Alaska Outer Continental Shelf

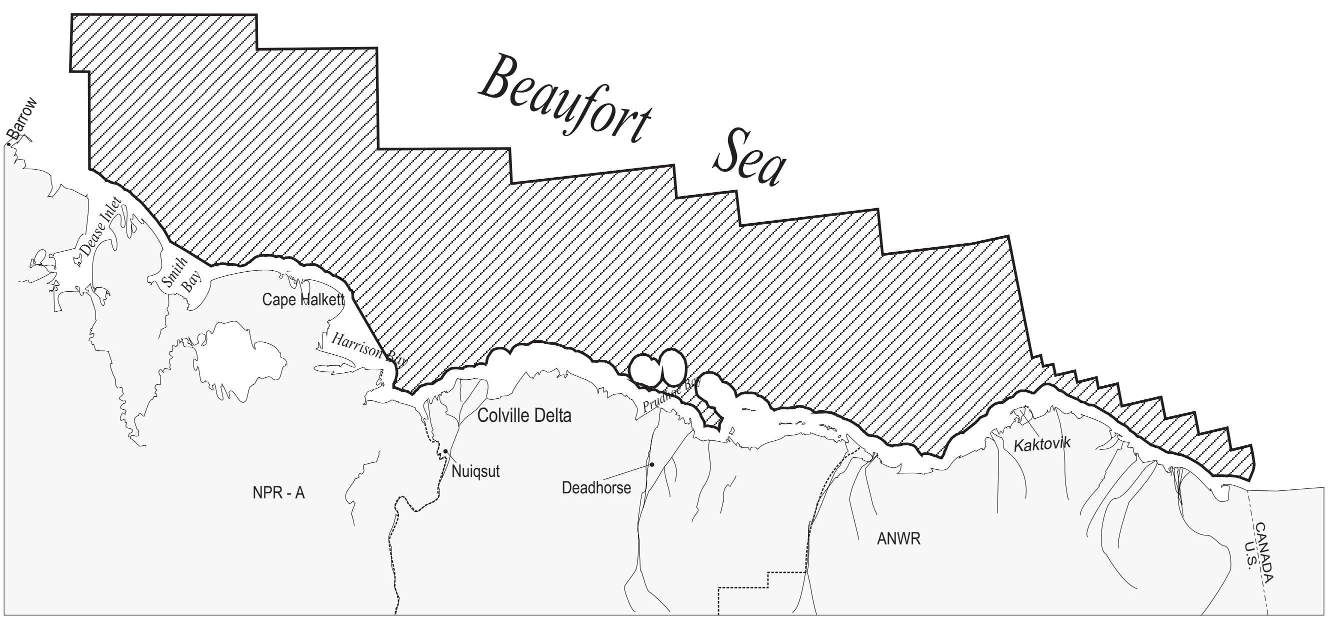
OCS EIS/EA
MMS 2003-001

Beaufort Sea Planning Area

Oil and Gas Lease Sales
186, 195, and 202

Final Environmental
Impact Statement

Volume IV
(Appendices)



U.S. Department of the Interior
Minerals Management Service
Alaska OCS Region

BEAUFORT SEA PLANNING AREA OIL AND GAS LEASE SALES 186, 195, AND 202
Final Environmental Impact Statement
OCS EIS/EA, MMS 2003-001, in 4 volumes:
Volume I, Executive Summary, Sections I through VI
Volume II, Section VII, Bibliography, Index
Volume III, Tables, Figures, and Maps for Volumes I and II
Volume IV, Appendices

The summary is also available as a separate document:
Executive Summary, **MMS 2003-002.**

The complete EIS is available on CD-ROM (**MMS 2003-001 CD**) and on the Internet (**http://www.mms.gov/alaska/cproject/Beafort Sea/**).

This Environmental Impact Statement (EIS) is not intended, nor should it be used, as a local planning document by potentially affected communities. The exploration, development and production, and transportation scenarios described in this EIS represent best-estimate assumptions that serve as a basis for identifying characteristic activities and any resulting environmental effects. Several years will elapse before enough is known about potential local details of development to permit estimates suitable for local planning. These assumptions do not represent a Minerals Management Service recommendation, preference, or endorsement of any facility, site, or development plan. Local control of events may be exercised through planning, zoning, land ownership, and applicable State and local laws and regulations.

With reference to the extent of the Federal Government's jurisdiction of the offshore regions, the United States has not yet resolved some of its offshore boundaries with neighboring jurisdictions. For the purposes of the EIS, certain assumptions were made about the extent of areas believed subject to United States' jurisdiction. The offshore-boundary lines shown in the figures and graphics of this EIS are for purposes of illustration only; they do not necessarily reflect the position or views of the United States with respect to the location of international boundaries, convention lines, or the offshore boundaries between the United States and coastal states concerned. The United States expressly reserves its rights, and those of its nationals, in all areas in which the offshore-boundary dispute has not been resolved; and these illustrative lines are used without prejudice to such rights.

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APPENDICES

APPENDIX A-1

INFORMATION,
MODELS AND ASSUMPTIONS
WE USE TO ANALYZE
THE EFFECTS OF AN OIL SPILL
IN THIS EIS

Contents for Appendix A-1

APPENDIX A-1

Figures

The Information, Models and Assumptions We Use to Analyze the Effects of Oil Spills in this EIS

We analyze oil spills and their relative impact to environmental, economic, and sociocultural resource areas and the coastline, which could result from offshore oil exploration and development in the Beaufort Sea Planning Area. Predicting an oil spill is an exercise in probability. Uncertainty exists regarding the location, number, and size of oil spills and the wind, ice and current conditions at the time of a spill. Although some of the uncertainty reflects incomplete or imperfect data, a considerable amount of uncertainty exists simply because it is difficult to predict events 15-40 years into the future.

We make assumptions to analyze the effects of oil spills. To judge the effect of an oil spill, we estimate information regarding the type of oil, the source of an oil spill, the location and size of a spill, the chemistry of the oil, how the oil will weather, how long it will remain, and where it will go. We describe the rationale for these assumptions in the following subsections. The rationale for these assumptions is a mixture of project-specific information, modeling results, statistical analysis, and professional judgment. Based on these assumptions, we assume a spill occurs and then analyze its effects. After we analyze the effects of an oil spill, we consider the chance of an oil spill ever occurring.

