Bay	WL001	WI Well In Well House	Community Water System	Groundwater
29630	AK2110839	Mosquito Lake State Rec Site	Haines	WL001	WI Artesian Well	Non-Public (Class C Water System)	Groundwater
29546	AK2110847	Chilkoot Lake	Haines	WL002	WI Pump	Non-Public (Class C Water System)	Groundwater
29588	AK2110847	Chilkoot Lake	Haines	WL001	WI Pump At Lake	Non-Public (Class C Water System)	Groundwater
30076	AK2110855	Haines Ferry Terminal	Haines	IN001	In Surface Source Army Property	Non-Community Water System	Surface Water
30221	AK2110871	Thane Ore House	Juneau	IN001	In Thane Ore House	Non-Community Water System	Surface Water
29547	AK2110902	Bear Creek Camp	Haines	WL001	WI Bear Creek Camp	Non-Public (Class C Water System)	Groundwater
29539	AK2111102	Chilkat State Park	Haines	WL001	WI Pump By Cabin	Non-Public (Class C Water System)	Groundwater
29562	AK2111102	Chilkat State Park	Haines	WL002	WI Campground Pump	Non-Public (Class C Water System)	Groundwater
29629	AK2111233	Kensington Mine Camp - Comet Beach	Juneau	WL001	Well	Non-Public (Class C Water System)	Groundwater
29580	AK2111241	Alaska Pure Mountain Spring Water	Juneau	WL001	WI Spring	Transient/Non-Community Water System	Groundwater
29557	AK2111275	Dalton Cache Border Station	Haines	WL001	WI Dalton Cache Border Station	Transient/Non-Community Water System	Groundwater
29589	AK2111446	Yukon Building	Juneau	WL001	WI Well	Non-Public (Class C Water System)	Groundwater
29568	AK2111449	Sheep Creek Portal Camp	Juneau	WL001	WI Groundwater	Non-Public (Class C Water System)	Groundwater
29591	AK2111457	Crystal Cathedrals Water	Skagway	WL002	WI East Well	Community Water System	Groundwater
29623	AK2111457	Crystal Cathedrals Water	Skagway	WL001	WI West Well	Community Water System	Groundwater

Facility_ID	State ID	Name	Location	State Identifier	Local Name	Federal Designation	Source
29529	AK2111462	Adlersheim Lodge	Juneau	WL001	WI Unamed Well	Non-Public (Class C Water System)	Groundwater
29626	AK2111465	Gold Rush Trail Camp	Skagway	WL001	WI Well	Transient/Non-Community Water System	Groundwater
29530	AK2111470	Elfin Cove	Elfin Cove	WL001	WI Spring 01	Transient/Non-Community Water System	Groundwater
29784	AK2111472	Bear Track Inn	Gustavus	IN001	In Homestead Creek	Non-Community Water System	Surface Water
29936	AK2111475	East Icy Bay	Yakutat	IN001	Unamed Pond	NP (Class C Water System)	Surface Water
29593	AK2111476	Gustavus Airport	Gustavus	WL001	WI Well	Transient/Non-Community Water System	Groundwater
29598	AK2111487	Chilkat Bald Eagle Preserve	Haines	WL001	WI Well	Non-Public (Class C Water System)	Groundwater
29637	AK2111513	Doc Warners Fish Camp	Haines	IN001	In Duncan Creek	Non-Community Water System	Surface Water
29769	AK2111523	Shrine Of St. Therese	Juneau	IN001	In Shrine Creek	Non-Community Water System	Surface Water
46746	AK2111526	Chilkat River Adventures	Haines	WL001	WI Well	Transient/Non-Community Water System	Groundwater
46339	AK2111535	Boardwalk Wilderness Lodge	Thorne Bay	IN001	In Rain Catchment	NP (Class C Water System)	Surface Water
46346	AK2111539	NPS- Dyea Ranger Station	Skagway	WL001	WI Well	Non-Public (Class C Water System)	Groundwater
46348	AK2111540	Jewell Gardens	Skagway	WL001	WI Well	Non-Public (Class C Water System)	Groundwater
45931	AK2111541	United Methodist Camp	Juneau	WL003	WI Well 003	Non-Public (Class C Water System)	Groundwater
45747	AK2111541	United Methodist Camp	Juneau	WL001	WI Main Well	Non-Public (Class C Water System)	Groundwater
46558	AK2111544	Skagway Border Station	Skagway	WL001	WI Skagway Border Station	Transient/Non-Community Water System	Groundwater
46059	AK2111550	Alsek River Lodge	Yakutat	WL001	WI Well	Non-Public (Class C Water System)	Groundwater
46061	AK2111553	NOAA Family Housing Yakutat	Yakutat	WL001	WI Well	Non-Public (Class C Water System)	Groundwater
46329	AK2111555	White Pass Rv Park	Skagway	WL001	WI Well	Transient/Non-Community Water System	Groundwater
46333	AK2111556	Ak Connections Shelter Lodge	Juneau	IN001	In Water Collection Pond	NP (Class C Water System)	Surface Water
47295	AK2111560	Homeshore Cafe	Gustavus	WL001	Well	Transient/Non-Community Water System	Groundwater
47263	AK2111561	Kensington Mine Jualin Labor Camp	Juneau	IN001	Intake Johnson Creek	Non-Transient/Non-Comm'ty Water System	Surface Water
47776	AK2111562	Gustavus Lds Church	Gustavus	WL001	Gustavus Lds Church	NP (Class C Water System)	Groundwater Under Direct Influence of Surface Water
29611	AK2113536	33 Mile Roadhouse	Haines	WL001	WI Well	Transient/Non-Community Water System	Groundwater
30412	AK2113560	Hecla Greens Creek Hawk Inlet	Juneau	IN001	In Cannery Creek	Non-Transient/Non-Comm'ty Water System	Surface Water
29856	AK2119205	Hecla Greens Creek 920 Level	Juneau	IN001	In Greens Creek	Non-Transient/Non-Comm'ty Water System	Surface Water
30471	AK2120012	Vallenar View MobileHomePark	Ketchikan	IN001	In Whipple Creek	Community Water System	Surface Water
30196	AK2120020	Clover Pass Resort	Ketchikan	IN001	In Clover Pass Resort	Non-Community Water System	Surface Water
30155	AK2120046	Homestead Trailer Park	Ketchikan	IN001	In Homestead Creek	NP (Class C Water System)	Surface Water
29827	AK2120062	Shoup Street Service Area	Ketchikan	IN001	Shoup Street Service Area	NP (Class C Water System)	Surface Water
47762	AK2120101	Mecca Bar	Ketchikan	RC001	Rain Catchment	Transient/Non-Community Water System	Groundwater
30392	AK2120127	Saxman	Saxman	IN001	In Unnamed Creek	Community Water System	Surface Water
29941	AK2120135	Wards Cove Packing Co.	Ketchikan	IN001	Wards Cove Packing Co.	NP (Class C Water System)	Surface Water
30325	AK2120143	Wrangell	Wrangell	IN001	In Municipal Reserviors	Community Water System	Surface Water
30265	AK2120169	City Of Klawock (Half Mile Cr.)	Klawock	IN001	(Half Mile Creek)	Community Water System	Surface Water
60	AK2120169	City Of Klawock (Three Mile Cr.)	Klawock	Proposed	(Threemile Creek)	Community Water System	Surface Water
29829	AK2120193	Craig Public Works	Craig	IN001	In North Fork Lake	Community Water System	Surface Water
30296	AK2120216	Thorne Bay	Thorne Bay	IN001	In Water Lake	Community Water System	Surface Water
30137	AK2120224	Hydaburg	Hydaburg	IN001	In Hydaburg River	Community Water System	Surface Water
30037	AK2120232	Ketchikan Public Utilities	Ketchikan	IN001	In Ketchikan Lakes	Community Water System	Surface Water
30422	AK2120240	Silver Bay - Wrangell Sawmill	Wrangell	IN001	Silver Bay - Wrangell Sawmill	NP (Class C Water System)	Surface Water
29943	AK2120313	Gildersleeve Grace Harbor	Dall Island	IN001	Unnamed Creek	NP (Class C Water System)	Surface Water
29684	AK2120436	Coffman Cove	Coffman Cove	IN001	In Chum Creek	Community Water System	Surface Water

