BRISTOL BAY
SUBAREA CONTINGENCY PLAN

BACKGROUND
SECTION

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BACKGROUND: PART ONE - SUPPORT INFORMATION

A. SUBAREA PLAN

This Subarea Contingency Plan (SCP) supplements the Alaska Federal/State Preparedness Plan for Response to Oil and Hazardous Substance Discharges/Releases (the Unified Plan). The SCP in conjunction with the Unified Plan describes the strategy for a coordinated federal, state, and local response to a discharge or substantial threat of discharge of oil or a release of a hazardous substance from a vessel, onshore or offshore facility, vehicle, or facility operating within the boundaries of the Bristol Bay subarea. For its planning process, the federal government has designated the entire state of Alaska as a planning "region" and the western half of the state as a planning "area." The State of Alaska has divided the state into ten planning regions, of which one is Bristol Bay. As part of the Unified Plan, this SCP addresses this Bristol Bay Region or, to avoid confusion with federal terms, Subarea.

This SCP shall be used as a framework for response mechanisms and as a pre-incident guide to identify weaknesses and to evaluate shortfalls in the response structure before an incident. The plan also offers parameters for vessel and facility response plans under the Oil Pollution Act of 1990. Any review for consistency between government and industry plans should address the recognition of economically and environmentally sensitive areas and the related protection strategies, as well as a look at the response personnel and equipment (quantity and type) available within the area (including federal, state, and local government and industry) in comparison to probable need during a response.

B. SUBAREA DESCRIPTION

As defined by Alaska regulations, the Bristol Bay Region is that area of the State encompassed by the boundaries of the Bristol Bay Coastal Resource Service Area, the Bristol Bay Borough, and the Lake and Peninsula Borough, including adjacent shorelines and state waters, and having as its seaward boundary a line drawn in such a manner that each point on it is 200 nautical miles from the baseline from which the territorial sea is measured. Figure 1 depicts this area.

1. **Physical Features:** Portions of this region are in the maritime, transitional, and continental climatic zones. The weather in the region is the result of the interaction between land topography and major weather systems that move northward across the Gulf of Alaska or eastward across the Bering Sea.

   The South side of the Alaska Peninsula is characterized by a fjord-like coastline rising to volcanic mountainous areas occasionally up to 8,000 feet. The north side of the peninsula and the Bristol Bay area are characterized by a relatively regular coastline with numerous sand and gravel beaches and abutting coastal lowlands, often drained by river systems terminating in broad estuarine areas. Major storm systems move northward off the Gulf of Alaska and into the South coastal highland areas, dropping precipitation usually as rain on the southern side and leaving the leeward (northern) side in somewhat of a rain shadow. The north side of the peninsula and Bristol Bay, however, are subject to eastward-moving storm systems from the Bering Sea; hence, these areas are among the stormiest in the State. Headwater areas of the major Bristol Bay-Togiak drainages receive less precipitation than coastal areas and are subject to greater temperature fluctuations due to the influence of the continental climatic zone.

   The Bay spans 200 miles from its base at Port Moller on the Alaska Peninsula to its northwest boundary at Cape Newenham, and stretches northeasterly nearly the same distance to the mouths of

the Nushagak and Kvichak rivers which drain its inland reaches. The Nushagak and Kvichak are two of several major rivers in the region. At the west end are the Kvichak River (which drains Lake Iliamna), the Nushagak, the Alagnak and the Naknek River, which drains Naknek Lake on the Alaska Peninsula.

2. **Socio-Economic:** Bristol Bay is the world's largest sockeye salmon fishery and the state's largest salmon fishery, which is by far the dominant enterprise in the region. Dillingham and Naknek are the major fish processing areas as well as the main ports, although fishing fleets work out of numerous smaller communities also. Noncommercial harvest, including subsistence, is another major activity especially important in areas with no direct connection to the commercial fishing and processing industry.

   Additional economic bases are provided by the tourist industry, mostly associated with sportfishing and hunting lodges in the Bristol Bay lakes area, and by government services including military bases. Infrastructural development is minimal. Dillingham is the only improved harbor in the Bristol Bay area, and the road network is minor and local. Most travel within the region is by plane (scheduled and charter) or private boat. There is no connecting road network and the Alaska Marine Highway System does not service the Bristol Bay area. The population centers of the region are thus physically isolated from one another. This factor has limited the diversification of the local economies so that they remain closely tied to the regional fish and wildlife resources. See the community profiles in the Resources Section for specifics regarding socio-economic activities within each community.

3. **Oil Activities:** Deliveries of noncrude oils are made to the villages in this area primarily by barges operating from Dutch Harbor or the Cook Inlet Region. Deliveries are ice dependent and do not occur as ice forms. Delivery of non-crude oil is made to the remote villages in this area primarily by small barges.

4. **General:** There are a total of 30 communities in the region (including the two boroughs), 27 Native and 3 non-Native.

C. AREA OF RESPONSIBILITY

This Subarea Contingency Plan covers the region outlined above. The USCG Captain of the Port (COTP) is the predesignated FOSC for navigable waters within the subarea (as agreed to and stipulated in a memorandum of understanding between the EPA and the U.S. Coast Guard). The Environmental Protection Agency is the predesignated FOSC for the Inland Zone which encompasses all lands, rivers, streams, and drainages inland of the 1000-yard wide band which parallels the Alaskan coastline. These zones are clearly defined in the Unified Plan. It is possible that incidents may occur in locations that do not fall under federal jurisdiction and there will be no FOSC in these instances.

The State of Alaska places jurisdiction of spill response for the Bristol Bay subarea under the Central Area Response Team (CART) of the Alaska Department of Environmental Conservation. The SOSC for the CART is the predesignated SOSC for the entire Bristol Bay subarea.

Memoranda of Understanding/Agreement (MOU/MOA) exist between the USCG and EPA, the USCG and the Alaska Department of Environmental Conservation (ADEC), and EPA and ADEC, which further delineate agency and OSC responsibilities. **Annex K of the Unified Plan** includes copies of these MOUs/MOAs.

D. REGIONAL STAKEHOLDER COMMITTEE

A Regional Stakeholder Committee (RSC) will normally be activated for significant incidents. The RSC was previously referred to as the Multi-Agency Coordination Committee (MAC). Unlike the MAC defined in the ICS of the National Incident Management System (NIMS), the RSC for a spill response does not play a direct role in setting incident priorities or allocating resources. The RSC can advise the Unified Command (under the guidance of the Community Liaison Officer) and provide comments and recommendations on incident priorities, objectives, and action plans.

Figure 5 provides the general location of the RSC in relation to the Unified Command organizational structure. Additionally, the suggested/potential membership of the RSC is also provided in Figure 5. Membership on the RSC is dependent upon the location of the incident and the interests or jurisdiction of the affected communities, landowners, and special interest groups. Government agencies will not normally use the RSC to provide input to the Unified Command. Federal agency personnel will participate within the ICS structure under the leadership of the FOSC; state personnel will do so under the guidance of the SOSC. During an incident in which no FOSC is taking part, federal agencies with jurisdictional responsibilities for resources at risk could participate as a member of the RSC, thus retaining a channel for input on containment, oversight, and cleanup. The preferred approach is to include these agencies as part of the overall ICS structure.

As indicated above, the RSC is not directly involved in tactical operations, though some of its members may be. The RSC's role is to convey to the Unified Command information relating to the authority, concerns, and expertise of its members. RSC members recommend to the Unified Command overall objectives and priorities and reviews the Incident Action Plans developed by the Unified Command.

RSC activities will be coordinated by the Community Liaison Officer. RSC discussions will be documented, and recommendations and dissenting opinions expressed outside of the RSC meetings with the Unified Command will be communicated to the Unified Command through the Liaison Officer. The RSC will be chaired initially by the Community Liaison Officer. After convening, the RSC will then elect its own chair.

E. SUBAREA COMMITTEE

The primary role of the Subarea Committee is to act as a preparedness and planning body for the subarea. The primary membership of the Subarea Committee is composed of the pre-designated Federal On-Scene Coordinators (FOSCs from EPA) for the subarea, and the pre-designated State On-Scene Coordinator (SOSC) from the Department of Environmental Conservation. Depending upon the event or the issues to be addressed, representatives from one of the boroughs or local or tribal government may also serve as members of the Bristol Bay Subarea Committee. Each member is empowered by their own agency to make decisions on behalf of the agency and to commit the agency to carrying out roles and responsibilities as described in this plan and the **Unified Plan**. The predesignated EPA FOSCs for the area and the ADEC SOSC will serve as chairpersons of the committee.

1. Subarea Committee Members

The Bristol Bay Subarea Committee is comprised of representatives from the following federal, state, and local agencies:

U.S. Environmental Protection Agency
U.S. Coast Guard COTP Western Alaska
Alaska Department of Environmental Conservation

Local government/ community representatives when applicable

The Bristol Bay Subarea Committee also seeks advice and expertise concerning environmental and economic issues from international, federal, state, and local agencies and private industries, such as the following:

Local borough, city, and tribal governments
Federally-recognized tribes
Regional/local businesses, especially petroleum-related entities
Local Emergency Planning Committees
Alaska Department of Fish and Game
Alaska Department of Natural Resources
Alaska Department of Military and Veteran Affairs
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
U.S. Department of the Interior-Office of Environmental Policy and Compliance
U.S. Fish and Wildlife Service
National Park Service
U.S. Forest Service
Canada (Yukon Territory)

2. Subarea Work Groups: The Subarea Committee seeks to solicit advice, guidance, or expertise from all appropriate sources and establish work groups as necessary to accomplish the preparedness and planning tasks. The Subarea Committee will select the work group members and provide general direction and guidance for the work groups. In addition to federal, state and local agency representatives, work group participants may include facility owners/operators, shipping company representatives, cleanup contractors, emergency response officials, marine pilot associations, academia, environmental groups, consultants, and response organizations.