A. Estimates of the Source, Type, and Size of Oil Spills

Table IV.A-5 show the source of a spill(s), type of oil, size of spill(s) in barrels, and the receiving environment we assume in our analysis of the effects of oil spills in this EIS for the Proposal and Alternatives and other analyses. The sources of spills are generically divided into platform or pipeline. The type of oil used in this analysis is Alaska North Slope crude. We divide spills into three sizes- small, large, and very large spills. Small spills are those less than 1,000 barrels. Large spills are greater than or equal to 1,000 barrels, and very large spills are greater than or equal to 150,000 barrels. Table IV.A-5 shows the EIS section where we analyze the effects of a large, small, and very large spill.

A.1. Source and Spill-Size Assumptions

The spill assumptions we use for large spills are based on the historic spill sizes from production in the Gulf of Mexico outer continental shelf (OCS) and what we believe is likely to occur. We estimate the likely large spill size based on the median spill size in the Gulf of Mexico. Small spills are based on the historic spill sizes from production on the onshore Alaska North Slope. Very large spill sizes are based on BPXA's estimates of the greatest possible discharge that could occur from a blowout in the Oil Discharge

Prevention and Contingency Plans for the Liberty Development Area and Northstar (BPXA, 2001, 2002). The State of Alaska requires this estimate for a response planning standard under 18 AAC.75.430.

A.1.a. Historical Crude Oil Spills Greater Than or Equal to 1,000 Barrels on the Outer Continental Shelf

The Gulf of Mexico OCS data show that the most likely location of a spill is from a pipeline or a platform. The median size of a crude oil spill greater than or equal to 1,000 barrels from a pipeline from 1985-1999 on the outer continental shelf is 4,600 barrels, and the average is 6,700 barrels (Anderson and LaBelle, 2000). The median spill size for a platform on the outer continental shelf over the entire record from 1964-1999 based on trend analysis is 1,500 barrels, and the average is 3,300 barrels (Anderson and LaBelle, 2000). For purposes of analysis we use the median spill size as the likely large spill size.

A.1.b. Historical Crude Oil Spills From Blowouts

We consider blowouts to be unlikely events. Blowout events are often equated with catastrophic spills; however, in actuality very few blowout events have resulted in spilled oil, and the volumes spilled are often small. All five of the blowout events greater than or equal to 1,000 barrels in the OCS database occurred between 1964 and 1970 (Table A.1-1a). Following the Santa Barbara blowout in 1969, amendments to the OCS Lands Act and implementing regulations significantly strengthened safety and pollution-prevention requirements for offshore activities. Well-control training, redundant pollution-prevention equipment, and subsurface safety devices are among the provisions that have been adopted in the regulatory program. From 1971-2000, 199 blowouts occurred on the OCS while drilling approximately 29,000 wells and producing 11.4 billion barrels of oil. Twenty eight of those 199 blowouts resulted in oil spills of crude or condensate with the amount of oil spilled ranging from less than 1 barrel to 200 barrels. The total volume spilled from those 28 blowouts is approximately 1,200 barrels. The volume spilled from blowouts was approximately 0.00001% of the volume produced. There were no spills greater than or equal to 1,000 barrels from blowouts in the last 30 years on the OCS.

The record for Alaska North Slope blowouts is not validated, but is presented as the best available information. There are two written reports regarding blowouts on the Alaska North Slope, Mallory (1998) and Fairweather (2000). Fairweather (2000) found 10 blowouts, 6 that Mallory had identified and 4 prior to 1974. Of the 10 blowouts, 9 were gas and 1 was oil. The blowout of oil in 1950 was unspectacular and could not have been avoided, because there were no casings of blowout preventors available (Fairweather, 2000). These drilling practices from 1950 would not be relevant today. A third study confirmed that no crude oil spills greater than or equal to 100 barrels from blowouts occurred from 1985-1999 (Hart Crowser, Inc., 2000). A recent report titled Blowout Frequency Assessment of Northstar (Scandpower, 2001) uses statistical blowout frequencies modified to reflect specific field conditions and operative systems at Northstar. This report concludes that the blowout frequency for drilling the oil-bearing zone is 1.5 x 10–5 per well drilled. This compares to a statistical blowout frequency of 7.4 X 10–5 per well (for an average development well). This same report estimates that the frequency of oil quantities per well drilled for Northstar for a spill greater than 130,000 barrels is 9.4 X 10-7 per well.

However unlikely a blowout may be, because it is a significant concern to the public, we analyze the effects of an 180,000-barrel spill in Section IV.I Low Probability, Very Large Oil Spill.

B. Behavior and Fate of Crude Oils

There is scientific and historical information about the behavior and fate of crude oil. We also make several assumptions about oil weathering to perform modeling simulations of oil weathering.

B.1. Processes Affecting the Fate and Behavior of Oil

Several processes alter the chemical and physical characteristics and toxicity of spilled oil. Collectively, these processes are referred to as weathering or aging of the oil and, along with the physical oceanography and meteorology, the weathering processes determine the oil's fate. The major oil-weathering processes are spreading, evaporation, dispersion, dissolution, emulsification, microbial degradation, photochemical oxidation, and sedimentation to the seafloor or stranding on the shoreline (Payne et al., 1987; Boehm, 1987; Lehr, 2001) (Appendix A-1, Figures A-1 and A-2).

The physical properties of a crude oil spill, the environment it occurs in, and the source and rate of the spill will affect how an oil spill behaves and weathers. Table A.1-1b shows the properties of Alaska North Slope crude oil.

The environment in which a spill occurs, such as the water surface or subsurface, spring ice-overflow, summer open-water, winter under ice, or winter broken ice, will affect how the spill behaves. In ice-covered waters, many of the same weathering processes are in effect; however, the sea ice changes the rates and relative importance of these processes (Payne, McNabb, and Clayton, 1991).

After a spill occurs, spreading and advection begin. The slick spreads horizontally in an elongated pattern oriented in the direction of wind and currents and nonuniformly into thin sheens (0.5-10 micrometers) and thick patches (0.1-10 millimeters) (Elliott, 1986; Elliott, Hurford, and Penn, 1986; Galt et al., 1991). In the cooler arctic waters, oil spills spread less and remain thicker than in temperate waters because of differences in the viscosity of oil due to temperature. This property will reduce spreading. An oil spill in broken ice would spread less and would spread between icefloes into any gaps greater than about 8-15 centimeters (Free, Cox, and Shultz, 1982).

The presence of broken ice tends to slow the rate of spreading (S.L. Ross Environmental Research Ltd. and D.F. Dickens Assocs. Ltd., 1987). Oil spilled beneath a wind-agitated field of pancake ice would be pumped up onto the surface of the ice or, if currents are slow enough, bound up in or below the ice (Payne et al., 1987). Once oil is encapsulated in ice, it has the potential to move distances from the spill site with the moving ice.

