

ALEUTIANS SUBAREA CONTINGENCY PLAN

SENSITIVE AREAS SECTION

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SENSITIVE AREAS: INTRODUCTION

This section is intended for use by the On-Scene Coordinators 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 Aleutian Islands. This information is specific to the Aleutians 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 developed a series of guidelines (see the Alaska Federal/State Preparedness Plan for Response to Oil & Hazardous Substance Discharges/Releases [the Unified Plan]) covering the decision processes for the application of dispersants, the use of *in situ* burning, and the protection of wildlife. Protection of cultural resources will be accomplished by implementation of the *Programmatic Agreement on Protection of Historic Properties during Emergency Response under the National Oil and Hazardous Substances Pollution Contingency Plan (Programmatic Agreement)*. The National Oceanic and Atmospheric Administration (NOAA) Scientific Support Coordinator has developed a Shoreline Countermeasures Manual which provides helpful information on clean-up options by shoreline type. In addition, Environmental Sensitivity Index (ESI) maps have been produced that illustrate selected sensitive resources and shoreline types. These guidelines and tools are not duplicated here. The Pribilof Island Work Group produced in 1998 the Wildlife Protection Guidelines: Pribilof Islands, which are incorporated into this Subarea Contingency Plan.

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 © response strategies to protect sensitive areas at risk. This information within industry plans should be consistent with the subarea 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. 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 for the next update.

The joint Federal-State Subarea Contingency Plan for this subarea is scheduled to be updated periodically. Much can be done in these updates to improve the data and its presentation, such as:

- Review and provide updated information for the Alaskan Environmental Sensitivity Index (ESI) maps, and complete ESI maps for the western portion of the Subarea.
- Enter the sensitive areas and ESI data into a commonly accessible geographic information system (GIS), standard base maps, and verify data quality.
- Complete work identified in Part Five, Significant Data Gaps and Information Needs, to adequately address sensitive areas and resources.
- Establish a continuing interagency mechanism to review, update and maintain sensitivity information and priorities.
- Fund staff/materials to compile data and prepare materials for presentation in the Subarea Contingency Plans.
- Subdivide the area into smaller geographic areas and identify more specifically sensitive seasonal biological and other resource locations.
- Expand and further detail sensitive resources and initial response tactics for the most likely spill scenarios.

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
(907) 271-5011
FAX (907) 271-4102

Mark Fink
Alaska Department of Fish and Game
Habitat and Restoration Division
333 Raspberry Road
Anchorage, Alaska 99518
(907) 267-2338
FAX (907) 267-2464

SENSITIVE AREAS: PART ONE - INITIAL CONTACTS

| Agency | Resources | Primary Contact | | Alternate Contact | |
|--|---|-----------------|---|-------------------|---|
| | | Name | Numbers | Name | Numbers |
| FISH and WILDLIFE and HABITAT RESOURCES | | | | | |
| Alaska Department of Fish and Game | fish, shellfish, birds, terrestrial mammals, marine mammals | Mark Fink | work: 267-2338 fax: 267-2464 emer: 337-7933 | Lance Trasky | work: 267-2342 fax: 267-2464 emer: 344-4220 |
| U.S. Department of the Interior | migratory birds, sea otters, polar bears, walrus, endangered species, bald eagles | Pamela Bergmann | work: 271-5011 fax: 271-4102 emer: 333-0489 | Doug Mutter | work: 271-5011 fax: 271-4102 emer: 345-7726 |
| U.S. Department of Commerce | sea lions, seals, whales, endangered species | Steve Zimmerman | work: 586-7235 fax: 586-7131 emer: 586-2591 | Brad Smith | work: 271-5006 fax: 271-3030 emer: 248-4211 |
| CULTURAL and ARCHAEOLOGICAL SITES | | | | | |
| Alaska Office of History and Archaeology | historic sites, archaeological sites, national register sites | Judy Bittner | work: 269-8715 fax: 269-8907 emer: 274-7165 | Doug Reger | work: 269-8725 fax: 269-8908 emer: 338-4371 |
| U.S. Department of the Interior | Archaeological/historical sites in park and wildlife refuge system units, public lands, Native allotments/trust lands; sunken vessels | Pamela Bergmann | work: 271-5011 fax: 271-4102 emer: 333-0489 | Doug Mutter | work: 271-5011 fax: 271-4102 emer: 345-7726 |
| U.S. Department of Defense | Archaeological sites in military reservations | | work: 552-2607 fax: 552-5102 emer: 552-3013 | Bob Hanson | work: 552-3791 fax: emer: |