The Bristol Bay Subarea Committee has formed the following work groups:

The Sensitive Areas Work Group is chaired by the Department of the Interior-Office of Environmental Policy and Compliance representative. This work group coordinates the preparation of the necessary information for each separate subarea and will ensure that the information is submitted in a common format. Participation by local community staff is vital to acquire local input and validate existing information. The Bristol Bay Subarea-specific sensitive areas information has been prepared and incorporated into the Sensitive Areas section of this plan.

The Logistics Work Group is co-chaired by representatives from the EPA and the ADEC. This work group is responsible for preparing the Resources Section of this plan.

The Operations Work Group is co-chaired by representatives from the EPA and the ADEC. This work group is responsible for scenario development and the refinement/expansion of the Emergency Notification Lists located in the Response Section of this plan.

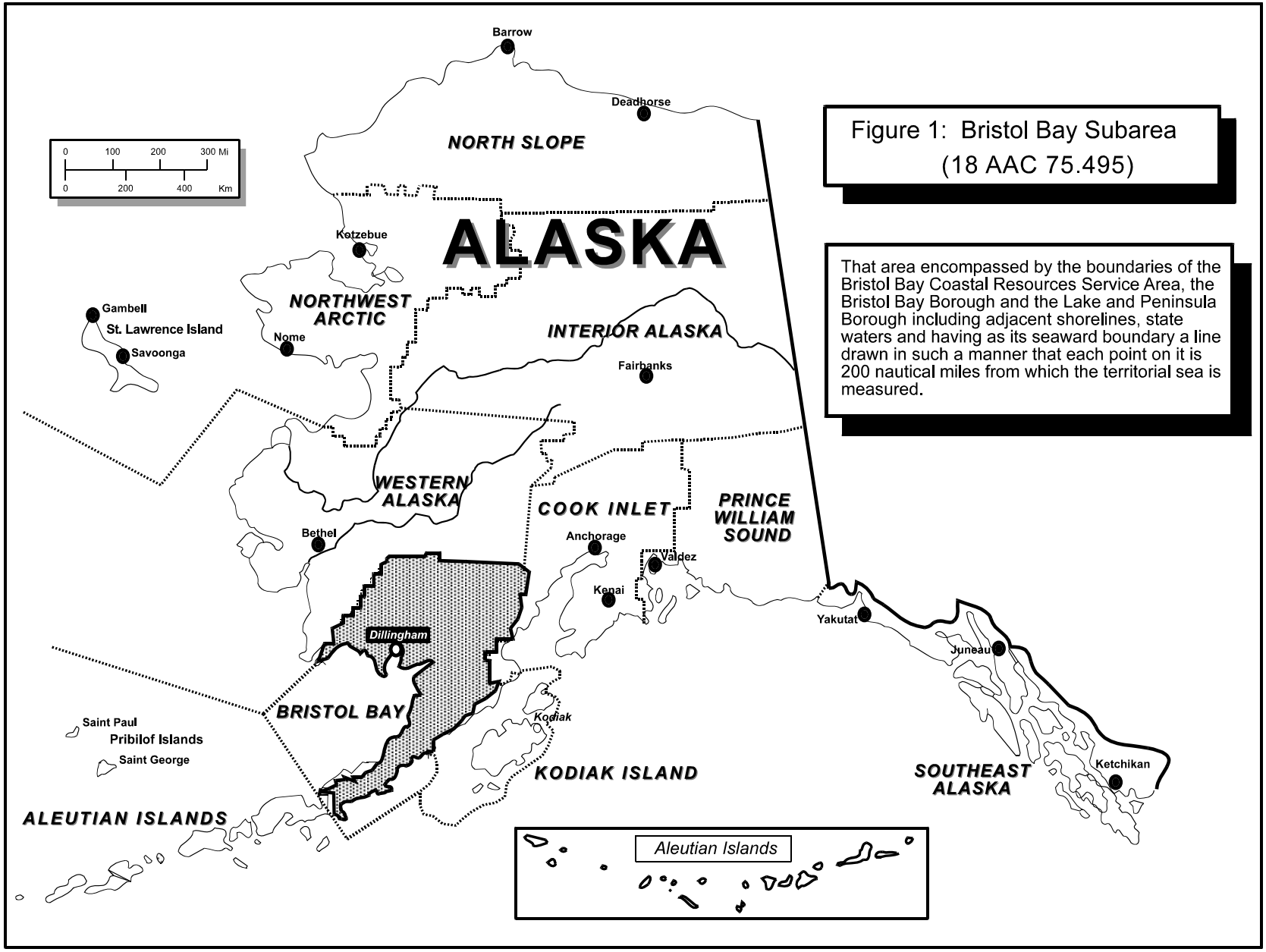


Figure 1: Bristol Bay Subarea
(18 AAC 75.495)

That area encompassed by the boundaries of the Bristol Bay Coastal Resources Service Area, the Bristol Bay Borough and the Lake and Peninsula Borough including adjacent shorelines, state waters and having as its seaward boundary a line drawn in such a manner that each point on it is 200 nautical miles from which the territorial sea is measured.

Figure 2: Bristol Bay Detailed Subarea Map pdf file - 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/subareas.html#bristol

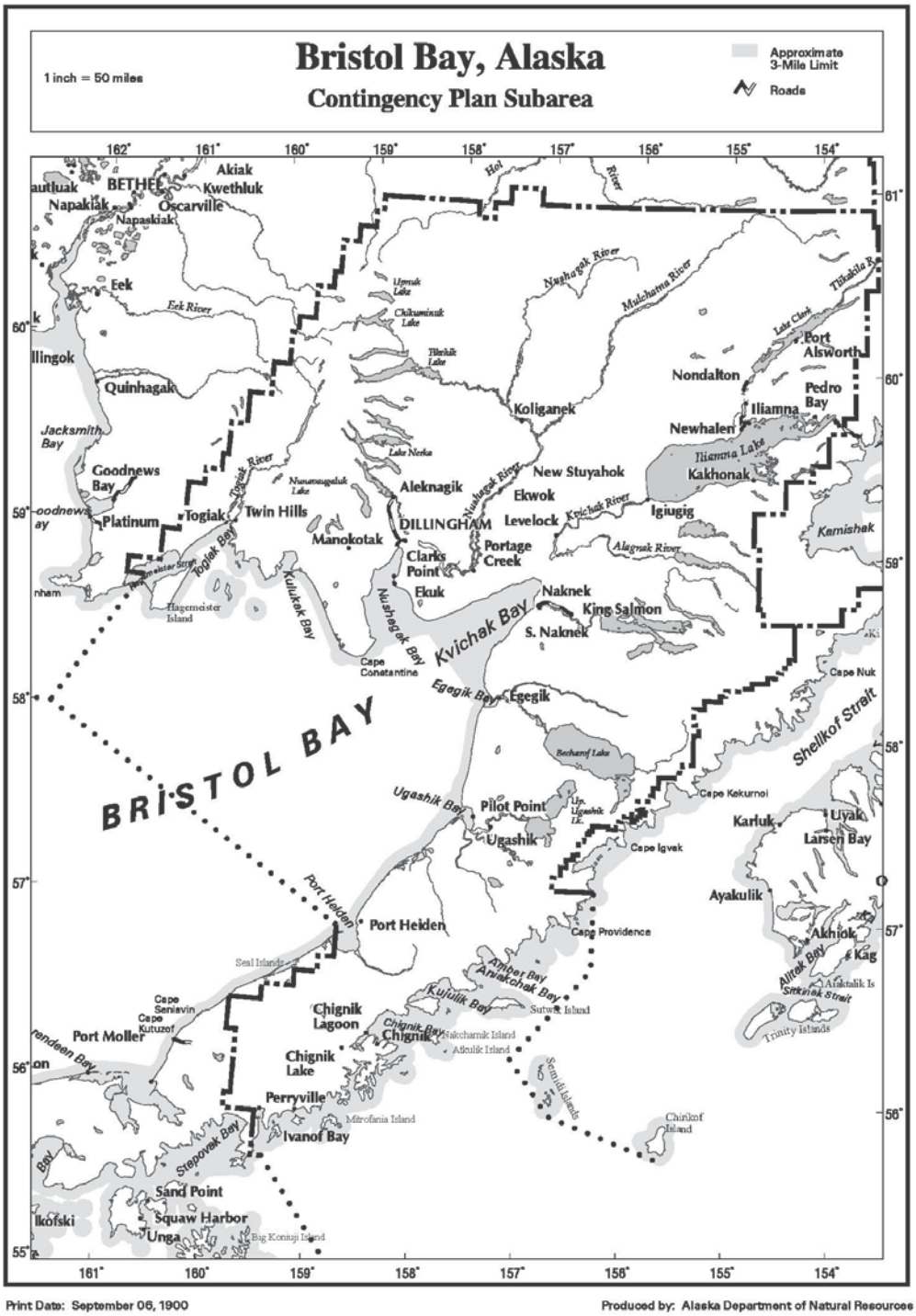


Figure 3: Bristol Bay USGS Topo Map Index - to view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