Evaporation results in a preferential loss of the lighter, more volatile hydrocarbons, increasing density and viscosity and reducing vapor pressure and toxicity (Mackay, 1985). Evaporation of volatile components accounts for 30-40% of crude loss, with approximately 25% occurring in the first 24 hours (Fingas, Duval, and Stevenson, 1979; National Academy of Sciences, 1985). The initial evaporation rate increases with increasing wind speeds, temperatures, and sea state. Evaporative processes occur on spills in ice-covered waters, although at a lower rate (Jordan and Payne, 1980). Fuel oils (diesel) evaporate more rapidly than crude, on the order of 13% within 40 hours at 23° Celsius, a larger overall percentage of diesel eventually will evaporate. Evaporation decreases in the presence of broken ice and stops if the oil is under or encapsulated in the ice (Payne et al., 1987). The lower the temperature, the less crude oil evaporates. Both Prudhoe Bay and Endicott crudes have experimentally followed this pattern (Fingas, 1996). Oil between or on icefloes is subject to normal evaporation. Oil that is frozen into the underside of ice is unlikely to undergo any evaporation until its release in spring. In spring as the ice sheet deteriorates, the encapsulated oil will rise to the surface through brine channels in the ice. As oil is released to the surface, evaporation will occur.

Dispersion of oil spills occurs from wind, waves, currents, or ice. Dispersion is an important breakup process that results in the transport of small oil particles (0.5 micrometers-several millimeters) or oil-in-water emulsions into the water column (Jordan and Payne, 1980; National Research Council, 1985). Droplets less than 0.5 millimeter rise slowly enough to remain dispersed in the water column (Payne and McNabb, 1985). The dispersion rate is directly influenced by sea state; the higher the sea state and breaking waves, the more rapid the dispersion rate (Mackay, 1985). The presence of broken ice promotes dispersion (Payne et al., 1987). Any waves within the ice pack tend to pump oil onto the ice. Some additional oil dispersion occurs in dense, broken ice through floe-grinding action. More viscous and/or weathered crudes may adhere to porous icefloes, essentially concentrating oil within the floe field and limiting the oil dispersion.

Dissolution results in the loss of soluble, low-molecular-weight aromatics such as benzene, toluene, and xylenes (National Research Council, 1985). The low-molecular weight aromatics, which are acutely toxic, rapidly dissolve into the water column. Dissolution, however, is very slow compared with evaporation; most volatiles usually evaporate rather than dissolve. Dissolved-hydrocarbon concentrations underneath a slick, therefore, tend to remain less than 1 part per million (Malins and Hodgins, 1981). Dissolved-hydrocarbon concentration can increase due to the promotion of dispersion by broken ice (Payne et al., 1987).

Emulsified oil results from oil incorporating water droplets in the oil phase and generally is referred to as mousse (Mackay, 1982). The measurable increases in viscosity and specific gravity observed for mousse change its behavior, including spreading, dispersion, evaporation, and dissolution (Payne and Jordan, 1988). The formation of mousse slows the subsequent weathering of oil. The presence of slush ice and turbulence promotes oil-in-water emulsions (Payne et al., 1987).

Most of the oil droplets suspended in the water column eventually will be degraded by bacteria in the water column or deposited on the seafloor. The rate of sedimentation depends on the suspended load of the water, the water depth, turbulence, oil density, and incorporation into zooplankton fecal pellets.

Subsurface blowouts or gathering-pipeline spills disperse small oil droplets and entrained gas into the water column. With sufficient gas, turbulence, and the necessary precursors in the oils, mousse forms by the time the oil reaches the surface (Payne, 1982; Thomas and McDonagh, 1991). For subsurface spills, oil rises rapidly to the water surface to form a slick. Droplets less than 50 microns in size, generally 1% of the blowout volume, could be carried several kilometers downcurrent before reaching the water surface (Environmental Sciences Limited, 1982). Blowout simulations show that convective cells set up by the rising oil and gas plume result in concentric rings of waves around the central plume. Surface currents within the ring should move outward, and surface currents outside the ring should move inward, resulting in a natural containment of some oil.

The subsurface release of oil droplets increases slightly the dissolution of oil, but the rapid rise of most oil to the surface suggests that the increase in dissolution—as a percentage of total spill volume—is fairly small. The resulting oil concentration, however, could be substantial, particularly for dispersed oil in subsurface plumes.

An oil spill under ice would follow this sequence: (1) The oil will rise to the under-ice surface and spread laterally, accumulating in the under ice cavities (Glaeser and Vance 1971; NORCOR, 1975; Martin, 1979; Comfort et al., 1983). (2) For spills that occur when the ice sheet is still growing, the pooled oil will be encapsulated in the growing ice sheet (NORCOR, 1975; Keevisl and Ramseier, 1975; Buist and Dickens, 1983; Comfort et al., 1983). (3) In the spring as the ice begins to deteriorate, the encapsulated oil will rise to the surface through brine channels in the ice (NORCOR, 1975; Purves, 1978; Martin, 1979; Kisil, 1981; Dickins and Buist, 1981; Comfort et al., 1983). The spread of oil under the landfast ice may be affected by the presence of currents, if the magnitude of those currents is large enough. A field study near Cape Parry in the Northwest Territories reported that currents up to 10 centimeters per second were present. This current was insufficient to strip oil from under the ice sheet after the oil had ceased to spread (NORCOR, 1975). Laboratory tests have shown that currents in excess of 15-25 centimeters per second are required to strip oil from under-ice depressions (Cammaert, 1980; Cox et al., 1980). Current speeds in the nearshore Beaufort generally are less than 10 centimeters per second during the winter (Weingartner and Okkonen 2001). The area of contamination for oil under ice could increase if the ice were to move. Because the nearshore Beaufort is in the landfast ice area, the spread of oil due to ice movement would not be anticipated until spring breakup.

Alaska North Slope crude oil will readily emulsify to form stable emulsions. Emulsification of some crude oils is increased in the presence of ice. With floe grinding, Prudhoe Bay crude forms a mousse within a few hours, an order of magnitude more rapidly than in open water.