Facility_ID	State ID	Name	Location	State Identifier	Local Name	Federal Designation	Source
29830	AK2120452	Mountain Point Service Area	Ketchikan	IN001	In Forks Creek	Community Water System	Surface Water
30439	AK2120541	Hollis School	Hollis	IN001	In No Name Pond	NP (Class C Water System)	Surface Water
29759	AK2120567	Waterfall Resort	Prince of Wales	IN001	In Unnamed Surface Water	Non-Community Water System	Surface Water
30180	AK2120575	Clover Pass Christian School	Ketchikan	RC001	Rain Catchment	Non-Transient/Non-Comm'ty Water System	Groundwater
29672	AK2120591	Yes Bay Resort	Yes Bay	IN001	In Surface Creek	Non-Community Water System	Surface Water
30107	AK2120606	Kasaan	Kasaan	IN001	In Linckum Creek	Community Water System	Surface Water
29817	AK2120703	Orton Ranch	Naha Bay	IN001	In Unnamed Surface Water	NP (Class C Water System)	Surface Water
47763	AK2120729	Ward Cove Market	Ward Cove	RC001	Rain Catchment	Transient/Non-Community Water System	Groundwater
47761	AK2120737	Lighthouse Grocery	Ketchikan	RC001	Rain Catchment	Transient/Non-Community Water System	Groundwater
29685	AK2120745	Point Baker Trading Post	Point Baker	IN001	In Point Baker Trading Post	NP (Class C Water System)	Surface Water
29930	AK2121018	Long Island-Evergreen Logging	Long Island	IN001	In Unnamed Stream	NP (Class C Water System)	Surface Water
47760	AK2121026	Knudsen Cove Marina	Knudsen Cove	RC001	Rain Catchment	Transient/Non-Community Water System	Groundwater
30243	AK2121034	Clover Bay Lodge	Clover Bay	IN001	In Clover Bay Lodge	Non-Community Water System	Surface Water
29987	AK2121042	Natzuhini Camp	Prince of Wales	IN001	In Unnamed Stream	NP (Class C Water System)	Surface Water
47758	AK2121076	Point Higgins Elem. School	Ketchikan	RC001	Rain Catchment	Non-Transient/Non-Comm'ty Water System	Groundwater
29641	AK2121081	Klawock Heenya Corp.	Klawock	IN001	Klawock Heenya Corp.	NP (Class C Water System)	Surface Water
30384	AK2121093	Sportsmans Cove Lodge	Prince of Wales	IN001	In Unknown	Non-Community Water System	Surface Water
30074	AK2121107	Whales Resort	Prince of Wales	IN001	Unnamed Stream	NP (Class C Water System)	Surface Water
29600	AK2121123	Port Protection	Port Protection	WL001	WI Spring	Community Water System	Groundwater
29665	AK2121131	Salmon Falls Resort, Ltd.	Ketchikan	IN001	In Surface Water Source	Non-Community Water System	Surface Water
30247	AK2121188	Naukati Bay Camp	Naukati Bay	IN001	In Unnamed Creek	NP (Class C Water System)	Surface Water
30048	AK2121262	Craik Logging	Neets Bay	IN001	Unnamed Creek	NP (Class C Water System)	Surface Water
29728	AK2121288	Gildersleeve - Dog Salmon Cr.	Dora Bay	IN001	Gildersleeve -Dog Salmon Cr.	NP (Class C Water System)	Surface Water
30172	AK2121414	Mill Park Trailer Court	Wrangell	IN001	In Unnamed Creek	NP (Class C Water System)	Surface Water
30095	AK2121425	Phoenix Logging - Fire Cove	Fire Cove	IN001	No Name Creek	NP (Class C Water System)	Surface Water
30472	AK2121428	KPC Accommodation Barge	Bradford Canal	IN001	Miner's Creek	NP (Class C Water System)	Surface Water
29991	AK2121433	Marguerite Bay	Marguerite Bay	IN001	In Un-Named Stream	NP (Class C Water System)	Surface Water
29706	AK2121467	El Capitan Lodge	El Capitan Passage	IN001	In Creek	Non-Community Water System	Surface Water
30401	AK2121474	George Inlet Lodge	George Inlet	IN001	In Creek	NP (Class C Water System)	Surface Water
30149	AK2121478	Herring Bay Association	Ketchikan	IN001	Whitman Creek	Community Water System	Surface Water
29953	AK2121484	Silver Bay Portage Bay Camp	Portage Bay	IN001	Unnamed Creek	NP (Class C Water System)	Surface Water
47757	AK2121485	Wal-Mart - Ketchikan Store	Ketchikan	RC001	Rain Catchment	Non-Transient/Non-Comm'ty Water System	Groundwater
29764	AK2121486	Metlakatla Indian Community-Chester Lake	Metlakatla	IN001	Chester Lake	Community Water System	Surface Water
30119	AK2121486	Annette Water System-Yellow Hill Lake	Annette Island	IN002	Yellow Hill Lake	Community Water System	Surface Water
45913	AK2121489	Grace Harbor	Grace Harbor	IN001	In Stream	Non-Community Water System	Surface Water
46352	AK2121491	Mcfarlands Floatel	Prince of Wales	WL001	WI Well	Non-Public (Class C Water System)	Groundwater
46689	AK2121496	Alaska Rainwater Bottling Company	Ketchikan	IN002	Whitman Lake	NP (Class C Water System)	Surface Water
47565	AK2121501	George Inlet Cannery	Ketchikan	IN001	In Creek	Non-Community Water System	Surface Water
47735	AK2121506	Renaissance Water Bottling Plant	Ketchikan	IN001	Connell Lake	Non-Transient/Non-Comm'ty Water System	Surface Water
30309	AK2130017	Angoon Public Water	Angoon	IN001	In Auk'tah Lake	Community Water System	Surface Water