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

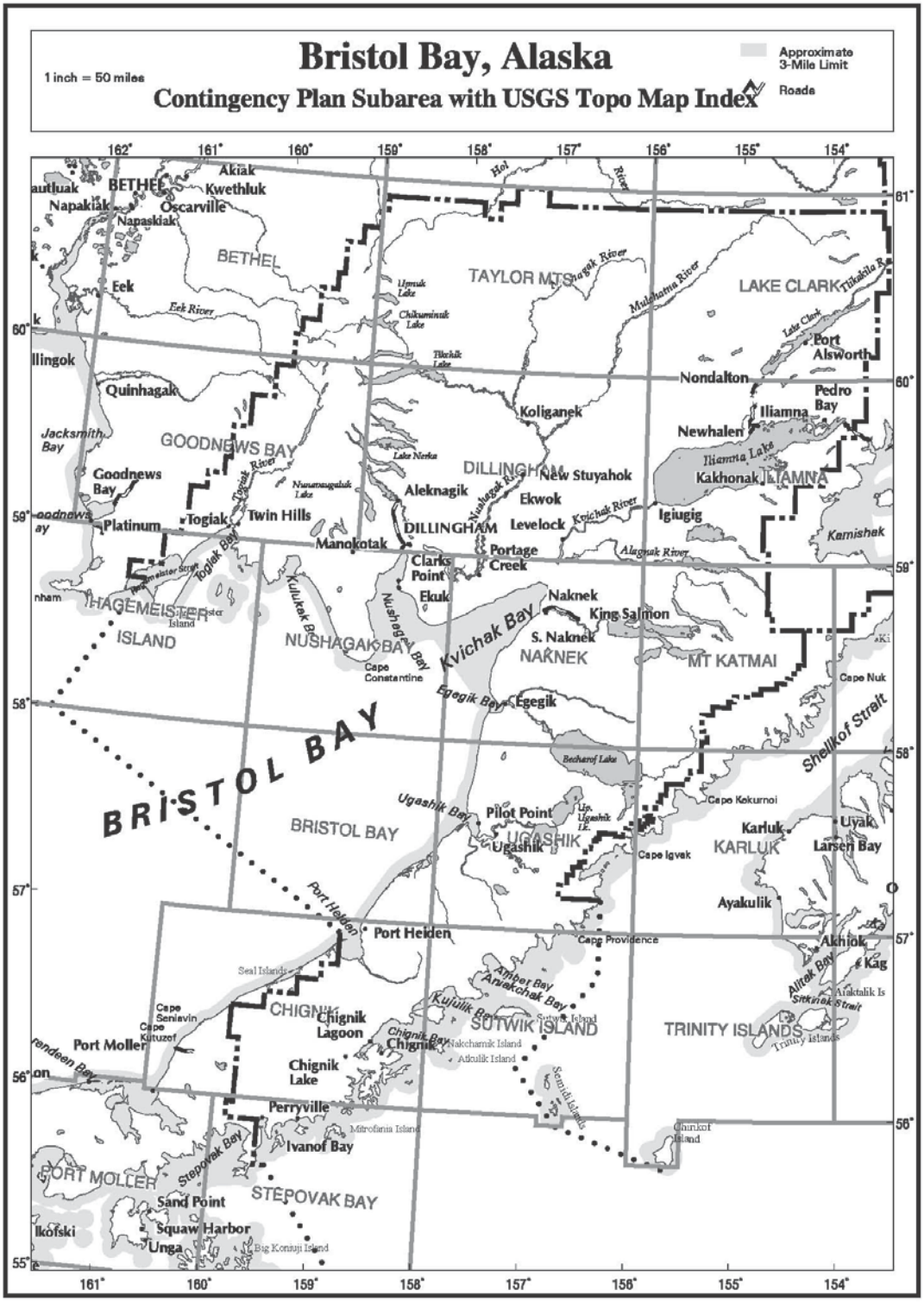


Figure 4: Bristol Bay Nautical Chart Map Index - to view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

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

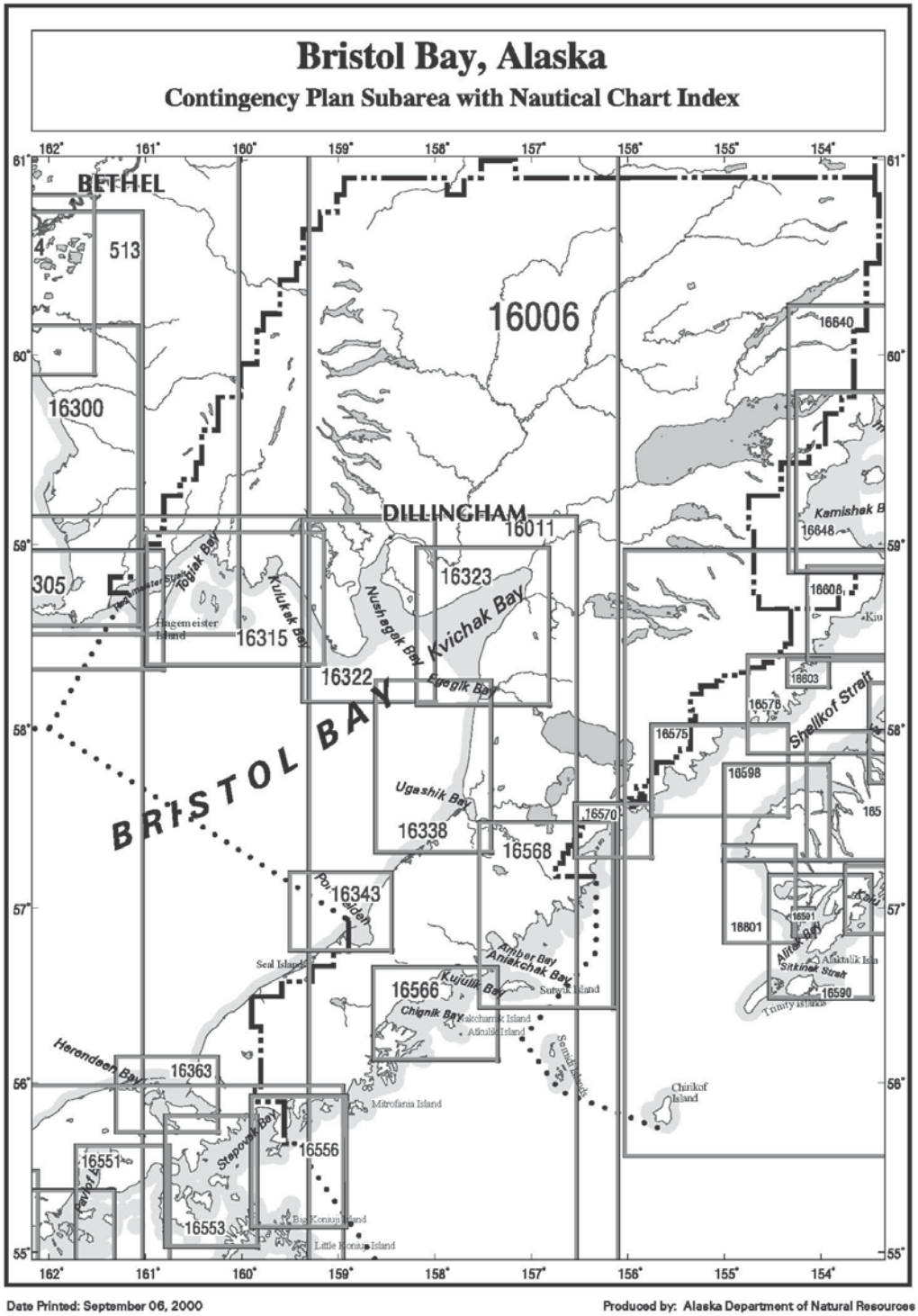
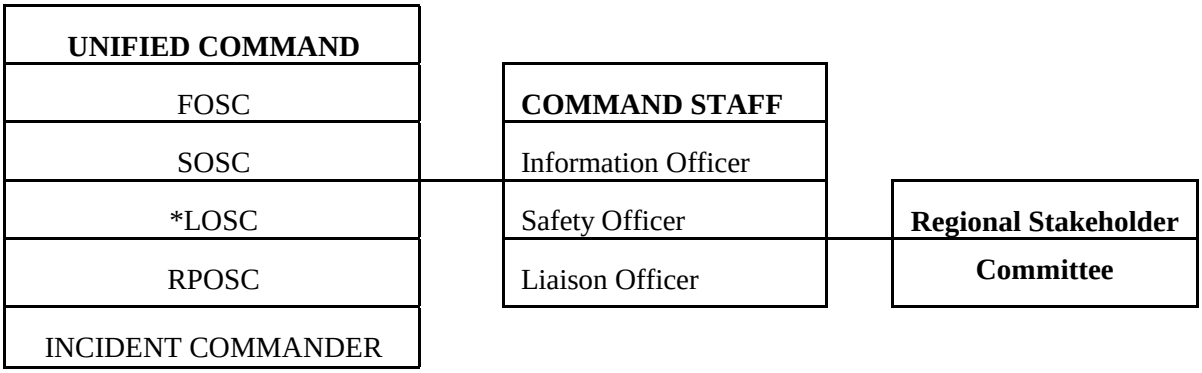


Figure 5

Bristol Bay Alaska Regional Stakeholder Committee
ICS Organizational Position and Membership



Suggested membership of the Regional Stakeholder Committee:

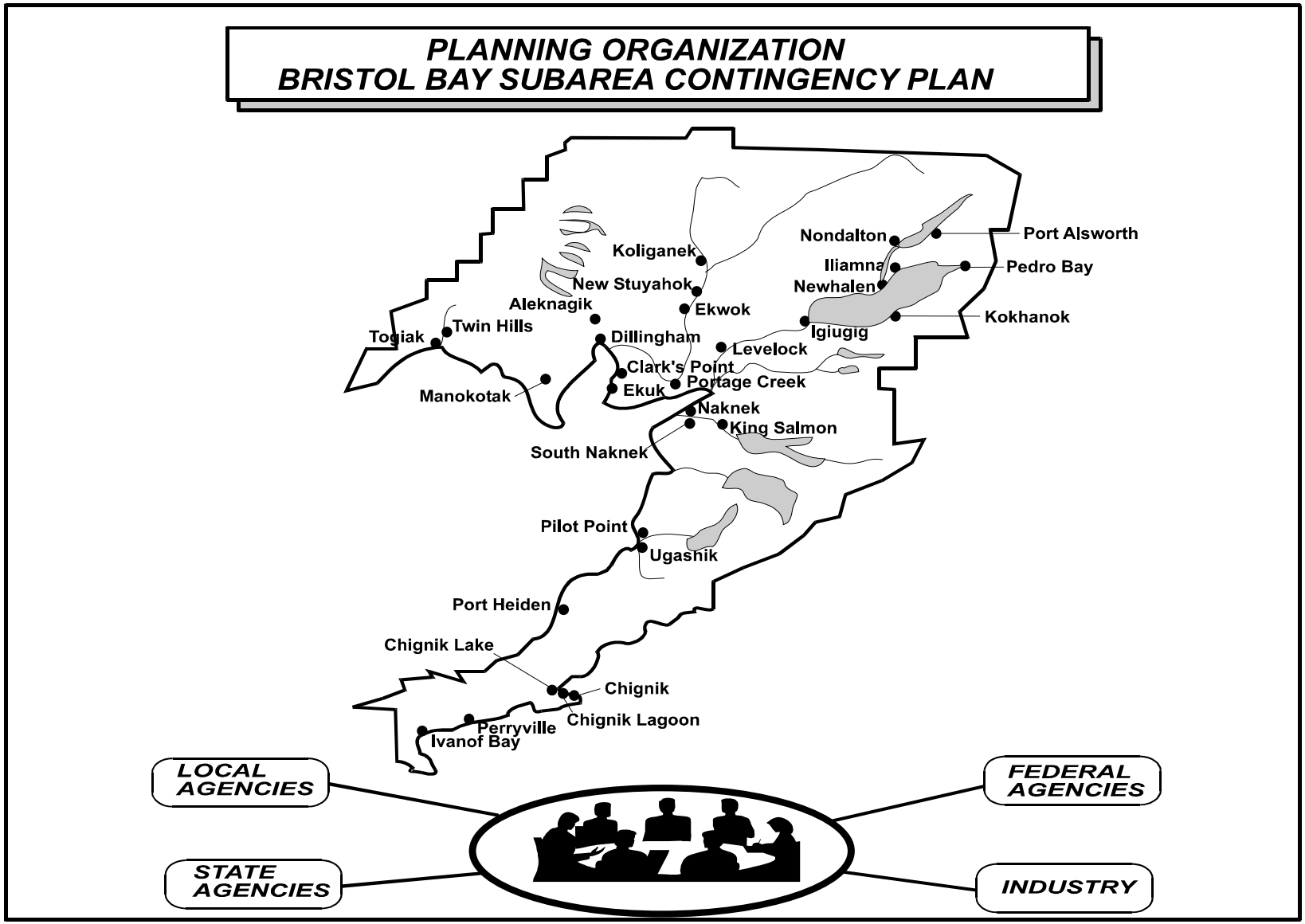
- Representatives or Community Emergency Coordinators from affected communities. These may include:

Boroughs			
Bristol Bay Borough		Lake and Peninsula Borough	
Communities			
Aleknagik	Igiugig	Naknek	Portage Creek
Chignik	Iliamna	New Stuyahok	Port Alsworth
Chignik Lagoon	Ivanof Bay	Newhalen	Port Heiden
Chignik Lake	King Salmon	Nondalton	South Naknek
Clark's Point	Kokhanok	Pedro Bay	Togiak
Dillingham	Koliganek	North Pole	Twin Hills
Ekuk	Levelock	Perryville	Ugashik
Ekwok	Manokotak	Pilot Point	

- Private landowners and leaseholders
- Native corporations, organizations, and communities
- Representatives from federally-recognized tribes
- Special interest groups affected by the incident

** As long as there is an immediate threat to life, health or safety, the Local On-Scene Coordinator serves as the Incident Commander and is part of the Unified Command.*

Figure 6: Subarea Planning Organization



BACKGROUND: PART TWO – RESPONSE POLICY & STRATEGIES

The strategy for responding to a specific spill or hazmat incident depends upon numerous factors. The strategy can change as the situation changes. As a general rule, the strategies listed below should be used as a guide in developing an effective response. Consider all factors that may affect the particular situation and revise/modify/expand these priorities as the situation dictates. The Response Section of this plan contains some specific information on response procedures and ramp-up timelines. Additional information can be found in the **Unified Plan**.

A. FEDERAL RESPONSE ACTION PRIORITIES/STRATEGIES

The following priorities and response activities are general guidelines for responding to a pollution incident within the COTP Western Alaska zone.

For all incidents, safety of victims, responders, and the public must be given the highest priority. Responders shall not be sent into the affected area without first determining the potential hazards present and taking adequate precautions to protect personnel. Other FOSC priorities will include protecting the safety of the vessel or facility and its cargo and minimizing environmental impacts.

The general pattern of response is as follows:

1. Control the source of the discharge
2. Limit the spread of the pollution
3. Mitigate the effects of the pollution. Mitigation may include recovering oil from the water and affected lands using physical or mechanical means such as sorbents and skimmers. The use of dispersants, chemicals, or in situ burning may mitigate pollution damage more effectively than physical or mechanical means. Refer to the Unified Plan, Annex F, "Chemical and Other Countermeasures," for guidance pertaining to the use of in situ burning and dispersants.

The OSC must recognize that each habitat possesses unique qualities; different cleanup techniques may be required to accomplish the goals of removing as much pollutant as possible while minimizing any environmental damage from the cleanup technique. If shoreline contamination is expected, the OSC should ask the following questions to determine whether cleanup is an appropriate response:

1. Will cleanup activities cause more damage than leaving the oil to natural recovery or dissipation?
2. Will cleanup activities severely disrupt colonies of birds, marine mammals, or other wildlife?
3. Does the oil have a relatively low toxicity?
4. Is it expected that storms or seasonal erosion cycles will remove the oil from the shoreline?
5. Does the oil degrade rapidly or slowly?
6. Does the shoreline have a high energy level?
7. Is the oil present on the surface of the substrate and likely to remain there rather than being incorporated into sediments or buried by seasonal cycles?
8. Is it likely the oil will migrate to adjacent shoreline or near-shore areas?

Whether the response is conducted by a Responsible Party or the federal government, the FOSC is

responsible for determining removal completeness and authorizing termination of operations. When uncertain, the FOSC may seek the advice of the ARRT. Generally, removal of an oil discharge is complete when:

1. There is no longer any detectable oil present on the water, adjoining shorelines, or places where it is likely to reach the water.
2. Further removal operations would cause more environmental harm than the oil to be removed.
3. Cleanup measures would pose a hazard to responders, or would be excessively costly in view of their insignificant contribution to minimizing a threat to the public health or welfare, or the environment; and
4. Activities required to repair unavoidable damage resulting from removal actions have been performed.

B. STATE OF ALASKA RESPONSE PRIORITIES

1. **Safety:** Ensure the safety of persons involved, responding, or exposed to the immediate effects of the incident.
2. **Public Health:** Ensure protection of public health and welfare from the direct or indirect effects of contamination of drinking water, air, and food.
3. **Environment:** Ensure protection of the environment, natural and cultural resources, and biota from the direct or indirect effects of contamination.
4. **Cleanup:** Ensure adequate containment, control, cleanup and disposal by the responsible party or supplement or take over when cleanup is inadequate.
5. **Restoration:** Ensure assessment of contamination and damage and restoration of property, natural resources and the environment.
6. **Cost Recovery:** Ensure recovery of costs and penalties to the Response Fund for response, containment, removal, remedial actions, or damage.

BACKGROUND: PART THREE - SUBAREA SPILL HISTORY AND OIL FATE

The following spill history was obtained from Alaska Department of Environmental Conservation records. This partial listing draws only from those spills of 500 gallons or more. This abbreviated spill history dates to the start of a spills database maintained by ADEC and is provided to give an overall view of the vast array of transportation-related accidents that can occur. The Bristol Bay subarea supports a wide variety of fixed and mobile hazardous substance sources including everything from fixed facilities, bulk fuel farms, fishing vessels and fuel barges.

All cities and villages in the Bristol Bay subarea are not immune to oil discharges or hazardous material releases. The commercial fishing industry and the number of fuel transfers that take place in these areas are significant factors, thus the opportunity for a spill is greatly increased.

The most notable spill in the Bristol Bay subarea occurred on October 30, 2008. An aviation fuel spill of 13,630 gallons occurred at Newhalen due to tank failure in an aboveground storage tank.

A. NAVIGABLE WATERS SPILL HISTORY

The Bristol Bay subarea experiences a large amount of vessel traffic, primarily resupply barges and the commercial fishing fleet. Response to major spills in this subarea is further compounded by the remoteness and limited accessibility to the different locations within the subarea.

The probability of a major oil spill exists due to the activities occurring in the region. Listed below is a brief synopsis of significant spills in the region. A complete list is available through ADEC.

Date	Location	Quantity	Substance
08/14/94	Ugashik on Beach (corrosion)	600 Gallons	Refined Product
05/22/97	Levelock on Kvichak River (Sinking)	3,000 Gallons	Diesel
03/17/98	Ekwok (Cargo not secured)	800 Gallons	Diesel
04/17/04	Trident Seafoods (Vessel Grounding)	2,800 Gallons	Diesel

B. INLAND SPILL HISTORY

The Bristol Bay subarea communities are accessible only by air or water. With limited access by air and water, a major spill in the region would present severe logistical problems for spill responders.

A fair number of releases occur in this region due to the commercial fishing industry and the fuel resupply operations in the remote villages. Listed below is a brief synopsis of significant releases of hazardous substances in the region. This information was collected from the ADEC spill database. A complete list is available through ADEC.