B.2. Shoreline Type

The shoreline habitats and the estimation of the behavior and persistence of oil on intertidal habitats is based on an understanding of the dynamics of the coastal environments, not just the substrate type and grain size. The sensitivity of a particular intertidal habitat is an integration of the following factors: 1) shoreline type (substrate, grain size, tidal elevation, origin); 2) exposure to wave and tidal energy; 3) biological productivity and sensitivity; and 4) ease of cleanup. All of these factors are used to determine the relative sensitivity of intertidal habitats. Key to the sensitivity ranking is an understanding of the relationships between physical processes; substrate; shoreline type; product type; fate and effect; and sediment-transport patterns. The intensity of energy expended on a shoreline by wave action, tidal currents, and river currents directly affects the persistence of stranded oil. The need for shoreline cleanup activities is determined, in part, by the slowness of natural processes in removal of oil stranded on the shoreline. These concepts have been used in the development of the ESI, which ranks shoreline environments as to their relative sensitivity to oil spills, potential biological injury, and ease of cleanup. Generally speaking, areas exposed to high levels of physical energy, such as wave action and tidal currents, and low biological activity rank low on the scale, whereas sheltered areas with associated high biological activity rank highest. A comprehensive shoreline habitat ranking system has been developed for the entire United States. The shoreline habitats delineated on the North Slope of Alaska are listed in order of increasing sensitivity to spilled oil:
3A) Fine- to Medium-grained Sand Beaches
3C) Tundra Cliffs
5) Mixed Sand and Gravel Beaches
6A) Gravel Beaches
7) Exposed Tidal Flats
8B) Sheltered, Solid Man-made Structures
8E) Peat Shorelines
9A) Sheltered Tidal Flats
10A) Salt- and Brackish-Water Marshes
10E) Inundated Low-lying Tundra
U) Unranked

The ESI rankings progress from low to high susceptibility to oil spills. In many cases, the shorelines also are ranked with multiple codes such as 10E/7. The first number is the most landward shoreline type, saltmarsh, with exposed tidal flats being the shoreline type closest to the water. Table A.1-1c shows the percentage of each ESI ranking for the most seaward shoreline type for each land segment.

B.3. Assumptions about Oil Weathering

- The crude oil properties will be similar to Alaska North Slope crude (Table A.1-1b).
- The size of the spill is 1,500 or 4,600 barrels.
- The wind, wave, and temperature conditions are as described.
- Meltout spills occur into 50% ice cover.
- The properties predicted by the model are those of the thick part of the slick.
- The spill occurs as an instantaneous spill over a short period of time.

Uncertainties exist, such as:

- the actual size of the oil spill or spills, should they occur;
- whether the spill is instantaneous or chronic
- wind, current, wave, and ice conditions at the time of a possible oil spill; and
- the crude oil properties at the time of a possible spill.

B.4. Modeling Simulations of Oil Weathering

To judge the effect of an oil spill, we estimate information regarding how much oil evaporates, how much oil is dispersed and how much oil remains after a certain time period. We derive the weathering estimates of Alaska North Slope crude oil and arctic diesel from modeling results from the SINTEF Oil Weathering Model (OWM) Version 2.0 (Reed et al., 2000) for up to 30 days.

Tables IV.A-6a and 6b show the results for Alaska North Slope crude oil spills using the SINTEF model. The SINTEF OWM changes both oil properties and physical properties of the oil. The oil properties include density, viscosity, pour point, flash point, and water content. The physical processes include spreading, evaporation, oil-in-water dispersion, and water uptake. The SINTEF OWM Version 2.0 performs a 30-day time horizon on the model-weathering calculations, but with a warning that the model is not verified against experimental field data for more than 4-5 days. The SINTEF OWM has been tested extensively with results from three full-scale field trials of experimental oil spills (Daling and Strom, 1999).

The SINTEF OWM does not incorporate the effects of the following:

- currents;
- beaching;
- containment;
- photo-oxidation;
- microbiological degradation;
- adsorption to particles; and
- encapsulation by ice.

The Alaska North Slope crude oil spill sizes are 1,500 or 4,600 barrels. We simulate two general scenarios: one in which the oil spills into open water and one in which the oil freezes into the ice and melts out into 50% ice cover. We assume open water is July through September, and a winter spill melts out in July. For open water, we model the weathering of the 1,500 or 4,200-barrel spills as if they are instantaneous spills. For the meltout spill scenario, we model the entire spill volume as an instantaneous spill. Although different amounts of oil could melt out at different times, the MMS took the conservative approach, which was to assume all the oil was released at the same time. We report the results at the end of 1, 3, 10, and 30 days.

Tables IV A.6a and 6b summarize the results we assume for the fate and behavior of Alaska North Slope crude oil and diesel oil in our analysis of the effects of oil on environmental and social resources.

C. Estimates of Where an Offshore Oil Spill May Go

We study how and where large offshore spills move by using a computer model called the Oil-Spill-Risk Analysis model (Smith et al., 1982). By large, we mean spills greater than or equal to 1,000 barrels. This model analyzes the likely paths of oil spills in relation to biological, physical, and social resources. The model uses information about the physical environment, including files of wind, ice, and current data. It also uses the locations of environmental resource areas, barrier islands, and the coast that might be contacted by a spill.

C.1. Inputs to the Oil-Spill-Trajectory Model

- study area
- arctic seasons
- location of the coastline
- location of environmental resource areas
- location of land segments
- location of boundary segments
- location of hypothetical launch areas
- location of hypothetical pipelines and transportation assumptions
- current and ice information from two general circulation models
- wind information.

C.1.a. Study Area and Boundary Segments

Map A-1 shows the Beaufort multiple-sale oil-spill-trajectory study area extends from lat. 68º N. to 74º N. and from long. 134° W. to 176° W. The study area is formed by 38 boundary segments and the Chukchi and Beaufort Sea coastline. The boundary segments are vulnerable to spills in both arctic summer and winter. We chose a study area large enough to contain the paths of 2,700 hypothetical oil spills each through as long as 360 days.

C.1.b. Seasons

We define three time periods for the trajectory analysis of oil spills. The first is from July through September and represents open water or arctic summer. We ran 675 trajectories in the arctic summer. The second is from October through June and represents ice cover or arctic winter. We also ran 2,025 trajectories in the arctic winter. The last is annual, which is from January through December, and represents the entire year. We ran 2,700 trajectories.

C.1.c. Locations of Environmental Resource Areas

Maps A-2a, A-2b, A-2c and A-2d show the location of 88 environmental resource areas, which represent concentrations of wildlife, subsistence-hunting areas, and subsurface habitats. Our analysts designate these environmental resource areas. The analysts also designate in which months these environmental resource areas are vulnerable to spills. The names or abbreviations of the environmental resource areas and their months in which they are vulnerable to spills are shown in Table A.1-2a. We also include Land as an additional environmental resource area. Land is the entire study area coastline.