Facility_ID	State ID	Name	Location	State Identifier	Local Name	Federal Designation	Source
29934	AK2130041	Beachcomber Inn PvtWS	Scow Bay-Petersburg	IN001	In Beachcomber Inn	NP (Class C Water System)	Surface Water
30455	AK2130067	Hoonah PWS	Hoonah	IN001	In Ear Mountain	Community Water System	Surface Water
48201	AK2130075	Sitka	Sitka	IN002	In Indian River	Community Water System	Surface Water
29916	AK2130075	Sitka	Sitka	IN001	In Blue Lake	Community Water System	Surface Water
29899	AK2130083	Kake Municipal Water	Kake	IN001	In Gunnuk Creek	Community Water System	Surface Water
30212	AK2130114	Rowan Bay PvtWS	Rowan Bay	IN001	In Rowan Bay Pws	NP (Class C Water System)	Surface Water
30151	AK2130122	Pelican Utilities	Pelican	IN001	In Pelican Creek	Community Water System	Surface Water
29721	AK2130148	Petersburg	Petersburg	IN001	In City Creek Reservoir	Community Water System	Surface Water
30213	AK2130148	Petersburg	Petersburg	IN003	In Cabin Creek Reservoir	Community Water System	Surface Water
30379	AK2130148	Petersburg	Petersburg	IN002	In Water Truck Reservoir	Community Water System	Surface Water
29737	AK2130156	Port Alexander PvtWS	Port Alexander	IN001	In Humpy Creek	Community Water System	Surface Water
29579	AK2130164	Glacier Bear Lodge	Yakutat	WL001	Wl Glacier Bear Lodge	Transient/Non-Community Water System	Groundwater
29625	AK2130172	Yakutat PvtWS	Yakutat	WL002	Wl Arco, 2 Wells	Community Water System	Groundwater
29587	AK2130172	Yakutat PvtWS	Yakutat	WL003	Wl Arco Well #2	Community Water System	Groundwater
29533	AK2130172	Yakutat PvtWS	Yakutat	WL001	Wl Ridge, 2 Wells	Community Water System	Groundwater
29954	AK2130198	Bartlett Cove Water Sys	Bartlett Cove	IN001	In Alder Creek	Non-Transient/Non-Comm'ty Water System	Surface Water
29730	AK2130229	Excursion Inlet Cannery	Haines-Excursion Inlet	IN001	In Unnamed Spring	Non-Community Water System	Surface Water
29605	AK2130237	Gustavus Inn	Gustavus	WL001	Wl Well	Transient/Non-Community Water System	Groundwater
46067	AK2130342	Alaska Airlines Yakutat	Yakutat	WL002	Wl New Well	Transient/Non-Community Water System	Groundwater
29615	AK2130350	Tonka View Trl Court	Petersburg	WL001	Wl Well	Non-Public (Class C Water System)	Groundwater
29574	AK2130423	Yakutat Airport Lodge	Yakutat	WL001	Wl Well	Transient/Non-Community Water System	Groundwater
30345	AK2130554	Hobart Bay	Hobart Bay	IN001	Unnamed Creek	NP (Class C Water System)	Surface Water
29535	AK2130596	Gustavus Water System	Gustavus	WL001	Wl Well	Non-Transient/Non-Comm'ty Water System	Groundwater
29679	AK2130619	Mt. Bether Bible Center	Hoonah	IN001	In Game Creek	NP (Class C Water System)	Surface Water
29544	AK2130659	Starrigavan Rec. Area, Sitka	Sitka	WL001	Wl Starrigavan Cmpgrnd, Sitka	Non-Transient/Non-Comm'ty Water System	Groundwater
29554	AK2130659	Starrigavan Rec. Area, Sitka	Sitka	WL002	Wl Well	Non-Transient/Non-Comm'ty Water System	Groundwater
29617	AK2130669	Twin Creek RV Park	Petersburg	WL001	Wl Spring	Non-Public (Class C Water System)	Groundwater
30208	AK2130693	Silver Bay Logging, Cube Cove	Admiralty I.	IN001	In Silver Bay Logging, Cube Cove	NP (Class C Water System)	Surface Water
29536	AK2130705	Leonards Landing & Ldg.	Yakutat	WL002	Wl Well #2 Manager's Apt	Transient/Non-Community Water System	Groundwater
29561	AK2130705	Leonards Landing & Ldg.	Yakutat	WL001	Wl Well #1 Bunkhouse	Transient/Non-Community Water System	Groundwater
29618	AK2130716	Ross Rentals 4-Plex	Yakutat	WL001	Wl Glacier Bear 4-Plex	Non-Public (Class C Water System)	Groundwater
29603	AK2130732	Glacier Bear New Motel	Yakutat	WL001	Wl Well	Non-Public (Class C Water System)	Groundwater
29537	AK2131110	Glacier Bay Country Inn	Gustavus	WL001	Wl Sand Point Well	Transient/Non-Community Water System	Groundwater
30063	AK2131118	Aqua Of Alaska	Petersburg	IN001	Crystal Lake	NP (Class C Water System)	Surface Water
29790	AK2133333	Whalers Cove Lodge	Angoon	IN001	In Surface Ponds	Non-Community Water System	Surface Water

vi. 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*

The State of Alaska owns the majority of tide and submerged lands within the state. Tide and submerged lands and those areas located between the mean high tide line and three miles distance offshore. Submerged lands are those located beneath the line of ordinary high water along navigable water bodies. The Alaska State Legislature has classified certain areas as being essential to wildlife and fisheries resources. These areas are designated as a Game Refuge, Critical Habitat Area, or Game Sanctuary. Other designated lands are State Parks or Forests.

The following State protected areas may be located at the web page:
http://www.adfg.alaska.gov/index.cfm?adfg=protectedareas.locator

Yakataga State Game Refuge was established in 1976 to protect spring and fall resting and feeding habitat for migrating waterfowl and shorebirds. The refuge is best known for Canada geese, ducks and bald eagles. Over 178 species of birds have been seen in the refuge, with the largest number present in April and May. The area is also used for wildlife viewing, hunting, fishing and boating. For further information regarding the Refuge, please see the Yakataga State Game Refuge Management Plan. See the web site at: http://www.adfg.alaska.gov/index.cfm?adfg=yakataga.main

Chilkat River State Critical Habitat Area was established in 1972 to protect the up to 3,500 bald eagles that gather to feed on late-run chum salmon. The greatest eagle concentrations occur during mid to late November. The area also provides winter moose habitat. Wildlife viewing is popular. See the web site at: http://www.adfg.alaska.gov/index.cfm?adfg=chilkatriver.main

Mendenhall Wetlands State Game Refuge was established in 1976 to protect natural habitat and game populations, especially waterfowl. For further information regarding the Refuge, please see the Mendenhall Wetlands State Game Refuge Management Plan. See the web site at:
http://www.adfg.alaska.gov/index.cfm?adfg=mendenhallwetlands.main

Dude Creek State Critical Habitat Area was established in 1988 to protect the wet meadow habitat which is a key resting area for lesser sandhill cranes during their spring and fall migrations. Local residents use the area for recreation. See the web site at:
http://www.adfg.alaska.gov/index.cfm?adfg=dudecreek.main

Stan Price State Game Sanctuary was established in 1990 to provide permanent protection for brown bears, other fish and wildlife populations, and the scientific, aesthetic and educational values of the area. See the web site at: http://www.adfg.alaska.gov/index.cfm?adfg=stanprice.main

3. ***Federal***

See also Part Four, Recreational Sites and Facilities, for National Parks and National Forests information.

Alaska Maritime National Wildlife Refuge The Gulf of Alaska Unit of the Refuge includes some of the islands, rocks and forelands along the coast of the Gulf of Alaska. Alaska Maritime 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 is also home to thousands of sea lions, seals, walrus, and sea otters.

Wildlife viewing, photography and backpacking are primary uses of the Refuge. The Refuge was established in 1980. Additional information may be found on the website: http://www.r7.fws.gov/nwr/akmar/index.htm The Refuge is managed out of Homer, and includes several islands in Southeast:

- Petrel Island
- Forrester Island
- Lowrie Island
- Wolf Rock
- Hazy Islands
- St. Lazaria Island

Glacier Bay National Park and Preserve Established as a National Monument in 1925, and a National Park and Preseve in 1980, the park has also been designated a World Biosphere Reserve and World Heritage Site. The Park and Preserve cover 3,283,000 acres in Southeast Alaska. Most visitors arrive on cruise ships and tour boats. The only road is 10 miles from the tiny town of Gustavus. Currently glaciers cover 1,375 square miles or 27% of the Park. There are over 50 named glaciers, 7 of which are active tidewater glaciers that calve icebergs into the sea. Most park glaciers originate between elevations from 8,000 to 15,000 feet. Mount Fairweather is the tallest peak at 15,325. Humpback whales summer in the Bay. There are over 160 species of marine and estuarine fish, 242 species of birds, 41 species of mammals and 3 species of amphibians in the Par and Preserve. For more information go to: http://www.nps.gov/glba/index.htm