DATE	LOCATION	QUANTITY	SUBSTANCE
04/28/93	Pilot Point at Old Alaska Packers Cannery Fuel Tanks (corrosion)	3,000 Gallons	Refined Product
07/09/97	Perryville School (Intentional Release)	3,000 Gallons	Diesel
12/14/97	Ekuk Wards Cove Cannery Tanks (Line Disconnected)	2,796 Gallons	Diesel
04/18/99	Pedro Bay School Tanks (Tank Leak)	4,000 Gallons	Diesel
01/03/00	Ivanof Bay (Ivanof Bay CDP) (Sensors Failed)	10,000 Gallons	Diesel
6/20/00	Aleknagik City (Snow slide/roof)	1,000 Gallons	Heating Oil
05/21/01	Aleknagik (Moody's Marina) (Line break)	5,000 Gallons	Unleaded Gasoline
08/21/01	Dillingham(Sport Lodges Ltd) (Tank Overfill)	1,000 Gallons	Diesel
03/19/02	Manokotak Power Plant (Valve Failure)	2,164 Gallons	Diesel
04/22/02	Village of Koliganek Tank Farm (Unknown Cause)	1,000 Gallons	Diesel
06/11/02	Portage Creek Village Council Tank (Puncture)	1,000 Gallons	Diesel
09/04/07	Iliamna Lake – Tank Spill (Equipment Failure)	2,280 Gallons	Aviation Fuel

08/22/08	Togiak (Unknown Cause)	1,000 Gallons	Diesel
10/30/08	Newhalen Aboveground Storage Tank (Tank Failure)	13,630 Gallons	Aviation Fuel
06/06/09	Iliamna Development Corp Vehicle Spill (Human Error)	1,400 Gallons	Diesel
12/15/09	Iliamna – Tanker Trailer Spill	1,507 Gallons	Aviation Fuel

C. HAZMAT RELEASE HISTORY

Date	Location	Quantity	Substance
07/12/98	Dillingham Peter Pan Seafoods Plant (Vent Discharge)	30 pounds	Anhydrous Ammonia
8/15/03	Ekuk Cannery (Valve Failure)	1 pound	Anhydrous Ammonia
5/28/08	Power Generation Plant – Kokhanok (Cargo not secured)	1 pound	Hydrochloric Acid
7/21/98	Chignik Cannery	8,000 pounds ("Other" Cause)	Anhydrous Ammonia

Bristol Bay Subarea

Total Spills:	296
Total Volume:	59,708
Average Spill Size:	202
Average Spills/Year:	30
Average Volume/Year:	5,971

Top 5 Causes

Cause	Spills	Gallons
Tank Failure	11	15,221
Line Failure	38	7,152
Tank Support Structure Failure	2	5,300
Valve Failure	21	5,037
Overfill	47	4,830

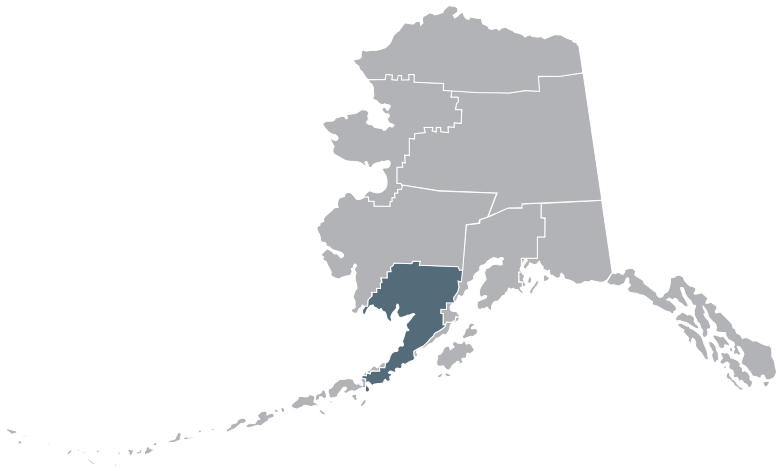
Top 5 Products

Product	Spills	Gallons
Diesel	195	51,184
Gasoline	18	6,031
Other	20	1,043
Used Oil	7	526
Aviation Fuel	14	307

Top 5 Facility Types

Facility Type	Spills	Gallons
Power Generation	13	14,484
Other	47	8,577
School	16	8,134
Noncrude Terminal	14	7,312
Cannery	33	7,035

NOTE: The data summary above excludes spills reported in pounds and potential spills.



Shoreline: 1,800 miles
Land Area: 29,400,000 acres or 45,900 square miles

There are a total of 30 communities in the region (including the two boroughs), 27 Native and 3 non-Native.

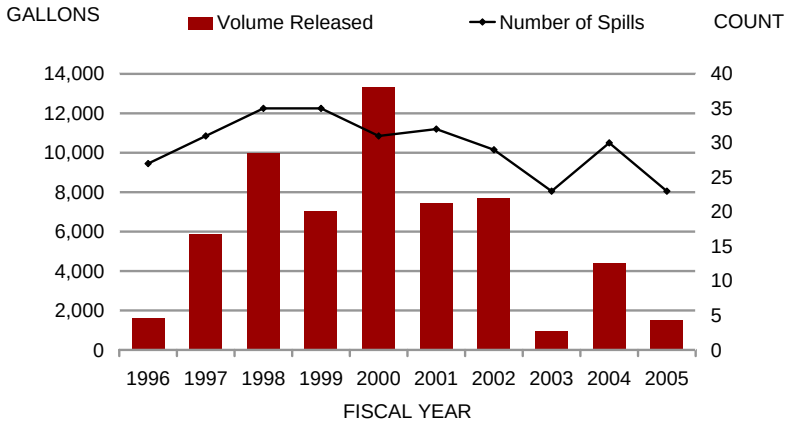
Deliveries of noncrude oils are made to the villages in this area primarily by barges operating from Dutch Harbor or the Cook Inlet Region. Deliveries are ice dependent and do not occur as ice forms. Delivery of noncrude oil is made to the remote villages in this area primarily by small barges.

Discernible Trends

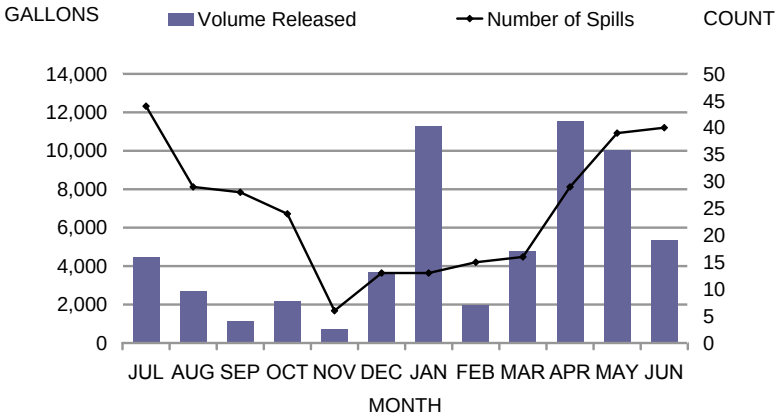
- There are no noticeable trends with regard to the total number of spills and the total spill volume over this ten-year period.
- Similar to the Aleutians, there is a seasonal trend in terms of when spills occur in the Bristol Bay subarea. Spills appear to reflect the fishing season as well as the Spring breakup season when oil spills are noticed and reported.
- Spills from Storage facilities contributed to 71% of the total volume spilled, although the number of spills were fairly evenly distributed between Storage (41%), Other (24%), Vessels (18%), and Transportation (17%).
- Spills from Structural/Mechanical causes accounted for 45% of the total number of spills, followed by Human Factors (34%), and Other causes (18%). In terms of total volume, Structural/Mechanical causes led the way with 64%, followed by Human Factors with 24%.
- Noncrude oil was the predominant product spilled, both in terms of numbers of spills (98%) and the total volume spilled (99%).

Power plant facility in Ivanoff Bay.

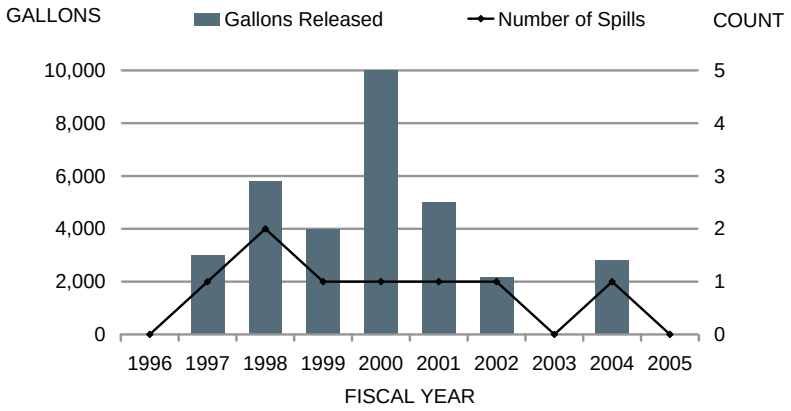
All Spills by Fiscal Year



All Spills by Month



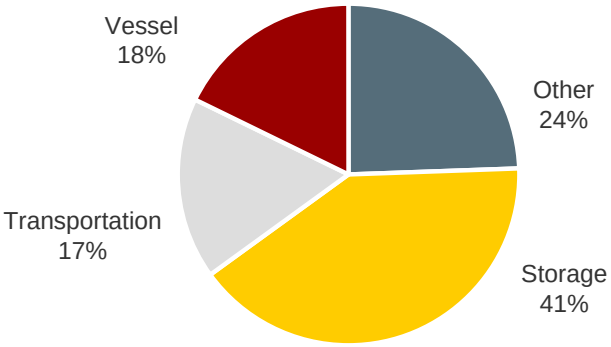
Spills >1,000 gallons



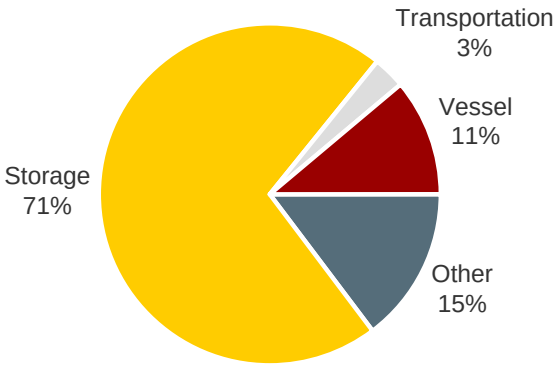
NOTE: Graphs do not include spills reported in pounds or potential spills.