C.1.d. Location of Land Segments

Land was further analyzed by dividing the Beaufort Sea coastline into 66 land segments. Maps A-3a and A-3b show the location of these 66 land segments. Land segments are vulnerable to spills in both summer and winter. The model defines summer as July through September and winter from October through June. The land segment identification numbers (ID) and the geographic place names within the land segment are shown in Table A.1-2b. Some land segments were grouped as follows:

- Arctic National Wildlife Refuge — 43, 44, 45, 46, 47, 48, 49, 50, 51
- Ivvavik National Park — 52, 53, 54, 56, 57
- Hershel Island — 55
- Kendall Island Bird Sanctuary — 64, 65
- Teshekpuk Lake Special Use Area — 29, 30, 31, 32, 33

C.1.e. Location of the Proposed and Alternative Hypothetical Spill Areas and Pipeline Segments

Map A-4a shows the location of the 18 hypothetical launch areas and 13 pipeline segments, the sites where large oil spills would originate, if they were to occur. There are 735 spill points evenly spread over the 18 hypothetical launch areas and 13 pipeline segments. Hypothetical spills were started at the 735 spill points and 13 pipeline segments. With the exception of the Northstar pipeline, landfall locations were chosen based on educated guesses. For example the Liberty pipeline was chosen as a landfall. Since that time, the project has been canceled.

Map A-4b shows the location of the alternatives to indicate where spill areas and pipelines would be removed. It also shows the location of the Near, Midrange, and Far zones. Table A.1-3 shows the transportation assumptions for the spill areas and their associated pipelines.

Table A.1-4 shows how the pipelines and launch areas relate to the Near Zone, Midrange Zone, and Far Zone scenarios and each alternative for each sale. For Sales 186, 195, and 202 Alternative I, we assume no oil large spills occur during exploration activities. Development/production activities for Sale 186 are not expected to occur in the Far Zone, and there would be no spill from launch areas or pipeline segments in this zone (LA1-LA5, LA11, LA13-LA16, LA18, P1, P5, P6, and P8). Development/production activities for Sale 195 are not expected to occur in the Far Zone, and there would be no spill from launch areas or pipeline segments in this zone (LA1-LA5, LA11, LA13-LA16, LA18, P1, P5, P6, and P8). One development/production project is expected to occur in the Far Zone for Sale 202. No development/production projects are expected in the Near Zone or the Midrange Zone, and there would be no spill from launch areas LA8 and LA10.

C.1.f. Current and Ice Information from a General Circulation Model

For the Beaufort multiple-sale, we use two general circulation models to simulate currents ($U_{current}$) or ice (U_{ice}) depending upon whether the location is nearshore or offshore.

C.1.f.(1) Offshore

Offshore of the 10- to 20-meter bathymetry contour, the wind-driven and density-induced ocean-flow fields and the ice-motion fields are simulated using a three-dimensional, coupled, ice-ocean hydrodynamic model (Haidvogel, Hedstrom, and Francis, 2001). The model is based on the ocean model of Haidvogel ,Wilkin, and Young (1991) and the ice models of Hibler (1979) and Mellor and Kantha (1989). This model simulates flow properties and sea-ice evolution in the western Arctic during the years 1982-1996. The coupled system uses the S-Coordinate Rutgers University Model (SCRUM) and Hibler viscous-plastic dynamics and the Mellor and Kantha thermodynamics. It is forced by daily surface geostrophic winds and monthly thermodynamic forces. The model is forced by thermal fields for the years 1982-1996. The thermal fields are interpolated in time from monthly fields. The location of each trajectory at each time interval is used to select the appropriate ice concentration. The pack ice is simulated as it grows and melts. The edge of the pack ice is represented on the model grid. Depending on the ice concentration, either the ice or water velocity with wind drift from the stored results of the Haidvogel, Hedstrom and Francis (2001) coupled ice-ocean model is used. A major assumption used in this analysis is that the ice-motion velocities and the ocean daily flows calculated by the coupled ice-ocean model adequately represent the flow components. Comparisons with data illustrate that the model captures the first-order transport and the dominant flow (Haidvogel, Hedstrom and Francis, 2001).

C.1.f.(2) Nearshore

Inshore of the 10- to 20-meter bathymetry contour, $U_{current}$ is simulated using a two-dimensional hydrodynamic model developed by the National Oceanic and Atmospheric Administration (NOAA) (Galt, 1980, Galt and Payton, 1981). This model does not have an ice component. In this model, we added an ice mask within the 0-meter and 10- to 20-meter water-depth contours to simulate the observed shorefast-ice zone. We apply the mask from November 1-June 15 in the Beaufort and December 1 to May 1 in selected areas of the Chukchi. U_{ice} is zero for the months November through June or January to May. The two-dimensional model incorporated the barrier islands in addition to the coastline. The model of the shallow water is based on the wind forcing and the continuity equation. The model was originally developed to simulate wind-driven, shallow-water dynamics in lagoons and shallow coastal areas with a complex shoreline. The solutions are determined by a finite element model where the primary balance is between the wind forcing friction, the pressure gradients, coriolis accelerations, and the bottom friction. The time dependencies are considered small, and the solution is determined by iteration of the velocity and sea level equations, until the balanced solution is calculated. The wind is the primary forcing function, and a sea level boundary condition of no anomaly produced by the particular wind stress is applied far offshore, at the northern boundary of the oil-spill-trajectory analysis domain. An example of the currents simulated by this model for a 10-meter-per-second wind is shown in Appendix A-1,Figure A-3.

The results of the model were compared to current meter data from the Endicott Environmental Monitoring Program to determine if the model was simulating the first order transport and the dominant flow. The model simulation was similar to the current meter velocities during summer. Example time series from 1985 show the current flow at Endicott Station ED1 for the U (east-west) and V (north-south) components plotted on the same axis with the current derived from the NOAA model for U and V (Der-U and Der-V). The series show many events that coincide in time, and that the currents derived from the NOAA model generally are in good correspondence with the measured currents. Some of the events in the measured currents are not particularly well represented, and that probably is due to forcing of the current by something other than wind, such as low frequency alongshore wave motions.