Wrangell-St. Elias National Park and Preserve Established in 1980, the 13 million acre Park and Preserve abut the border and Canada's Kluane National Park--together they have been designated on the World Heritage List as outstanding natural areas. The area contains the North American continent's largest assemblage of glaciers and its greatest collection of mountain peaks over 16,000 feet in elevation. The Malaspina glacier is larger than the state of Rhode Island. Mount Saint Elias, at 18, 008 feet, is the second highest peak in the United States. Wilderness backpacking, fishing and hunting, car camping, river running, cross-country skiing and mountain climbing are principal uses. The Dall sheep population is considered one of the finest in the world. Additional information may be found on the website: http://www.nps.gov/wrst/index.htm

Sitka National Historic Park Alaska's oldest national park was established as Sitka National Monument in 1910 to commemorate the 1804 Battle of Sitka, as well as to preserve Native totemic art. All that remains of the last major conflict between Europeans and Alaska Natives is the site of the Tlingit fort and battlefield, located in the heart of this scenic 113-acre park, which features the Totem Trail. The

Park is located on the western coast of mountainous Baranof Island at the mouth of the Indian River, an important regional salmon stream. For more information go to: http://www.nps.gov/sitk/index.htm

Klondike Gold Rush National Historic Park Gold! Headlines read in 1897, starting the Klondike Gold Rush. Thousands, hoping to ease the woes of economic depression, sold farms, dropped businesses and boarded ships to follow their dreams north. Today Klondike Gold Rush NHP commemorates the bravery the stampeders that took the epic voyage by protecting the trails, historic boomtowns and buildings of the Klondike Gold Rush era.The Chilkoot Trail, Skagway historic district, Dyea, and the Klondike Gold Rush International Historical Park are all park of the "gold rush" experience. For more information go to: http://www.nps.gov/klgo/index.htm

Tongass National Forest The Tongass National Forest is the largest unit in the national forest system, covering almost 17 million acres. Though home to the world's largest temperate rain forest, almost half of the Tongass is covered by ice, water, wetlands and rock. There are 11,000 miles of shoreline. Congress designated 5.7 million acres to be managed as Wilderness. Misty Fiords and Admiralty Island have been designated as National Monuments. Bald eagles, whales, propoises, seals, and sea otters are prevalent. All five species of Pacific salmon—chum, Coho, king, pink and sockeye—depend upon the streams and waters of the Tongass for spawning before making their way out to the rich seas nearby. Dolly Varden, rainbow, steelhead, and cutthroat trout are other Southeast Alaska inhabitants. Mining, fishing, timber, and recreation/tourism are ecomonic drivers. For more information go to: http://www.fs.fed.us/r10/tongass/

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.

Land Management Designations Map Legend

http://www.asgdc.state.ak.us/maps/cplans/base/cover1n3.pdf

Land Management Designation Map #1of 6

http://www.asgdc.state.ak.us/maps/cplans/se/SEmap1of6.pdf

Land Management Designation Map #2 of 6

http://www.asgdc.state.ak.us/maps/cplans/se/SEmap2of6.pdf

Land Management Designation Map #3 of 6

http://www.asgdc.state.ak.us/maps/cplans/se/SEmap3of6.pdf

Land Management Designation Map #4 of 6

http://www.asgdc.state.ak.us/maps/cplans/se/SEmap4of6.pdf

Land Management Designation Map #5of 6

http://www.asgdc.state.ak.us/maps/cplans/se/SEmap5of6.pdf

Land Management Designation Map #6 of 6

http://www.asgdc.state.ak.us/maps/cplans/se/SEmap6of6.pdf

vii. SENSITIVE AREAS ATTACHMENT 1 - LOG TRANSFER FACILITIES

LTF #	LTF Name	Built	Township	Range	Section	Longitude	Latitude	Remarks	Core Of Eng Name	Status	Life	Core Of Eng Permit Process	Permit Owner
1	SAWMILL COVE	Y	27S	34E	21	139 42 45.3638	59 33 56.5201		YAKATAT BAY 6	E	P	PRE85	FS
2	HOMESHORE	Y	14S	61E	25	135 21 06.4219	58 17 25.9850		ICY STRAIT 6	E	P	PRE85	FS
6	THOMAS BAY	Y	56S	79E	35	132 48 59.9662	56 58 00.4392		FREDERICK SOUND 28	E	T	PRE85	FS
7	YOUNG BAY	Y	43S	65E	1	134 35 48.4613	58 10 22.7370			E	P		FS
8	HOONAH SHIP MOORAGE	Y	43S	61E	32	135 28 07.6165	58 06 01.6103		PORT FREDERICK 47	E		PRE85	HUNA TOTEM CORP
9	LONG ISLAND LTF	Y	43S	61E	32	135 27 53.3635	58 05 58.6703		PORT FREDERICK 47	E		PRE85	HUNA TOTEM CORP
10	LONG ISLAND	Y	44S	61E	4	135 26 16.1813	58 05 58.9523	UNLOADING RAMP FOR EQUIPMENT AND FULE		E	P		NC
11	WEST PORT LTF	Y	44S	60E	9	135 35 39.4843	58 04 07.2987		PORT FREDERICK 46	E		PRE85	SEALASKA
13	WEST PORT STORAGE	Y	44S	60E	9	135 36 20.2801	58 03 44.0945		PORT FREDERICK 46	E		PRE85	SEALASKA

LTF #	LTF Name	Built	Township	Range	Section	Longitude	Latitude	Remarks	Core Of Eng Name	Status	Life	Core Of Eng Permit Process	Permit Owner
14	W. PORT FREDERICK	Y	44S	60E	16	135 36 32.9517	58 03 19.9703	UNLOADING RAMP FOR EQUIPMENT AND FULE		E	T	PRE85	FS
15	EIGHT FATHOM BIGHT	Y	45S	63E	11	135 44 39.5093	58 00 06.0567		PORT FREDERIC K 29&45	E	T	PRE85	FS
16	SALT LAKE BAY	Y			0	135 38 43.8602	57 58 38.5789		PORT FREDERIC K 41	E	T	PRE85	FS
17	SEAL CREEK	Y			36	135 08 25.2573	57 55 40.8379		CHATHAM STRAIT 90	E	T	PRE85	FS
18	N. KENNEL CREEK	Y				135 09 16.3848	57 53 54.9174			E	T	PRE85	FS
19	FRESH WATER BAY	Y	46S	64E	17	135 05 23.5310	57 52 47.5968	OLD A-FRAME LOCATION	CHATHAM STRAIT 99&77	E	P	PRE85	FS
20	INBETWEEN		47S	65E	6	135 26 01.5339	57 49 34.3959		TENAKEE INLET 24	E	T	PRE85	FS
21	INDIAN RIVER				0	135 10 00.7177	57 46 56.8235		TENAKEE INLET 21	E	P	PRE85	FS
22	CRAB BAY	Y	48S	62E	1	135 17 48.1232	57 44 27.2112		TENAKEE INLET 20	E	T	PRE85	FS
23	CORNER BAY	Y	48S	63E	1	135 07 57.5007	57 44 13.7193		TENAKEE INLET 25	E	P	PRE85	FS
27	FALSE ISLAND	Y	50S	60E	18	135 12 26.0536	57 31 55.9365		PERIL STRAIT 14&25	E	T	PRE85	
29	SITKOH BAY	Y	55S	62E	26	134 55 54.0377	57 31 15.2179		CHATHAM STRAIT 65	E	T	PRE85	FS
30	SITKOH BAY S.	Y	50S	65E	23	134 55 23.7176	57 30 18.2302		CHATHAM STRAIT 63	E	T	PRE85	FS