| Agency | Resources | Primary Contact | | Alternate Contact | |
|--|---|-----------------|---|-------------------|---|
| | | Name | Numbers | Name | Numbers |
| LAND OWNERSHIP and CLASSIFICATIONS/DESIGNATIONS | | | | | |
| Alaska Department of Natural Resources | state lands, state parks and recreation areas, state forests, tidelands | Sam Means | work: 269-8548 fax: 269-8913 emer: | Kristina O'Connor | work: 269-8815 fax: 563-0415 emer: 349-1908 |
| Alaska Department of Fish and Game | state game refuges, state critical habitats | Mark Fink | work: 267-2338 fax: 267-2464 emer: 337-7933 | Lance Trasky | work: 267-2342 fax: 267-2464 emer: 344-4220 |
| 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 | Pamela Bergmann | work: 271-5011 fax: 271-4102 emer: 333-0489 | Doug Mutter | work: 271-5011 fax: 271-4102 emer: 345-7726 |
| U.S. Department of Defense | military installations and reservations | | work: 552-2607 fax: 552-5102 emer: 552-3013 | Bob Hanson | work: 552-3791 fax: emer: |
| COMMERCIAL HARVEST | | | | | |
| Alaska Department of Fish and Game | fishing | Mark Fink | work: 267-2338 fax: 267-2464 emer: 337-7933 | Lance Trasky | work: 267-2342 fax: 267-2464 emer: 344-4220 |
| Alaska Department of Natural Resources | tideland leases, logging on private lands | Sam Means | work: 269-8548 fax: 269-8913 emer: | Kristina O'Connor | work: 269-8815 fax: 563-0415 emer: 349-1908 |
| Alaska Department of Environmental Conservation | seafood processing | Manny Soares | work: 349-7343 fax: 349-4715 emer: 333-5312 | Kit Ballentine | work: 465-5280 fax: 465-5292 emer: |
| U.S. Department of Commerce | fishing permits | Steve Zimmerman | work: 586-7235 fax: 586-7131 emer: 586-2591 | Brad Smith | work: 271-5006 fax: 271-3030 emer: 248-4211 |

| Agency | Resources | Primary Contact | | Alternate Contact | |
|--|---|-----------------|---|-------------------|---|
| | | Name | Numbers | Name | Numbers |
| SUBSISTENCE USES | | | | | |
| Alaska Department of Fish and Game | statewide subsistence uses | Mark Fink | work: 267-2338 fax: 267-2464 emer: 337-7933 | Lance Trasky | work: 267-2342 fax: 267-2464 emer: 344-4220 |
| U.S. Department of the Interior | Subsistence uses on Federal lands and all navigable waters; use of sea otters, walrus, polar bears, migratory birds | Pamela Bergmann | work: 271-5011 fax: 271-4102 emer: 333-0489 | Doug Mutter | work: 271-5011 fax: 271-4102 emer: 345-7726 |
| U.S. Department of Commerce | Subsistence use of whales, porpoises, seals, sea lions | Steve Zimmerman | work: 586-7235 fax: 586-7131 emer: 586-2591 | Brad Smith | work: 271-5006 fax: 271-3030 emer: 248-4211 |
| RECREATION AND TOURISM USES | | | | | |
| Alaska Department of Natural Resources | state parks and recreation areas, anchorages, campgrounds | Sam Means | work: 269-8548 fax: 269-8913 emer: | Kristina O'Connor | work: 269-8815 fax: 563-0415 emer: 349-1908 |
| Alaska Department of Fish and Game | sport hunting and fishing | Mark Fink | work: 267-2338 fax: 267-2464 emer: 337-7933 | Lance Trasky | work: 267-2342 fax: 267-2464 emer: 344-4220 |
| U.S. Department of the Interior | recreation uses in park and wildlife refuge system units and public lands | Pamela Bergmann | work: 271-5011 fax: 271-4102 emer: 333-0489 | Doug Mutter | work: 271-5011 fax: 271-4102 emer: 345-7726 |

| Agency | Resources | Primary Contact | | Alternate Contact | |
|---|--|---------------------------------|---|-------------------|---|
| | | Name | Numbers | Name | Numbers |
| WATER INTAKE and USE FACILITIES | | | | | |
| Alaska Department of Environmental Conservation | drinking water wells, treatment and storage; fish processing facilities | Lynn Johnston | work: 269-7624 fax: 269-7652 emer: | John Truelove | work: 465-5300 fax: 465-5274 emer: 790-3122 |
| Alaska Department of Fish and Game | hatcheries and release sites | Mark Fink | work: 267-2338 fax: 267-2464 emer: 337-7933 | Lance Trasky | work: 267-2342 fax: 267-2464 emer: 344-4220 |
| Alaska Department of Natural Resources | tidelands leases, aquaculture sites, private logging camps and log transfer facilities | Sam Means | work: 269-8548 fax: 269-8913 emer: | Kristina O'Connor | work: 269-8815 fax: 563-0415 emer: 349-1908 |
| U. S. Coast Guard | marinas and docks, mooring buoys | Marine Safety Office, Anchorage | work: 271-6700 fax: 271-4689 emer: 271-6700 | | work: fax: emer |