Bristol Bay Subarea Spills by Facility Type

Number of Spills

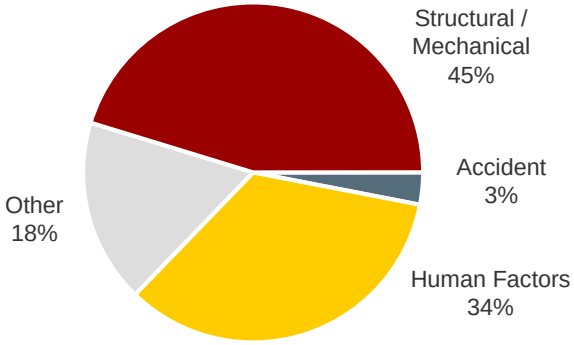


Gallons Released

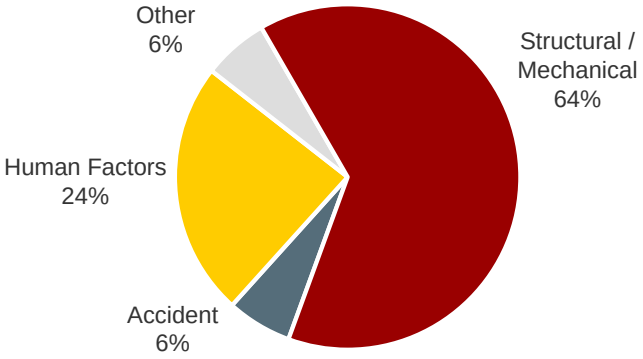


Bristol Bay Subarea Spills by Cause

Number of Spills

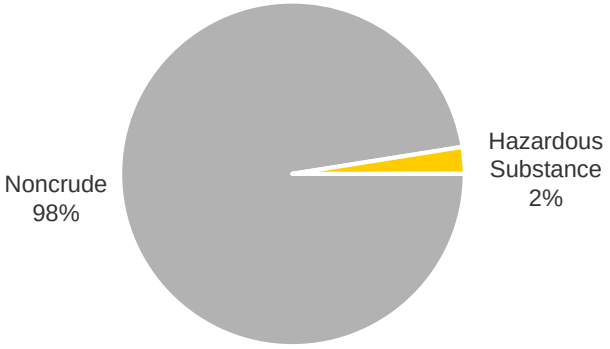


Gallons Released

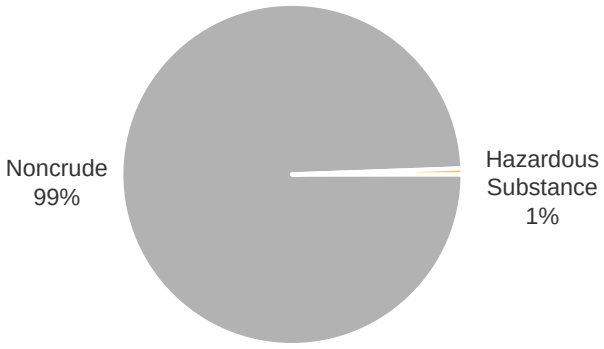


Bristol Bay Subarea Spills by Product

Number of Spills



Gallons Released

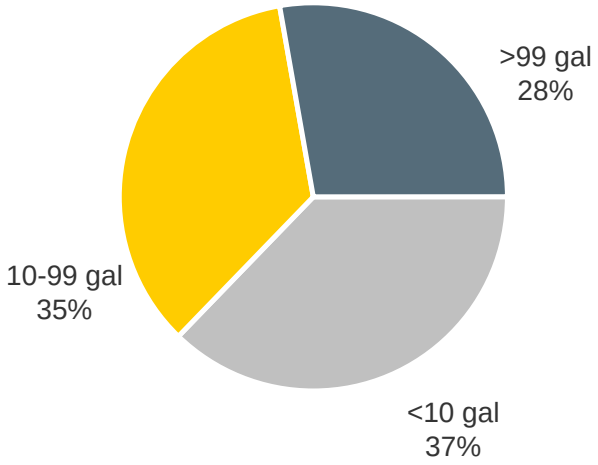


NOTE: Graphs do not include spills reported in pounds or potential spills.

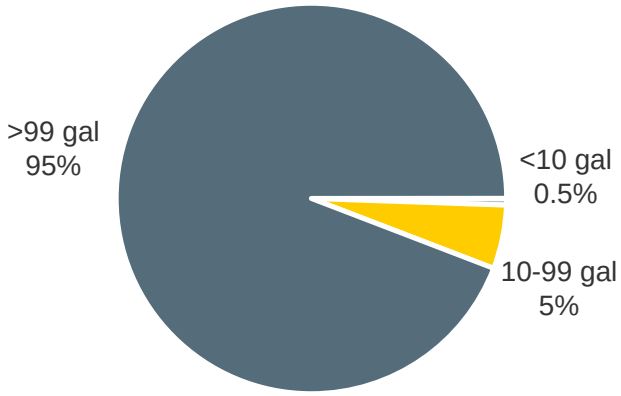
Bristol Bay Subarea Spills by Size Class

- More than two-thirds of the spills during the report period were less than 100 gallons in volume.
- Approximately 95% of the total volume released resulted from spills larger than 99 gallons.

Number of Spills



Gallons Released



NOTE: Graphs do not include spills reported in pounds or potential spills.

Bristol Bay Subarea Spills at Regulated vs. Unregulated Facilities

Numerous oil facilities and vessels operating in Alaska are subject to Alaska's spill response planning and financial responsibility statutes. This section summarizes spills from:

- facilities and vessels required by statute to have an approved oil discharge prevention and contingency plan; and,
- non-tank vessels which are required to have an approved certificate of financial responsibility are also included.

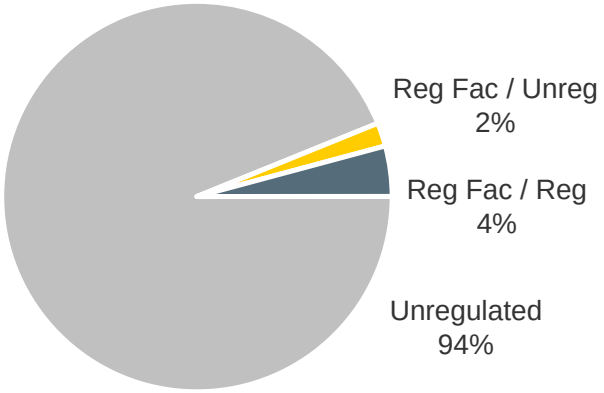
Spills from underground storage tanks are not included in this analysis.

Alaska's contingency planning requirements apply to specific aspects (components) of a facility's or vessel's operations. The analysis in this report distinguishes between spills from regulated versus unregulated components. Examples of spills from unregulated components include:

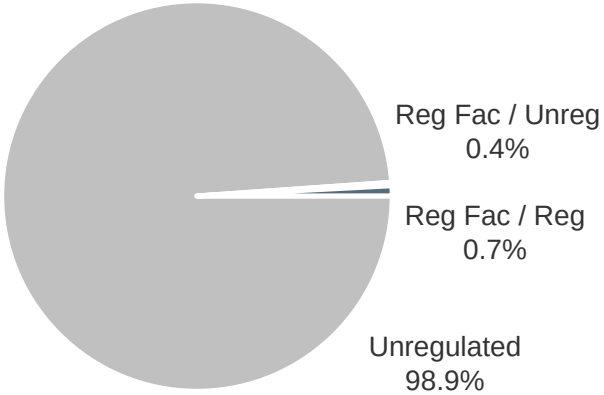
- a spill from a vehicle at a regulated facility;
- a spill from a fuel tank (below the regulatory threshold of 10,000 barrels) at a regulated facility

- More than 90% of the spills and nearly 100% of the total volume released during the 10-year period were from unregulated facilities.
- Power Generation Facilities were the leading unregulated facility type in terms of total volume released.

Number of Spills

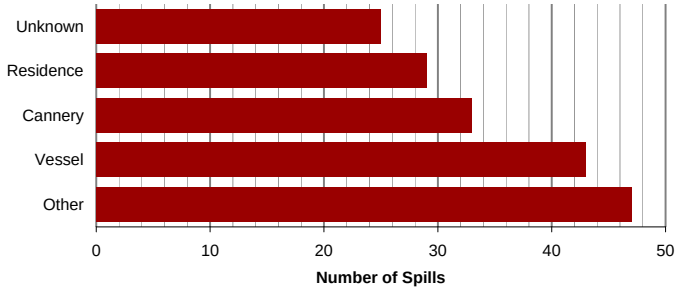


Gallons Released

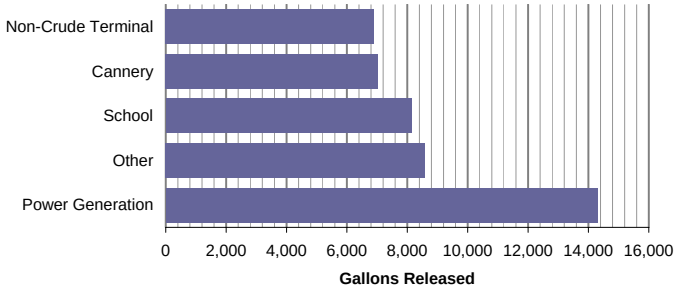


Top Unregulated Facilities

Number of Spills



Gallons Released



NOTE: Graphs do not include spills reported in pounds or potential spills.

Major Spills in the Bristol Bay Subarea

Spill Date	Location	Facility Type	Product	Gallons
1/3/2000	Ivanof Bay	Power Generation	Diesel	10,000
5/20/2001	Aleknagik	Harbor/Port	Unleaded Gasoline	5,000
4/18/1999	Pedro Bay	School	Diesel	4,000
5/22/1997	Levelock	Vessel	Diesel	3,000
4/28/1993	Pilot Point	Cannery	Refined Product	3,000
7/9/1997	Perryville	School	Diesel	3,000
12/14/1997	Ekuk	Cannery	Diesel	2,796
6/20/2000	Aleknagik City	Heating Oil Tank	Heating Oil	1,000
6/27/1997	Dillingham	Residence	Diesel	900
3/17/1998	Ekwok	Tank	Diesel	800
2/4/1998	Dillingham	Fire Station	Diesel	700
8/14/1994	Ugashik	Cannery	Refined Product	600
5/12/1999	Naknek	Cannery	Diesel	593

Data Sources:

Department of Environmental Conservation
US Coast Guard
NOAA
Bristol Bay Subarea Contingency Plan for Oil and Hazardous Substance Discharges/Releases, June 2001

Contingency Plan Facilities in the Bristol Bay Subarea

Facility Name	Facility Type
Island Tug and Barge, Ltd. Barges (1)	Barge
Crowley Barges (1)	Barge
Sea Coast Transportation Barges (1)	Barge
Sirius Maritime Barges	Barge
Sause Brothers, Inc. -- Klamath	Barge
Ruby Marine -- Melozi	Barge
Ruby Marine -- Novi	Barge
Delta Western Naknek Bulk Plant	Noncrude Terminal
Delta Western Dillingham Bulk Plant	Noncrude Terminal
Nushagak Electric Power Plant	Noncrude Terminal
USAF King Salmon Airport	Noncrude Terminal
Naknek Electrical Power Plant	Noncrude Terminal
Bristol Express Fuels Dillingham Plant	Noncrude Terminal

NOTES:

(1) Authorized to operate statewide

Active Contaminated Sites in the Bristol Bay Subarea

This table summarizes the number of active contaminated site cleanup projects in the Bristol Bay subarea as of August 20, 2007.