LTF #	LTF Name	Built	Township	Range	Section	Longitude	Latitude	Remarks	Core Of Eng Name	Status	Life	Core Of Eng Permit Process	Permit Owner
31	APPLETON COVE	Y	51S	65E	10	135 16 43.9672	57 28 03.4632		APPLETON COVE 4	E	T	PRE85	FS
32	RODMAN BAY	Y	51S	62E	11	135 24 24.2116	57 27 42.7104		RODMAN BAY 2	E	T	PRE85	FS
37	FISH BAY	Y			0	135 30 01.0824	57 21 20.9826			E	T	PRE85	APC
38	BASIN W.	Y			0	134 56 37.5500	57 17 36.8511	CALLED KELP BAY		E	T	PRE85	FS
39	ST. JOHN BAPTIST BAY	Y			0	135 33 03.6871	57 17 01.7221		ST. JOHN BAPTIST BAY 1	E	T	POST85	FS
41	EAGLE RIVER	Y	53S	61E	25	135 39 04.7433	57 14 49.8425			E	T	PRE85	FS
42	NAKWASINA N.E.	Y			0	135 21 39.4245	57 15 04.9416			E	T	PRE85	FS
45	NAKWASINA	Y			0	135 23 20.2990	57 11 39.3095			E	T	PRE85	FS
46	MUD BAY	Y			0	135 36 57.4552	57 10 48.6562			E	T	PRE85	
48	LISIANSKI	Y			0	135 23 13.2780	57 09 07.3526			E	T	PRE85	
49	POINT MACARTNEY LTF	Y			0	134 01 50.9608	57 01 32.4139		FREDERICK SOUND 24	E	P	PRE85	KAKE TRIBAL
50	PORTAGE BAY	Y			0	133 18 53.1175	56 59 43.8277		FREDERICK SOUND 18	E	P	PRE85	FS
51	KAKE SHIP MOORAGE	Y			0	133 55 56.4767	56 57 47.0998		KEKU STRAIT 25	E		OFFSHORE	SEALASKA
52	GRAVE ISLAND STORAGE	Y			0	133 56 41.0184	56 57 37.8593		KEKU STRAIT 27	E		OFFSHORE	SEALASKA

LTF #	LTF Name	Built	Township	Range	Section	Longitude	Latitude	Remarks	Core Of Eng Name	Status	Life	Core Of Eng Permit Process	Permit Owner
53	PORTAGE BAY LTF	Y			0	133 53 21.7170	56 56 30.9674		KEKU STRAIT 10	E		PRE85	KAKE TRIBAL
54	PORTAGE BAY STORAGE	Y			0	133 54 03.8173	56 56 30.7870		KEKU STRAIT 10	E		PRE85	KAKE TRIBAL
55	HAMILTON BAY	Y	57S	74E	30	133 48 44.0841	56 53 48.1780		KEKU STRAIT 26	E	P	PRE85	FS
56	W. SAGINAW	Y			0	134 13 35.9814	56 52 29.5504			E	T	PRE85	FS
57	SAGINAW BAY	Y	58S	71E	12	134 11 05.4915	56 51 29.6829		FREDERICK SOUND 34	E	T	POST85	FS
58	TONKA MOUNTAIN	Y	59S	79E	34	132 57 17.6105	56 42 49.5174		WRANGELL NARROWS 127	E	P	PRE85	FS
60	PAPKE'S LANDING	Y			0	132 55 57.0539	56 40 38.7128			E	P	PRE85	ST
61	ROWAN BAY	Y	60S	71E	17	134 15 46.4934	56 40 00.2516		CHATHAM STRAIT 60	E	T	PRE85	FS
63	BLIND SLOUGH	Y			0	132 43 41.8707	56 32 34.7190			E	T	PRE85	FS
64	RYNDA ISLAND	Y	61S	82E	35	132 33 42.0255	56 32 09.4656		SUMNER STRAIT 78	E	T	PRE85	FS
65	WOODPECKER COVE	Y	62S	81E	18	132 49 25.3965	56 30 01.4479		SUMNER STRAIT 86	E	T	PRE85	FS
66	SOKOLOF	Y			0	132 36 31.2979	56 29 52.1279			E	T	PRE85	FS
68	VANK	Y			0	132 39 08.9771	56 28 52.5033			E	T	PRE85	FS
69	ST. JOHN'S HARBOR	Y	63S	80E	5	132 58 22.1012	56 26 14.5622		SUMNER STRAIT 81	E	P	PRE85	FS
70	DEEP BAY	Y			0	132 38 21.8943	56 23 57.5588		SIKINE STRAIT 4	E	P	PRE85	FS

LTF #	LTF Name	Built	Township	Range	Section	Longitude	Latitude	Remarks	Core Of Eng Name	Status	Life	Core Of Eng Permit Process	Permit Owner
71	EARL WEST COVE	Y	64S	85E	3	132 07 38.9417	56 21 02.6906		EASTERN PASSAGE 12	E	P	PRE85	FS
72	PAT'S CREEK	Y			0	132 21 01.3454	56 20 48.2483			E	P	PRE85	FS
25	BASKET BAY	Y				134 56 07.3771	57 40 08.1010		CHATHAM STRAIT 57	E	T	PRE85	FS
33	TODD	Y				135 01 21.9743	57 27 24.1997		PERIL STRAIT 21	E	T	PRE85	FS
35	SAOOK BAY	Y				135 13 04.7616	57 25 19.5829		SAOOK BAY 1	E	T	POST85	FS
36	HANUS BAY					135 00 24.6642	57 24 35.2870		PERIL STRAIT 29	E	T	PRE85	FS
74	ANITA BAY 2	Y	65S	84E	32	132 26 56.0680	56 11 29.8485		ANITA BAY 2	E	T	PRE85	FS
75	OLIVE COVE	Y			0	132 18 30.6911	56 11 24.5303		ZIMOVIA STRAIT 33	E	T	PRE85	FS
76	ANITA BAY 1	Y			0	132 26 51.7470	56 11 18.7526		ANITA BAY 1	E	T	PRE85	FS
80	BRADFIELD CANAL	Y	65S	90E	21	131 30 19.4203	56 13 01.8053			E	T	PRE85	FS
171	LONG ISLAND	Y	44S	61E	4	132 39 12.6236	54 49 08.2357		PORT FREDERICK 47	E	T	PRE85	
172	HASSLER ISLAND	Y	69S	90E	22	131 35 22.6665	55 52 16.6390		BEHM CANAL 43	E	T	PRE85	FS
173	KLU BAY	Y	69S	91E	34	131 27 01.5309	55 50 32.1497		BEHM CANAL 49	E	T	PRE85	FS
174	SHRIMP BAY	Y	70S	91E	5	131 29 43.3563	55 49 58.0570		BEHM CANAL 44	E	T	PRE85	FS
175	NEETS CHIN	Y	70S	90E	20	131 38 41.8305	55 47 33.3526			E	T	PRE85	FS