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 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 or Endangered Species Habitats

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 Haulout Areas (> 10)

Northern Fur Seal Rookeries

Steller Sea Lion Rookeries or Haulouts

Walrus Haulout/Concentration Areas

Caribou Calving and Insect Relief Areas

Seabird Colonies (> 100,000)

Waterfowl and Shorebird Spring, Fall, or Winter Concentration Areas

Eagle Nest Sites

Large Anadromous Fish Streams:

- > 500 king 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 (Possible Threatened or Endangered)

Geomorphology - Coastal Habitat Types:

- Gravel Beaches
- Mixed Sand and Gravel Beaches
- Exposed Tidal Flats
- Coarse Grained Sand Beaches

Sea Otter General Distribution Areas

Harbor Seal Haulout Areas (< 10)
 Northern Fur Seal Offshore Concentration Areas
 Seabird Colonies (10,000 - 100,000)
 Waterfowl and Shorebird Nesting or Molting Concentration Areas
 Whale Migration Routes (Spring/Fall)
 Bear Concentration Areas
 Anadromous Fish Streams:
 100-500 king salmon
 1,000-5,000 sockeye salmon
 500-2,500 coho salmon
 5,000-25,000 pink salmon
 5,000-15,000 chum salmon
 Caribou Migration Routes
 Commercial Harvest Areas
 Recreational Use Areas
 Land Management Designations:
 Federal: National Parks
 National Wildlife Refuges
 Research Natural Areas
 State: 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
 Harbor Seal General Distribution Areas
 Walrus General Distribution Areas
 Seabird Colonies (< 10,000)
 Waterfowl and Shorebird General Distribution Areas
 Anadromous Fish Streams:
 < 100 king 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
 National Forests
 National Preserves
 State: General Public Lands
 Other Cultural Resources

SENSITIVE AREAS: PART THREE - RESOURCE SENSITIVITY

The following sensitivity tables were developed by the Sensitive Areas Work Group, with representatives from state and federal agencies and the private sector (not all information is complete at this time). Key references that are available are identified for each table and listed at the end of the tables. Periods and/or conditions when resources are of varying levels of susceptibility (most, medium, least) to adverse impacts from an oil spill are noted in the following tables.

GEOMORPHOLOGY

(references: 6)

| CATEGORY | LESSER | MODERATE | MAJOR |
|------------------------------|---|---|---|
| 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 |
| UPLAND HABITAT TYPES | | | Streams & Lakes Riparian Habitats |

THREATENED OR ENDANGERED SPECIES

(references: 8, 9, 14)

| CATEGORY | LOW | MEDIUM | HIGH |
|---------------------------|------------|---------------|---|
| ENDANGERED SPECIES | | | Whales: Fin, Blue, Humpback, Sei, Gray, Pacific Right, and Sperm Birds: Short-tailed albatross, Eskimo curlew |
| THREATENED SPECIES | | | Marine mammals: Steller sea lion Birds: Aleutian Canada goose, Steller's eider, Spectacled eider, American peregrine falcon Plant: Aleutian shield fern |

CARIBOU/REINDEER

(references: 2, 3, 10, 15)

| CATEGORY | LESSER | MODERATE | MAJOR |
|------------------------|------------------------------|---|--|
| ABUNDANCE ¹ | | | |
| SUSCEPTIBILITY | 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. Depending on the herd; abundance may vary widely. As a result, specific abundance figures have not been established for use in prioritizing protection sites.

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

MOOSE

(references: 2, 3, 4, 10, 15)

| CATEGORY | LESSER | MODERATE | MAJOR |
|-----------------|--|-----------------|--------------|
| 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. | | |
| SUSCEPTIBILITY | | | |
| HUMAN HARVEST | No Open Season. No Subsistence Use. | | |

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

SALMONIDS

(references: 1, 2, 3, 4, 10, 15)

| CATEGORY | LESSER | MODERATE | MAJOR |
|----------------|---|---|---|
| ABUNDANCE | < 100 (Kings) < 1,500 (Sockeye) < 500 (Coho) < 5,000 (Pinks) < 5,000 (Chum) | 100-500 (Kings) 1,500-5,000 (Sockeye) 500-2,500 (Coho) 5,000-25,000 (Pinks) 5,000-15,000 (Chum) | > 500 (Kings) > 5,000 (Sockeye) > 2,500 (Coho) > 25,000 (Pinks) > 15,000 (Chum) |
| SUSCEPTIBILITY | 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 |