Primary Contaminant	Sites	%
Petroleum	103	87%
Hazardous Substances	15	13%
Total	118	

Bristol Bay Subarea Spill Preparedness and Response Initiatives

Response Corps and Equipment Depots

Community	CRSA	Conex	Nearshore	Other Equipment
Chignik Bay	■			
Bristol Bay	■		▲	
Dillingham	■	●		
Iliamna		●		
Pilot Point	■			

Bristol Bay Subarea Contingency Plan for Oil and Hazardous Substance Spills and Releases

The current plan is dated June 2001, and a revision is planned for the 2008/2009 timeframe. The plan can be accessed at the following website: http://www.dec.state.ak.us/spar/perp/plans/scp_bb.htm

D. OIL FATE AND GENERAL RISK ASSESSMENT

1. Fate of Spilled Oil

Natural processes that may act to reduce the severity of an oil spill or accelerate the decomposition of spilled oil are always at work in the aquatic environment. These natural processes include weathering, evaporation, oxidation, biodegradation, and emulsification.

- **Weathering** is a series of chemical and physical changes that cause spilled oil to break down and become heavier than water. Winds, waves, and currents may result in natural *dispersion*, breaking a slick into droplets which are then distributed throughout the water. These droplets may also result in the creation of a secondary slick or thin film on the surface of the water.

- **Evaporation** occurs when the lighter substances within the oil mixture become vapors and leave the surface of the water. This process leaves behind the heavier components of the oil, which may undergo further weathering or may sink to the ocean floor. For example, spills of lighter refined petroleum-based products such as kerosene and gasoline contain a high proportion of flammable components known as *light ends*. These may evaporate completely within a few hours, thereby reducing the toxic effects to the environment. Heavier oils leave a thicker, more viscous residue, which may have serious physical and chemical impacts on the environment. Wind, waves, and currents increase both evaporation and natural dispersion.

- **Oxidation** occurs when oil contacts the water and oxygen combines with the oil to produce water-soluble compounds. This process affects oil slicks mostly around their edges. Thick slicks may only partially oxidize, forming *tar balls*. These dense, sticky, black spheres may linger in the environment, and can collect in the sediments of slow moving streams or lakes or wash up on shorelines long after a spill.

- **Biodegradation** occurs when micro-organisms such as bacteria feed on oil. A wide range of micro-organisms is required for a significant reduction of the oil. To sustain biodegradation, nutrients such as nitrogen and phosphorus are sometimes added to the water to encourage the micro-organisms to grow and reproduce. Biodegradation tends to work best in warm water environments.

- **Emulsification** is a process that forms *emulsions* consisting of a mixture of small droplets of oil and water. Emulsions are formed by wave action, and greatly hamper weathering and cleanup processes. Two types of emulsions exist: water-in-oil and oil-in-water. Water-in-oil emulsions are frequently called "chocolate mousse," and they are formed when strong currents or wave action causes water to become trapped inside viscous oil. Chocolate mousse emulsions may linger in the environment for months or even years. Oil and water emulsions cause oil to sink and disappear from the surface, which give the false impression that it is gone and the threat to the environment has ended.

E. WIND, ICE AND CURRENT CONDITIONS

The following is an overview of, tide, current, and ice conditions for the Bristol Bay subarea. Much of the available data is general in nature and should be supplemented by area-specific updates and any information available from local residents. Included herein are tidal ranges, and data on ice conditions and surface currents. Using the current edition of the U.S. Department of Commerce National Oceanic and Atmospheric Administration tide current tables for the Pacific coast of North America, it is possible to predict the times of ebb and flood tides for points within this region.

1. Currents

General current patterns in the Bristol Bay subarea are illustrated in the following figures. Tides in the region are predominantly mixed, i.e., there are two high and low waters each day.

2. Winds

In many cases, spill trajectory is determined primarily by winds, especially when currents are weak. Winter winds are typically from the north with an average velocity of 9 to 11 knots. Summer wind speeds are similar, but winds are typically from the south.

3. Sea Ice Conditions

Ice begins forming in the sheltered lagoons of Bristol Bay between late October and November. The pack ice generally begins its southward migration in November. In some years the southern edge of the pack ice may extend into parts of Bristol Bay by January; the ice typically recedes northward by March or April. Ice clears from shorelines first, but remains in bays longer than the open sea.

4. Spill Trajectory Modeling

The behavior of spilled oil on water is the result of the complex interaction of the forces described above. Accordingly, trajectory modeling can be difficult. The National Oceanic and Atmospheric Administration is capable of generating computerized spill trajectory forecasts. Requests for this service should be directed to:

John Whitney
Scientific Support Coordinator
National Oceanic and Atmospheric Administration
510 L Street, Suite 100
Anchorage, AK 99501

working hours: 271-3593; fax: 271-3139
after hours: 346-1634
pager: 275-3134

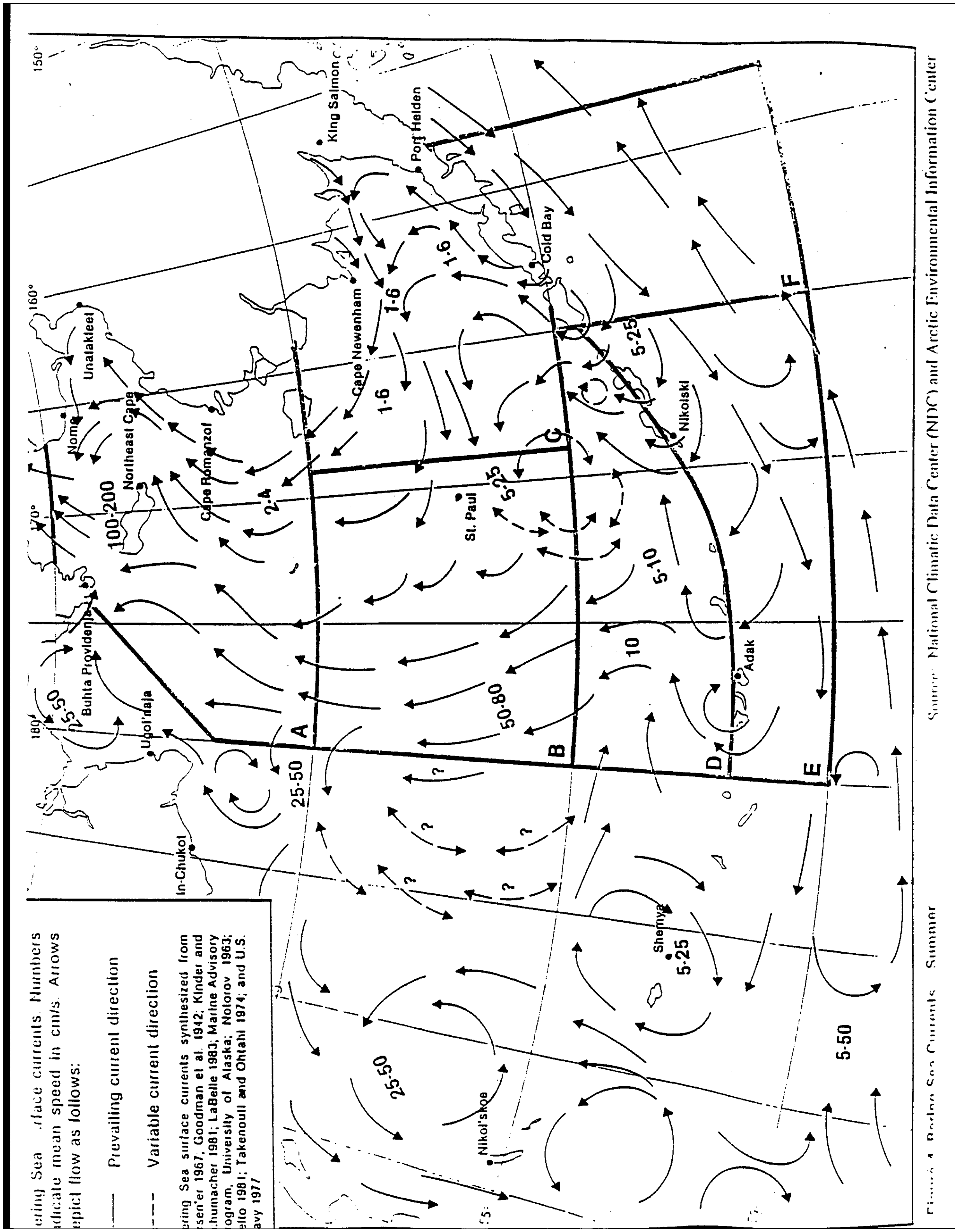
5. Data Sources

LaBelle, J.C. and J.L. Wise. 1983. Alaska marine ice atlas.

National Climatic Data Center (NDC) and Arctic Environmental Information Center (AEIDC). 1988. Climatic atlas. Volume I: Gulf of Alaska.

National Climatic Data Center (NDC) and Arctic Environmental Information Center (AEIDC). 1988. Climatic atlas. Volume II: Bering Sea.

U.S. Department of Commerce National Oceanic And Atmospheric Administration. 1989. Tide current tables 1990: Pacific Coast of North America and Asia. (tidal current data and information).