LTF #	LTF Name	Built	Township	Range	Section	Longitude	Latitude	Remarks	Core Of Eng Name	Status	Life	Core Of Eng Permit Process	Permit Owner
176	NEETS CLAM	Y	70S	90E	21	131 36 51.6357	55 47 11.0578			E	T	PRE85	FS
177	FIRE COVE	Y	70S	90E	25	131 33 13.7696	55 46 28.1106		NEETS BAY 8	E	T	PRE85	FS
178	SOUTH WEST NEETS	Y	70S	89E	36	131 41 22.4034	55 45 11.1863		NEETS BAY 12	E	T	PRE85	FS
183	FRANCIS COVE	Y	72S	89E	1	131 42 11.1822	55 39 39.6946			E	T	PRE85	FS
184	UPPER CARROLL INLET	Y	72S	92E	17	131 21 16.6023	55 37 46.9275		CARROLL INLET 23	E	T	PRE85	FS
185	SHELTER COVE	Y	73S	93E	18	131 20 39.9464	55 32 09.3730		CARROLL INLET 20	E	T	POST85	FS
186	COON COVE	Y	74S	92E	18	131 28 44.3706	55 27 17.8873			E	T	PRE85	CAPE FOX CO
187	SHOAL COVE	Y	74S	93E	16	131 17 25.6847	55 27 04.8592		CARROLL INLET 7	E	P	PRE85	FS
188	PACIFIC_LOG_&_LUMBER	Y	75S	90E	8	131 45 29.3276	55 23 01.5477	MILL SITE		E	P		PACIFIC_LOG_&_LUMBER
189	ELF POINT	Y	75S	93E	36	131 13 28.9648	55 19 13.4576		THORNE ARM 6	E	T	POST85	FS
83	FROSTY BAY	Y	67S	87E	16	131 57 55.3526	56 03 51.5730		ERNEST SOUND 18	E	T	POST85	FS
84	DEER ISLAND W.	Y	67S	87E	6	132 01 38.7587	55 59 53.2371		ERNEST SOUND 11	E	T	POST85	FS
90	LABOUCHERE BAY	Y	64S	76E	19	133 37 09.3240	56 18 09.7625		SUMNER STRAIT 54	E	T	PRE85	FS
91	PORT PROTECTION		64S	75E	20	133 35 01.5035	56 18 06.7780		SUMMER STRAIT 11	E			KPC
92	BUSHY ISLAND					132 59 23.1514	56 14 52.7111		CLARANCE STRAIT 66	E	T		FS

LTF #	LTF Name	Built	Township	Range	Section	Longitude	Latitude	Remarks	Core Of Eng Name	Status	Life	Core Of Eng Permit Process	Permit Owner
93	SHRUBBY	Y	65S	80E	13	132 58 10.6856	56 14 25.2220		CLARANCE STRAIT 29	E	T	PRE85	FS
94	EXCHANGE COVE		65S	80E	29	133 04 19.4278	56 11 55.6632			E			
95	CALDER	Y	66S	77E	3	133 28 24.3138	56 10 39.8919			E	T	PRE85	FS
96	EL CAPITAN	Y	66S	78E	11	133 18 44.0289	56 09 31.7945			E	T	PRE85	FS
97	SUTTER CREEK	Y	66S	77E	14	133 27 27.2706	56 09 07.7074		SHAKAN STRAIT 4	E	T	PRE85	
99	WHALE PASS	Y	66S	79E	25	133 07 15.3506	56 06 53.5001			E	T	PRE85	
100	WHALE PASS WEST	Y	67S	79E	1	133 07 35.1523	56 05 44.3811			E	T	PRE85	FS
101	SHIPLEY	Y	67S	77E	8	133 32 47.0282	56 04 45.4320		SUMNER STRAIT 62	E	T	PRE85	KPC
102	COFFMAN COVE	Y	67S	81E	35	132 49 50.9089	56 00 50.3397		CLARENCE STRAIT 24	E	T	PRE85	FS
103	CAPE POLE	Y	68S	75E	22	133 47 08.8924	55 58 16.1010		SUMNER STRAIT 21	E	T	PRE85	FS
104	ORR ISLAND WEST	Y	68S	77E	24	133 25 05.4152	55 57 41.7452			E	T	PRE85	FS
105	MARBLE ISLAND EAST	Y	68S	77E	24	133 26 04.0912	55 57 12.6043			E	T	PRE85	FS
106	S. CAPE POLE	Y	68S	75E	28	133 48 27.6387	55 57 10.8897			E	T	PRE85	FS
107	ORR ISLAND SW	Y	68S	77E	25	133 25 11.0130	55 56 25.9458			E	T	PRE85	FS
108	ORR ISLAND E	Y	68S	78E	29	133 23 13.8212	55 56 25.5089			E	T	PRE85	FS
110	WHITE CLIFF ISLAND	Y				133 29 07.4655	55 54 49.9611			E	T	PRE85	FS

LTF #	LTF Name	Built	Township	Range	Section	Longitude	Latitude	Remarks	Core Of Eng Name	Status	Life	Core Of Eng Permit Process	Permit Owner
111	ORR ISLAND SOUTH	Y	69S	78E	11	133 23 45.4137	55 53 58.1038			E	T	PRE85	FS
112	ORR ISLAND SE	Y	69S	78E	12	133 23 28.4491	55 53 56.9399			E	T	PRE85	FS
113	EAGLE ISLAND E	Y	69S	78E	17	133 29 39.0801	55 53 33.1817			E	T	PRE85	FS
114	OWL ISLAND	Y	69S	78E	14	133 24 52.9929	55 53 10.4963			E	T	PRE85	FS
115	EAGLE ISLAND S	Y	69S	78E	18	133 30 02.6604	55 52 56.8179			E	T	PRE85	FS
116	HOOT ISLAND	Y	69S	78E	13	133 23 26.0671	55 52 52.1202			E	T	PRE85	FS
117	NAUKATI	Y	69S	79E	24	133 13 08.2180	55 52 22.5780		TUXEKAN PASSAGE 6	E	T	PRE85	FS
118	TUXEKAN JINHI E.	Y	69S	79E	23	133 15 55.2493	55 52 11.2437			E	T	PRE85	ST
119	TUXEKAN JINHI W.	Y				133 17 21.0398	55 51 29.5172			E	T	PRE85	ST
120	NICHEN COVE	Y	69S	79E	25	133 13 46.8619	55 51 08.7396		TUXEKAN PASSAGE 2	E	T	PRE85	FS
121	CAMP IS.(HECATA)	Y	70S	78E	20	133 29 41.6660	55 48 34.8447		SEA OTTER SOUND 5	E	T	PRE85	FS
122	PORT ALICE	Y	70S	77E	15	133 35 34.9851	55 47 51.3305		DAVIDSON INLET 8	E	T	PRE85	FS
124	CAMP S.W.		70S	78E	20	133 29 05.0117	55 47 21.8403			E			FS
125	CAMP S.E.		70S	78E	21	133 27 04.7917	55 47 21.6379			E			FS

LTF #	LTF Name	Built	Township	Range	Section	Longitude	Latitude	Remarks	Core Of Eng Name	Status	Life	Core Of Eng Permit Process	Permit Owner
126	WINTER HARBOR	Y	70S	79E	25	133 13 40.2104	55 46 17.7162		TUXEKAN PASSAGE 7	E	T	PRE85	FS
127	THORNE BAY	Y	71S	84E	28	132 32 50.1373	55 41 21.2909		CLARENCE STRAIT 21	E	T	PRE85	KPC
128	TOLSTOI BAY LTF	Y				132 25 59.2709	55 37 50.0489		TOLSTOI BAY 1	E		POST85	SEALASKA
129	TOLSTOI BAY STORAGE	Y				132 26 57.9816	55 37 45.8729		TOLSTOI BAY 1	E		POST85	SEALASKA
130	WADLEIGH ISLAND STORAGE	Y	73S	81E	9	133 07 44.5847	55 34 48.9966		KLAWOCK INLET 59	E		PRE85	SEALASKA
131	KLAWOCK ISLAND DOCK	Y				133 06 32.4801	55 33 16.0557		KLAWOCK INLET 53	E		PRE85	KIDCO
132	KIDCO LTF	Y	73S	81E	9	133 06 29.9457	55 33 10.7311		KLAWOCK INLET 51; 56	E		PRE85	KIDCO
133	SANDY POINT LTF	Y				132 32 24.6014	55 32 41.2254		KASAAN BAY 52	E		POST85	SEALASKA
134	LITTLE COAL BAY	Y	73S	85E	26	132 26 18.8189	55 30 48.5139		KASAAN BAY 51	E	T	POST85	FS
135	KINA COVE STORAGE	Y	73S	78E	29	132 31 04.2601	55 30 28.3609		KASAAN BAY 43	E		POST85	SEALASKA
137	KASAAN ISLAND LTF	Y	74S	84E	33	132 21 19.5446	55 29 35.0948			E		UNKNOWN	KAVILCO
139	TROCADERO LTF	Y	74S	80E	15	133 14 34.2888	55 27 00.2826			E		UNKNOWN	SHAAN SEET
140	LITTLE GOOSE BAY STORAGE	Y	74S	85E	35	132 27 25.8300	55 24 56.7972		SKOWL ARM 21	E		POST85	SEALASKA
141	CABIN CREEK LTF	Y	74S	85E	34	132 29 10.3138	55 24 56.4619		SKOWL ARM 21	E		POST85	SEALASKA
142	EAST 12 MILE NORTH	Y	75S	84E	7	132 42 12.9066	55 23 15.8787		TWELVEMILE ARM 1	E	T	POST85	FS