C.1.g. Wind Information

We use 15 of the 17-year re-analysis of the wind fields provided to us by Rutgers. The TIROS Operational Vertical Sounder (TOVS) has flown on NOAA polar-orbiting satellites since 1978. Available from July 7, 1979, through December 31, 1996, and stored in Hierarchical Data Format, the TOVS Pathfinder (Path-P) dataset provides observations of areas poleward of lat. 60 N. at a resolution of approximately 100 x 100 kilometers. The TOVS Path-P data were obtained using a modified version of the Improved Initialization Inversion Algorithm (3I) (Chedin et al., 1985), a physical-statistical retrieval method improved for use in identifying geophysical variables in snow- and ice-covered areas (Francis, 1994). Designed to address the particular needs of the polar-research community, the dataset is centered on the North Pole and has been gridded using an equal-area azimuthal projection, a version of the Equal-Area Scalable Earth-Grid (EASE-Grid) (Armstrong and Brodzik, 1995).

Preparation of a basinwide set of surface-forcing fields for the years 1980 through 1996 has been completed (Francis, 1999). Improved atmospheric forcing fields were obtained by using the bulk boundary-layer stratification derived from the TOVS temperature profiles to correct the 10-meter level geostrophic winds computed from the National Center for Environmental Prediction Reanalysis surface pressure fields. These winds are compared to observations from field experiments and coastal stations in the Arctic Basin and have an accuracy of approximately 10% in magnitude and 20 degrees in direction.

C.1.h. Oil-Spill Scenario

For purposes of this trajectory simulation, all spills occur instantaneously. For each trajectory simulation, the start time for the first trajectory was the first day of the season (summer or winter) of the first year of wind data (1982) at 6 a.m. Greenwich Mean Time. We launch particles every 2 days (on average) for each of the 15 years of wind.

C.2. Oil-Spill-Trajectory Model Assumptions

- Oil spills occur in the hypothetical spill areas or along pipeline segments.
- Companies transport the produced oil through pipelines.
- An oil spill reaches the water.
- An oil spill encapsulated in the fast ice does not move until the ice moves or it melts out.
- Oil spills occur and move without consideration of weathering. The oil spills are simulated each as a point with no mass or volume. The weathering of the oil is estimated in the stand alone SINTEF OWM model.

- Oil spills occur and move without any cleanup. The model does not simulate cleanup scenarios. The oil-spill trajectories move as though no booms, skimmers, or any other response action is taken.
- Oil spills stop when they contact the mainland coastline, but not the barrier islands in Stefansson Sound.

Uncertainties exist, such as:
- the actual size of the oil spill or spills, should they occur;
- whether the spill reaches the water;
- whether the spill is instantaneous or a long-term leak;
- the wind, current, and ice conditions at the time of a possible oil spill;
- how effective cleanup is;
- the characteristics of crude oil at the time of the spill;
- how Alaska North Slope crude oil will spread; and
- whether or not production occurs.

C.3. Oil-Spill-Trajectory Simulation

The trajectory simulation portion of the model consists of many hypothetical oil-spill trajectories that collectively represent the mean surface transport and the variability of the surface transport as a function of time and space. The trajectories represent the Lagrangian motion that a particle on the surface might take under given wind, ice, and ocean-current conditions. Multiple trajectories are simulated to give a statistical representation, over time and space, of possible transport under the range of wind, ice, and ocean-current conditions that exist in the area.

Trajectories are constructed from simulations of wind-driven and density-induced ocean flow fields and the ice-motion field. The basic approach is to simulate these time- and spatially dependent currents separately, then combine them through linear superposition to produce an oil-transport vector. This vector is then used to create a trajectory. Simulations are performed for three seasons: winter (October-June), summer (July-September), and annual (January-December). The choice of this seasonal division was based on meteorological, climatological, and biological cycles and consultation with Alaska Region analysts.

For cases where the ice concentration is below 80%, each trajectory is constructed using vector addition of the ocean current field and 3.5% of the instantaneous wind field—a method based on work done by Huang and Monastero (1982), Smith et al. (1982), and Stolzenbach et al. (1977). For cases where the ice concentration is 80% or greater, the model ice velocity is used to transport the oil. Equations 1 and 2 show the components of motion that are simulated and used to describe the oil transport for each spillete:

1 $U_{oil} = U_{current} + 0.035\ U_{wind}$

or

2 $U_{oil} = U_{ice}$

where:

U_{oil} = oil drift vector

$U_{current}$ = current vector (when ice concentration is less than 80%)

U_{wind} = wind speed at 10 meters above the sea surface

U_{ice} = ice vector (when ice concentration is greater than or equal to 80%)

The wind-drift factor was estimated to be 0.035, with a variable drift angle ranging from 0º to 25º clockwise. The drift angle was computed as a function of wind speed according to the formula in Samuels, Huang, and Amstutz (1982). (The drift angle is inversely related to wind speed.)

The trajectories age while they are in the water and/or on the ice. For each day that the hypothetical spill is in the water, the spill ages—up to a total of 360 days. While the spill is in the ice (greater than or equal to 80% concentration), the aging process is suspended. The maximum time allowed for the transport of oil in the ice is 360 days, after which the trajectory is terminated. After coming out of the ice into open water, the trajectory ages to a maximum of 30 days.

C.4. Results of the Oil-Spill-Trajectory Model

C.4.a. Conditional Probabilities: Definition and Application

The chance that an oil spill will contact a specific environmental resource area or land or boundary segment within a given time of travel from a certain location or spill site is termed a conditional probability. The condition is that we assume a spill occurs. Conditional probabilities assume a spill has occurred and the transport of the spilled oil depends only on the winds, ice, and ocean currents in the study area.

For the Beaufort multiple-sales, we estimate conditional probabilities of contact within 1, 3, 10, 30, 60, 180, or 360 days during summer. Summer spills are spills that begin in July through September. Therefore, if any contact to an environmental resource area or land segment is made by a trajectory that began before the end of September, it is considered a summer contact and is counted along with the rest of the contacts from spills launched in the summer. We also estimate the conditional probability of contact from spills that start in winter, freeze into the landfast ice and meltout in the spring. We estimate contacts from these spills for 1, 3, 10, 30, 60, 180, or 360 days. Winter spills are spills that begin in October through June, melt out of the ice, and contact during the open-water period. Therefore, if any contact to an environmental resource area or land segment is made by a trajectory that began by the end of June, it is considered a winter contact and is counted along with the rest of the contacts from spills launched in the winter.

C.4.a.(1) Conditional Probabilities: Results

The chance of a spill contacting is taken from the oil-spill trajectory model results summarized below and listed in Tables A2-1 through A2-54 and A2-73 through A2-90.

C.4.a.(1)(a) Comparisons between Spill Location and Season

The primary differences of contact between spill locations are geographic in the perspective of west to east and nearshore versus offshore. Offshore spill locations take longer to contact the coast and nearshore environmental resource area, if contact occurs at all. Winter spill contact to nearshore and coastal resources is less often and to a lesser extent due to the landfast ice in place from October to June.