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

HERRING

(references: 2, 3, 4, 10, 15)

| CATEGORY | LESSER | MODERATE | MAJOR |
|----------------|------------------------------|----------------|-----------------|
| ABUNDANCE | Abundance data not available | | |
| SUSCEPTIBILITY | Oct 1 - Feb 28 | Mar 1 - Mar 31 | Apr 1 - Sept 30 |
| HUMAN HARVEST | Aug 1 - Feb 28 | Mar 1 - Apr 30 | May 1 - Jul 31 |

| | | | | | | | | | | | | |
|------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Critical Life Periods | J | F | M | A | M | J | J | A | S | O | N | D |
| Spawning | | | | | | | | | | | | |
| Present nearshore | | | | | | | | | | | | |

CLAMS and OTHER MARINE INVERTEBRATES (CHITONS)

(references: 2, 3, 4, 10, 15)

| CATEGORY | LESSER | MODERATE | MAJOR |
|----------------|--------|----------------|-----------------|
| SUSCEPTIBILITY | | Jan 1 - May 19 | May 20 - Dec 31 |
| HUMAN HARVEST | | May 1 - Aug 31 | Sept 1 - Apr 30 |

| | | | | | | | | | | | | |
|------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Critical Life Periods | J | F | M | A | M | J | J | A | S | O | N | D |
| Spawning | | | | | | | | | | | | |
| Planktonic larvae | | | | | | | | | | | | |

LEGISLATIVELY DESIGNATED LAND STATUS*

(references: 13)

| CATEGORY | LOW | MEDIUM | HIGH |
|-----------------|---------------------------|--|--|
| FEDERAL LANDS | Public Lands | National Parks Wildlife Refuges Recreational Areas | Wilderness Areas |
| STATE LANDS | Public Lands ¹ | Recreational Areas | Izembek State Refuge Port Moller Critical Habitat Area Port Heiden Critical Habitat Area |

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

CULTURAL RESOURCES/ARCHAEOLOGICAL SITES*

(references:12)

| CATEGORY | LOW | MEDIUM | HIGH |
|-----------------|--|---|---|
| | 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 |
| | | | |

REFERENCE DOCUMENTS FOR SENSITIVITY TABLES

1. Alaska Department of Fish and Game. 1994. An atlas to the catalog of waters important for spawning, rearing or migration of anadromous fishes. ADFG, Div. of Habitat, Juneau.
2. Alaska Department of Fish and Game. 1985. Fish and wildlife life histories, habitat requirements, distribution, and abundance. Southwest region. Volume I. Alaska Habitat Management Guide. ADFG, Div. of Habitat, Juneau. 545 pp.
3. Alaska Department of Fish and Game. 1985. Human use of fish and wildlife. Southwest region. Volume II. Alaska Habitat Management Guide. ADFG, Div. of Habitat, Juneau. 630 pp.
4. Alaska Department of Fish and Game. 1985. Map atlas. Southwest region. Alaska Habitat Management Guide. ADFG, Div. of Habitat, Juneau. 8 pp. + 66 plates.
5. Sowls, A.L., S.A. Hatch and C.J. Lensink. 1978. Catalog of Alaskan seabird colonies. FWS/OBS-78/78. Biological Services Program. USDI:USFWS.
6. Research Planning Institute. 1988. Sensitivity of coastal environments and wildlife to spilled oil - Southern Alaska Peninsula - An atlas of coastal resources. 61 plates.
8. U.S. Fish and Wildlife Service
9. National Marine Fisheries Service
10. Alaska Department of Fish and Game
11. Alaska Department of Natural Resources
12. National Park Service
13. Alaska Department of Fish and Game. 1991. State of Alaska refuges, critical habitat areas and sanctuaries. ADFG, Div. of Habitat. 69 pp.
14. Alaska's Threatened and Endangered Species. 1994. 29 pp.
15. Alaska Department of Fish and Game, Division of Subsistence Technical Paper Series: Nos. 57, 58, 88, 183, 226, 227, 229, 233 and two reports *in prep.*

SENSITIVE AREAS: PART FOUR - BACKGROUND INFORMATION

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.

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. For selected areas of high sensitivity and/or risk, seasonal sensitive areas maps for the area have also been produced (in coordination with the National Oceanic and Atmospheric Administration's (NOAA) Environmental Sensitivity Index mapping schema—contact the NOAA Scientific Support Coordinator at 271-3593).

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