LTF #	LTF Name	Built	Township	Range	Section	Longitude	Latitude	Remarks	Core Of Eng Name	Status	Life	Core Of Eng Permit Process	Permit Owner
143	POLK INLET	Y	75S	85E	21	132 30 05.8015	55 21 21.0057		SKOWL ARM 16	E	P	PRE85	FS
145	SULZER LTF	Y				132 37 37.2361	55 17 17.3885		HETTA INLET 11	E		POST85	SEALASKA
146	SUEMEZ	Y	76S	79E	12	133 19 37.7052	55 17 16.1892		ULLOA CHANNEL 4	E	P	PRE85	FS
148	SODA BAY STORAGE	Y				133 00 08.7026	55 15 23.9062		SODA BAY 1	E		POST85	SEALASKA
149	W. ARM CHOLMONDELEY	Y	76S	86E	27	132 25 13.7740	55 15 03.8657		CHOLMONDELEY SOUND 28	E	T	POST85	FS
150	SODA BAY LTF	Y	76S	82E	29	132 58 05.5561	55 15 18.6303		SODA BAY 1	E		POST85	SEALASKA
153	COPPER MOUNTAIN LTF	Y	76S	84E	12	132 39 17.3359	55 14 50.6579		HETTA INLET 8	E		POST85	SEALASKA
154	LANCASTER COVE	Y	77S	88E	12	132 04 57.5115	55 12 47.6279		CHOLMONDELEY SOUND 16	E	T	POST85	FS
155	SALTERTY POINT LTF	Y	77S	84E	20	132 47 51.6299	55 11 00.3717		SUKKWAN STRAIT 12	E		PRE85	HAIDA CORP
156	CRAB TRAP COVE STORAGE	Y	77S	84E	20	132 47 49.0284	55 10 25.2527		SUKKWAN STRAIT 12	E		OFFSHORE	SEALASKA
157	NORTH NUTKWA LTF	Y				132 33 30.4069	55 07 07.9026		NUTKWA INLET 3	E		POST85	SEALASKA
158	SOUTH NUTKWA LTF	Y	78S	85E	23	132 32 57.2001	55 05 24.8108		NUTKWA INLET 4	E		POST85	SEALASKA
159	SOUTH NUTKWA STORAGE	Y	78S	85E	23	132 33 08.8747	55 05 12.3913		NUTKWA INLET 4	E		POST85	SEALASKA

LTF #	LTF Name	Built	Township	Range	Section	Longitude	Latitude	Remarks	Core Of Eng Name	Status	Life	Core Of Eng Permit Process	Permit Owner
160	CLAM ISLAND STORAGE	Y	78E	82E	21	133 03 18.6991	55 05 22.7569		TLEVAK STRAIT 11	E		PRE85	SEALASKA
161	VIEW COVE LTF	Y	78E	82E	23	133 01 01.1948	55 05 04.9639		TLEVAK STRAIT 11; 6	E		PRE85	SEALASKA
162	COCO HARBOR LTF	Y	79S	82E	9	133 04 10.8145	55 02 27.2701		TLEVAK STRAIT 16	E		POST85	SEALASKA
163	COCO HARBOR STORAGE	Y	79S	82E	9	133 03 52.9276	55 02 26.5102		TLEVAK STRAIT 16	E		POST85	SEALASKA
166	ROSE INLET SHIP MOORAGE	N	80S	63E	7	132 57 26.6557	54 56 52.3028		ROSE INLET 2	E		OFFSHORE	SEALASKA
167	ROSE INLET LTF	N	80S	83E	7	132 57 51.4746	54 56 37.4536		ROSE INLET 2	E		POST85	SEALASKA
168	ROSE INLET STORAGE	N	80S	83E	7	132 57 20.5729	54 56 31.3726			E		POST85	SEALASKA
169	GRACE HARBOR STORAGE	Y	80S	83E	28	132 54 58.3315	54 54 48.8058		DIXON ENTRANCE 12	E		PRE85	SEALASKA
170	GRACE HARBOR LTF	Y	80S	83E	28	132 54 46.7781	54 54 31.8856		DIXON ENTRANCE 12	E		PRE85	SEALASKA

WESTERN ALASKA SUBAREA CONTINGENCY PLAN
SENSITIVE AREAS
SECTION

i. 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:

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Habitat Division
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Anchorage, Alaska 99518-1599
267-2541
FAX: 267-2499
email: Bradley.dunker@alaska.gov

ii. 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

Agency	Resources	Point of Contact
SHORELINE TYPES		
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

Agency	Resources	Point of Contact
Alaska Department of Environmental Conservation	seafood processing	Division of Environmental Health Juneau 907-269-7644
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

Agency	Resources	Point of Contact
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
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

iii. 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

iv. 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

v. 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

The Environmental Sensitivity Index Map Atlas Index may be viewed at the DNR Prevention and Emergency Response Subarea Plan Maps website located at:

http://www.asgdc.state.ak.us/maps/cplans/western/PDFS/ESI_DATA/INDEX.PDF

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[7] 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

[7] 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."

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

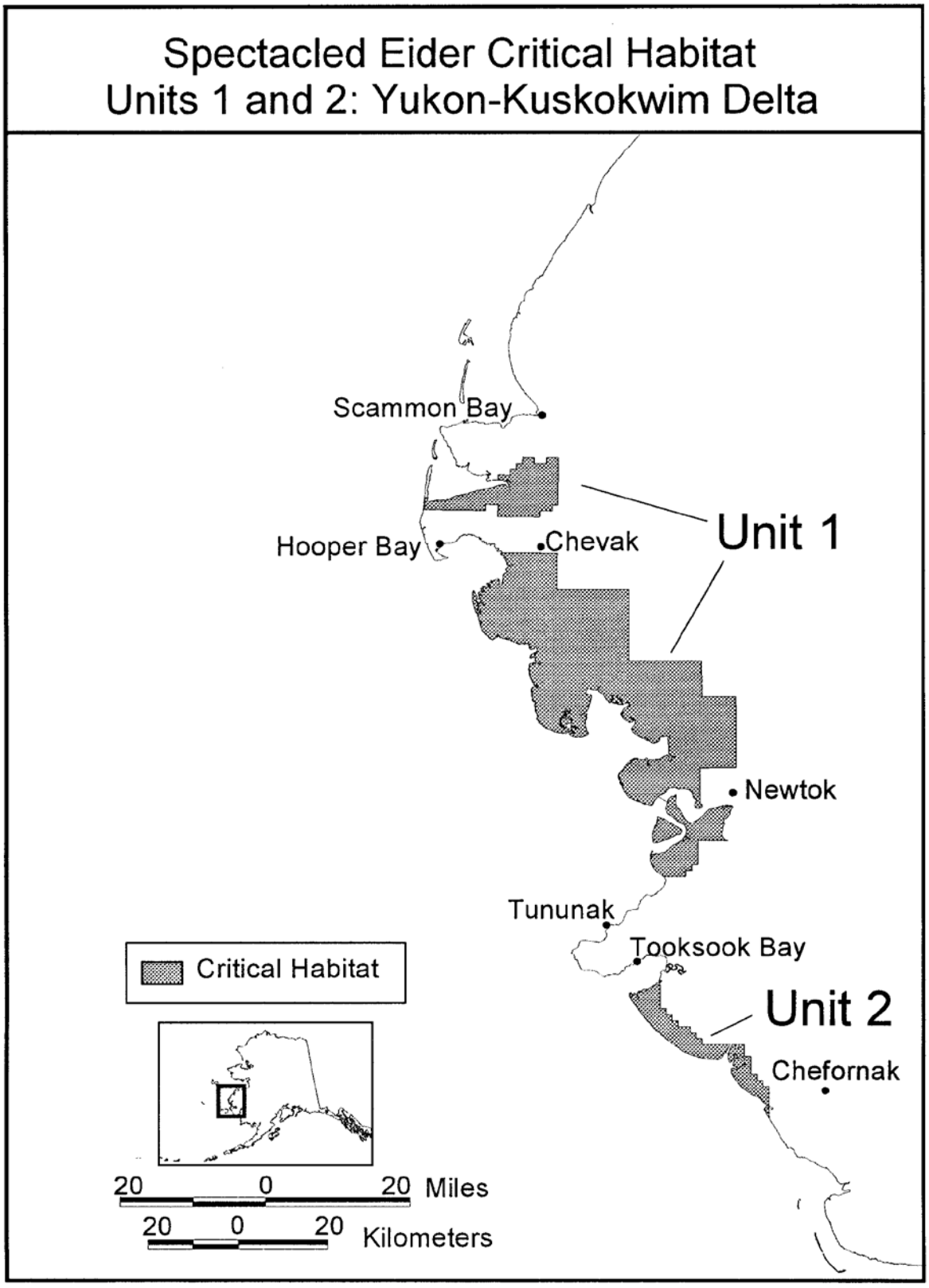
The National Marine Fisheries Service Regional Threatened and Endangered Species web site:
http://www.fakr.noaa.gov/protectedresources/esa/ak_specieslst.pdf