C.4.a.(1)(b) Generalities Through Time

3 Days: During summer, offshore launch areas 1, 7, 9, 11, 13, 14, and 16 have less than a 0.5% chance of contacting individual land segments within 3 days. Nearshore launch areas have a less than 0.5-6% chance of contacting individual land segments. Pipeline segments have a less than 0.5-14% chance of contacting individual land segments. Contacts to land segments from pipeline spills are highest where the pipeline comes ashore.

During summer, offshore launch areas 1 through 18 have a less than 0.5-46% chance of contacting individual environmental resource areas. Launch areas adjacent to or on top of environmental resource areas have the highest percent chance of contact. Pipeline segments 1 through 13 have a less than 0.5% to a greater than 99.5% chance of contact to individual environmental resource areas.

During winter, launch areas 1, 3, 5, 7, and 9 through 17 have a less than 0.5% chance of contacting individual land segments within 3 days. Nearshore launch areas 2, 4, 6, 8, and 18 have a less than 0.5-1% chance of contacting individual land segments. Pipeline segments have a less than 0.5-5% chance of contacting individual land segments.

During winter, offshore launch areas 1 through 18 have a less than 0.5-46% chance of contacting individual environmental resource areas. Launch areas adjacent to or on top of environmental resource areas have the highest percent chance of contact. Pipeline segments 1 through 13 have a less than 0.5% to greater than 99.5% chance of contact to individual environmental resource areas.

10 Days: During summer, offshore spill box 14 has less than a 0.5% chance and launch areas 9, 11, and 13 have a less than 0.5-1% chance of contacting individual land segments within 10 days. The other launch areas have a less than 0.5-13% chance of contacting individual land segments. Pipeline segments have a less than 0.5-18% chance of contacting individual land segments. Contacts to land segments from pipeline spills are highest where the pipeline comes ashore.

During summer, offshore spill boxes 1 through 18 have a less than 0.5-60% chance of contacting individual environmental resource areas. Launch areas adjacent to or on top of environmental resource areas have the highest percent chance of contact. Pipeline segments 1 through 13 have a less than 0.5% to greater than 99.5% chance of contact to individual environmental resource areas.

During winter, offshore launch areas 3, 9, 11, 13, 14, 15, and 16 have less than a 0.5% chance of contacting individual land segments within 10 days. Other launch areas have a less than 0.5-2% chance of contacting individual land segments. Pipeline segments have a less than 0.5-6% chance of contacting individual land segments.

During winter, offshore launch areas 1 through 18 have a less than 0.5% to greater than 59% chance of contacting individual environmental resource areas. Launch areas adjacent to or on top of environmental resource areas have the highest percent chance of contact. Pipeline segments 1 through 13 have a less than 0.5% to greater than 99.5% chance of contact to individual environmental resource areas.

30 Days: During summer, launch areas have a less than 0.5-17% chance of contacting individual land segments within 30 days. Pipeline segments have a less than 0.5-21% chance of contacting individual land segments. Contacts to land segments from pipeline spills are highest where the pipeline comes ashore.

During summer, offshore launch areas 1 through 18 have a less than 0.5-66% chance of contacting individual environmental resource areas. Launch areas adjacent to or on top of environmental resource areas have the highest percent chance of contact. Pipeline segments 1 through 13 have a less than 0.5% to greater than 99.5% chance of contact to individual environmental resource areas.

During winter, offshore launch areas 11, 13, and 14 have less than a 0.5% chance of contacting individual land segments within 30 days. Other launch areas have a less than 0.5-4% chance of contacting individual land segments. Pipeline segments have a less than 0.5-6% chance of contacting individual land segments.

During winter, offshore launch areas 1 through 18 have a less than 0.5% to greater than 62% chance of contacting individual environmental resource areas. Launch areas adjacent to or on top of environmental resource areas have the highest percent chance of contact. Pipeline segments 1 through 13 have a less than 0.5% to greater than 99.5% chance of contact to individual environmental resource areas.

D. Oil-Spill-Risk-Analysis

A measure of oil-spill impact is determined by looking at the chance of a spill occurring and then contacting a resource of concern. This analysis helps determine the relative spill occurrence and contact associated with oil and gas production in different regions of the proposed area. Combined probabilities are estimated using the conditional probabilities, the historical oil-spill rates, the resource estimates, and the assumed transportation scenarios. These are combined through matrix multiplication to estimate the mean number of spills occurring and contacting.

D.1. Chance of a Spill Occurring

The chance of a spill occurring is derived from two components: (1) the spill rate and (2) the resource volume estimates.

D.1.a. Spill Rates

We derive the spill rates from a modeling study done by the Bercha Group, Inc. (2002). This study examined alternative oil-spill-occurrence estimators for the Beaufort and Chukchi seas using a fault-tree method. During preparation of the Liberty Development final EIS, stakeholders expressed concern regarding the application of historical data from the Gulf of Mexico to the Beaufort OCS. For the Liberty Development final EIS, historical oil-spill data were gathered from a multitude of sources. Various causes of spills were looked at in relation to their relevance to arctic conditions. A preliminary assessment was made regarding the contribution of arctic versus non-arctic conditions. Because sufficient historical data on offshore oil spills for these regions do not exist for the Arctic on oil-spill occurrence, a model based on fault-tree methodology was developed and applied for this Beaufort multiple-sale EIS (Bercha Group, Inc., 2002). Using fault trees, oil-spill data from the Gulf of Mexico were modified and incremented to represent expected Arctic performance.

D.1.a.(1) Limitations of Input data

The Arctic effects include modifications in causes associated with the historical data set in addition to additions of spill causes unique to the arctic environment. Quantification of existing causes for the Arctic was done in a relatively cursory way restricted to engineering judgment. A reproducible but relatively elementary analysis of gouging and scour effects was carried out. Upheaval-buckling and thaw-settlement effect assessments were included on the basis of professional judgment; no engineering analysis was carried out for the assessment of frequencies to be expected for these effects. No Arctic effects were estimated for the wells, which were considered to blow out with frequencies the same as those for the Gulf of Mexico. The existing MMS databases on pipeline mileage were used as they stand with all their inherent inaccuracies.

D.1.a.(2) Results for Spill Rates

Based on the Bercha Group, Inc. (2002) fault-tree analysis for Sale 186, the MMS calculates the spill rates as follows:

Platforms	0.13 spills per billion barrels produced
Pipelines	0.10 spills per billion barrels produced

D.1.b. Source-Volume Estimates

The resource volume estimates are discussed in terms of an opportunity index in Appendix B.