Prevailing current direction
Variable current direction
King Salmon
Port Heiden
Cold Bay
Unalakleet
Nome
Northeast Cape
Cape Romanzof
Cape Newenham
St. Paul
Nikolski
Adak
Buhta Providenja
Ugol'naja
In-Chukot
Shemya
Nikol'skoe
100-200
2-4
1-6
5-25
5-10
10
50-80
25-50
5-50
A
B
C
D
E
F
160°
170°
180°
150°

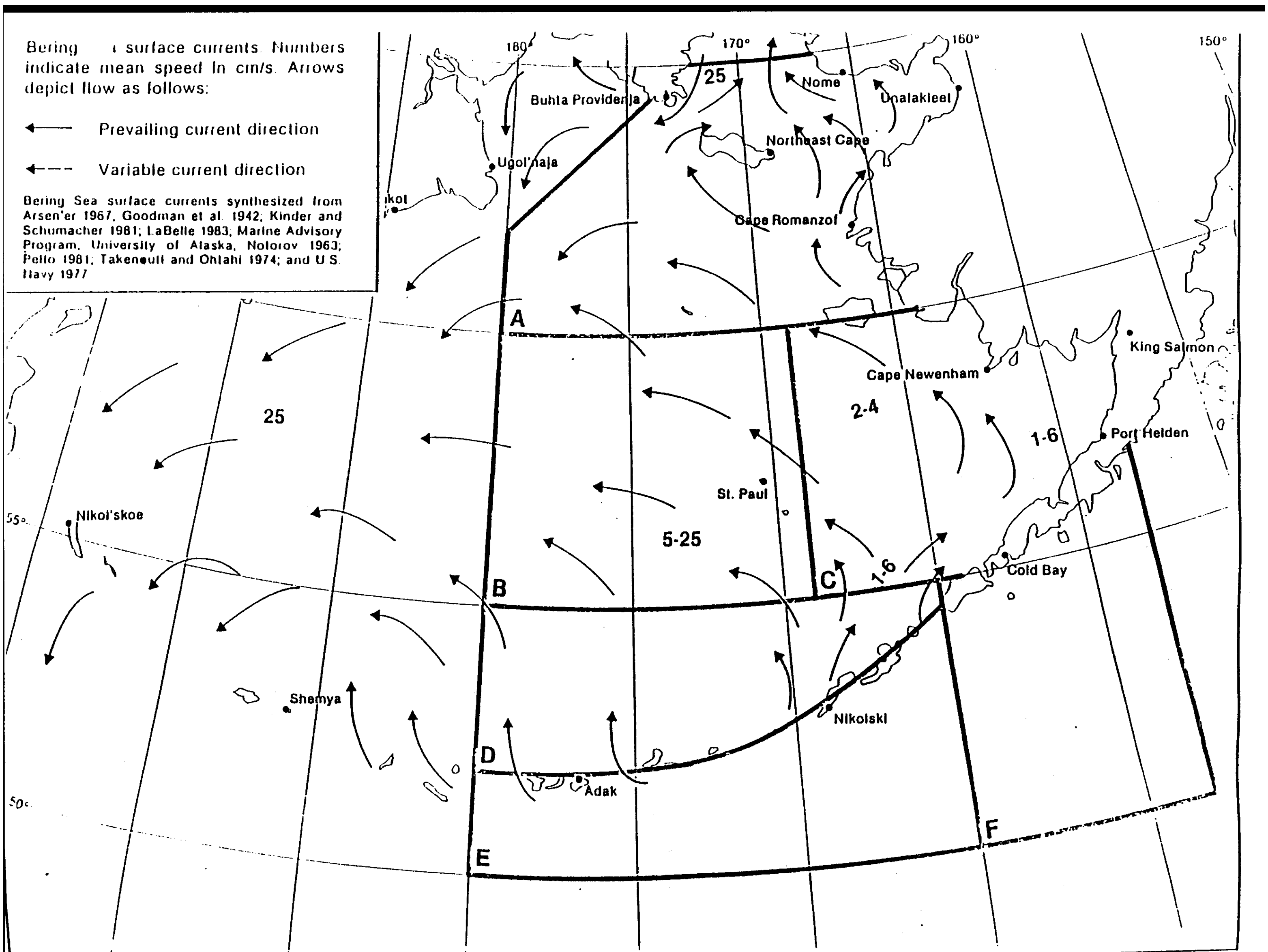


Figure 5. Bering Sea Currents — Winter

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BACKGROUND: PART FOUR – ABBREVIATIONS & ACRONYMS

AAC	Alaska Administrative Code
ACFT	Aircraft
ACP	Area Contingency Plan
ADCCED	Alaska Department of Commerce, Community and Economic Development
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game, also as ADFG
ADMVA	Alaska Department of Military and Veterans Affairs
ADNR	Alaska Department of Natural Resources
ADOT&PF	Alaska Department of Transportation and Public Facilities, also as ADOTPF
AFB	Air Force Base
AIR	Air Operations
AKANG	Alaska Air National Guard
AKARNG	Alaska Army National Guard
AKNG	Alaska National Guard
ALCOM	Alaska Command
ARRT	Alaska Regional Response Team
AS	Alaska Statute, also Air Station (USAF)
ASAP	As soon as possible
BBLS	Barrels
BLM	Bureau of Land Management
BOA	Basic Ordering Agreement
CAMEO	Computer-Aided Management of Emergency Operations
CCGD 17	Commander, Coast Guard District 17
CFR	Code of Federal Regulations
COM	Communications equipment/capabilities
COMDTINST	Commandant Instruction (USCG)
COTP	Captain of the Port (USCG)
CP	Command Post
C-Plan	Contingency Plan
CTAG	Cultural Technical Advisory Group
CUL	Cultural Resources
DAA	Documentation/Administrative Assistance
DHSEM	Division of Homeland Security and Emergency Management (a division under ADMVA)
DOD	Department of Defense
DOI	Department of the Interior
DOI-FWS	Department of the Interior - Fish and Wildlife Service
DRAT	District Response Advisory Team
DRG	District Response Group
EMS	Emergency Medical Services
ENV	Environmental Unit Support
EOC	Emergency Operations Center
EPA	Environmental Protection Agency, also as USEPA
EPCRA	Emergency Planning and Community Right-to-Know Act of 1986

ESI	(Alaskan) Environmental Sensitivity Index
FDA	Food and Drug Administration
FIN	Finance
FIR	Fire Protection/fire fighting
F/V	Fishing Vessel
FAA	Federal Aviation Administration
FLIP	Flight Information Publication
FOG	Field Operations Guide
FPN	Federal Pollution Number
FOSC	Federal On-Scene Coordinator
FWPCA	Federal Water Pollution Control Act
GIS	Geographic Information System
GRS	Geographic Response Strategies
GSA	General Services Administration
HAZMAT	Hazardous Materials, also as hazmat
HAZWOPER	Hazardous Waste Operations and Emergency Response (a training program)
HQ	Headquarters
IC	Incident Commander
ICS	Incident Command System
IDLH	Immediately Dangerous to Life and Health
INMARSAT	International Maritime Satellite Organization
LAT	Latitude
LEG	Legal
LEPC	Local Emergency Planning Committee
LEPD	Local Emergency Planning District
LERP	Local Emergency Response Plan
LO	Liaison Officer
LONG	Longitude
LOSC	Local On-Scene Coordinator
MAC	Multiagency Coordinating Committee
MAP	Mapping
MAR CH	Marine Channel
MED	Medical Support/Health Care
MESA	Most Environmentally Sensitive Area
M/V	Motor Vessel
MLC	Maintenance and Logistics Command (USCG Pacific Area)
MLT	Municipal Lands Trustee Program
MOA	Memoranda of Agreement, also Municipality of Anchorage
MOU	Memoranda of Understanding
MSD	Marine Safety Detachment (USCG)
MSO	Marine Safety Office (USCG)
MSRC	Marine Spill Response Corp. (national industry cooperative)
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NIIMS	National Interagency Incident Management System
NIST	National Institute of Standards and Technology
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration

NOTAMS	Notice to All Mariners; also, Notice to Airmen
NPDES	National Pollution Discharge Elimination System
NPFC	National Pollution Fund Center
NRC	National Response Center
NRT	National Response Team
NRDA	Natural Resource Damage Assessment (Federal/State)
NSF	National Strike Force
NSFCC	National Strike Force Coordinating Center
NWR	NOAA Weather Radio
OHMSETT	Oil and Hazardous Material Simulated Environment Test Tank
OOD	Duty Officer or Officer On Duty
OPA 90	Oil Pollution Act of 1990
OPCEN	Operations Center
OPS	General Response Operations, also Office of Pipeline Safety (U.S. DOT)
OSC	On-Scene Coordinator
OSHA	Occupational Health and Safety Administration
OSLTF	Oil Spill Liability Trust Fund
OSRO	Oil Spill Response Organization
O/S	On-Scene
PIAT	Public Information Assist Team
PIO	Public Information Officer
PL	Private Line
PLN	General Planning Operations
POLREP	Pollution Report (USCG)
PPE	Personal Protective Equipment
RAC	Response Action Contractor
RCC	Rescue Coordination Center
RCRA	Resource Conservation and Recovery Act of 1978
RMAC	Regional Multi-Agency Coordination Committee
RP	Responsible Party
RPOSC	Responsible Party On-Scene Coordinator
RPD	Recovery, Protection and Decontamination
RQ	Reportable Quantity
RRT	Regional Response Team
RV	Recreational Vehicle
SAR	Search and Rescue
SCBA	Self-Contained Breathing Apparatus
SCP	Subarea Contingency Plan
SEC	Security
SHPO	State Historic Preservation Officer (ADNR)
SITREP	Situation Report (ADEC)
SONS	Spill of National Significance
SOSC	State On-Scene Coordinator
SS	Technical Expertise/Scientific Support
SSC	Scientific Support Coordinator (NOAA)
STORMS	Standard Oil Spill Response Management System
SUPSALV	U.S. Navy Supervisor of Salvage, also as NAVSUPSALV

TA	Trajectory Analysis
TPO	Tribal Police Officer
T/V	Tank Vessel
USAF	United States Air Force
USCG	United States Coast Guard
VOSS	Vessel of Opportunity Skimming System
VPO	Village Police Officer
VPSO	Village Public Safety Officer
VTS	Vessel Traffic System
WRR	Wildlife Protection/Care/Rehabilitation/Recovery
WX	Weather