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

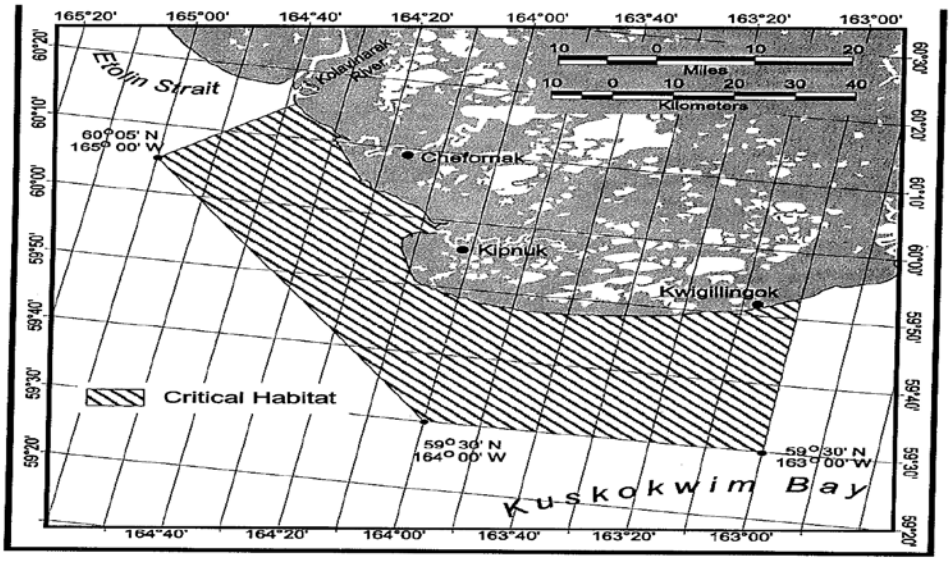
Steller's eider range map:
http://alaska.fws.gov/fisheries/endangered/StellEider_RangeMap.htm

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



Steller's Eiders Critical Habitat: map 1 of 2


165°20'
165°00'
164°40'
164°20'
164°00'
163°40'
163°20'
163°00'
60°20'
60°10'
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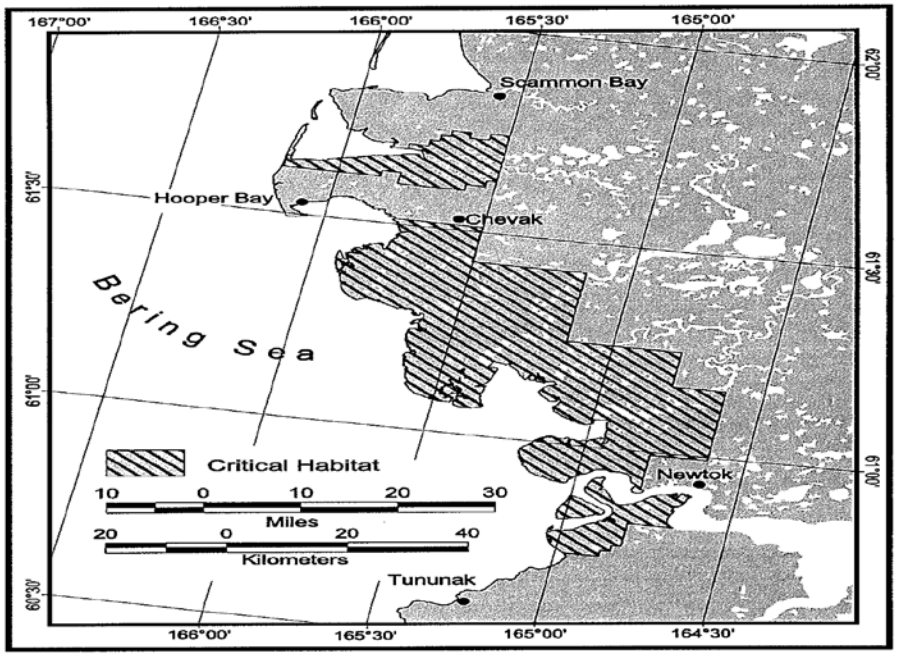
Etolin Strait
Kolavinarak River
10 0 10 20
Miles
10 0 10 20 30 40
Kilometers
60° 05' N
165° 00' W
Chefornak
Kipnuk
Kwigillingok
Critical Habitat
59° 30' N
164° 00' W
59° 30' N
163° 00' W
Kuskokwim Bay

Steller's Eiders Critical Habitat: map 2 of 2



The critical habitat map for the North Pacific right whale may be viewed at:

http://www.nmfs.noaa.gov/pr/pdfs/criticalhabitat/northpacificrightwhale.pdf

The critical habitat map for Steller sea lion may be viewed at:

http://www.nmfs.noaa.gov/pr/pdfs/criticalhabitat/stellersealion_ak.pdf

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	Present in Bays and Estuaries	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

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

vi. 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.**

The Land Management Map Legend page may be viewed at the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/base/LegendPage.pdf

Land Management Map 1 of 10 may be viewed at the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/western/WesternMap1of10.pdf

Land Management Map 2 of 10 may be viewed at the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/western/WesternMap2of10.pdf

Land Management Map 3 of 10 may be viewed at the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/western/WesternMap3of10.pdf

Land Management Map 4 of 10 may be viewed at the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/western/WesternMap4of10.pdf

Land Management Map 5 of 10 may be viewed at the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/western/WesternMap5of10.pdf

Land Management Map 6 of 10 may be viewed at the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/western/WesternMap6of10.pdf

Land Management Map 7 of 10 may be viewed at the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/western/WesternMap7of10.pdf

Land Management Map 8 of 10 may be viewed at the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/western/WesternMap8of10.pdf

Land Management Map 9 of 10 may be viewed at the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/western/WesternMap9of10.pdf

Land Management Map 10 of 10 may be viewed at the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/western/WesternMap10of10.pdf