D.1.c. Transportation Assumptions

Appendix A.1 Section C - Estimates of Where an Oil Spill May Go discusses the transportation assumptions for the launch areas and their associated pipelines.

D.1.d. Results for the Chance of a Spill Occurring

Using the above spill rates, Table A.1-5 shows the chance of one or more spills occurring for the Proposal and alternatives. For the Proposal alternatives, we estimate 0.04-0.05 pipeline spills and 0.05-0.06 platform (and well) spills. The chance of one or more pipeline spills is 4-5%, and the chance of one or more platform spills is 5-6%. The chance of one or more spills total is 8-10 % for each sale.

D.2. Chance of a Spill Contacting

The chance of a spill contacting is taken from the oil-spill-trajectory model results summarized in Section C.4.a(1) and listed in Tables A2-1 through A2-54.

D.3. Results of the Oil-Spill-Risk Analysis: Combined Probabilities

Tables A2-55 through A2-72 show the annual combined probabilities for the Proposal and the alternatives. For the most part, the chance of one or more spills occurring and contacting resources and land segments is less than 0.5%. The relative risk from the Proposal and alternatives is low, because we do not expect oil spills to occur and contact resources or coastline. Because the combined probabilities are so low it is difficult to distinguish differences between the Proposal and alternatives based on combined probabilities.

E. Small Oil Spills

Small spills are spills that are less than 1,000 barrels. We analyze the effects of small spills in Section C.4.a.(1) We consider two types of small spills–crude oil and refined oil.

We use the Alaska North Slope record of small spills, because the spill rate is significantly less than the Gulf of Mexico OCS small spill rate. The OCS rate of crude and refined small spills is approximately 3,460 spills per billion barrels, and the North Slope rate is approximately 618 spills per billion barrels. We expect the same companies and regulators to participate offshore in the Beaufort Sea as those that are now operating on the onshore Alaska North Slope. We believe it is reasonable to assume that the rate in the Beaufort Sea will be similar to the rate on the Alaska North Slope.

The analysis of operational small oil spills uses historical oil-spill databases and simple statistical methods to derive general information about small crude and refined oil spills that occur on the Alaska North Slope. This information includes estimates of how often a spill occurs for every billion barrels of oil produced (oil-spill rates), the mean (average) number of oil spills, and the mean and median size of oil spills from facilities, pipelines, and flowlines combined. We then use this information to estimate the number, size, and distribution of operational small spills that may occur from Beaufort Sea Sales 186, 195, and 202. The analysis of operational small oil spills considers the entire production life of the Beaufort Sea sales and assumes the following:

- commercial quantities of hydrocarbons are present in the multiple-sale Program Area, and
- these hydrocarbons will be developed and produced at the estimated resource levels.

Uncertainties exist, such as

- the estimates required for the assumed resource levels, or
- the actual size of a crude- or refined-oil spill.

We use the history of crude and refined oil spills reported to the State of Alaska, Department of Environmental Conservation and the Joint Pipeline Office to determine crude- and refined-oil-spill rates and patterns from Alaska North Slope oil and gas exploration and development activities for spills greater than or equal to 1gallon and less than 1,000 barrels. Refined oil includes aviation fuel, diesel fuel, engine lube, fuel oil, gasoline, grease, hydraulic oil, transformer oil, and transmission oil. The Alaska North Slope oil-spill analysis includes onshore oil and gas exploration and development spills from the Point Thompson Unit, Badami Unit, Kuparuk River Unit, Milne Point Unit, Prudhoe Bay West Operating Area, Prudhoe Bay East Operating Area, and Duck Island Unit.

The Alaska North Slope oil-spill database of all spills greater than or equal to 1 gallon is from the State of Alaska, Department of Environmental Conservation. Oil-spill information is provided to the State of

Alaska, Department of Environmental Conservation by private industry according to the State of Alaska Regulations 18 AAC 75. The totals are based on initial spill reports and may not contain updated information. The State of Alaska, Department of Environmental Conservation database integrity is most reliable for the period 1989 and after due to increased scrutiny after the Exxon Valdez oil spill (Volt, 1997, pers. commun.). For this analysis, the database integrity cannot be validated thoroughly. However, we use this information, because it is the only information available to us about small spills. For this analysis, the State of Alaska, Department of Environmental Conservation database is spot-checked against spill records from ARCO Alaska, Inc. and British Petroleum, Inc. All spills greater than or equal to1 gallon are included in the data set. We use the time period January 1989-December 2000 in this analysis of small oil spills for the Beaufort Sea multiple-sales.

A simple analysis of operational small oil-spills is performed. Alaska North Slope oil-spill rates are estimated without regard to differentiating operation processes. The State of Alaska, Department of Environmental Conservation database base structure does not facilitate quantitative analysis of Alaska North Slope oil-spill rates separately for platforms, pipelines, or flowlines.

E.1. Results for Small Operational Crude Oil Spills

The analysis of Alaska North Slope crude oil spills is performed collectively for all facilities, pipelines, and flowlines. The pattern of crude oil spills on the Alaska North Slope is one of numerous small spills. Of the crude oil spills that occurred between 1989 and 2000, 31% were less than or equal to 2 gallons; 55% were less than or equal to 5 gallons. Ninety-eight percent of the crude oil spills were less than 25 barrels, and 99% were less than 60 barrels. The spill sizes in the database range from less than 1 gallon to 925 barrels. The average crude oil-spill size on the Alaska North Slope is 2.7 barrels, and the median spill size is 5 gallons. For purposes of analysis, this EIS assumes an average crude oil-spill size of 3 barrels.

Table A.1-6a shows the estimated crude oil-spill rate for the Alaska North Slope is 178 spills per billion barrels produced. Table A.1-6b shows the assumed number, size, and total volume of small spills for the proposal and alternative. Table A.1-6c shows the assumed size distribution of those spills for the Proposal and alternatives.

The causes of Alaska North Slope crude oil spills, in decreasing order of occurrence by frequency, are leaks, faulty valve/gauges, vent discharges, faulty connections, ruptured lines, seal failures, human error, and explosions. The cause of approximately 30% of the spills is unknown.

E.2. Results for Small Operational Refined Oil Spills

The typical refined products spilled are aviation fuel, diesel fuel, engine lube, fuel oil, gasoline, grease, hydraulic oil, transformer oil, and transmission oil. Diesel spills are 58% of refined oil spills by frequency and 83% by volume. Engine lube oil spills are 10% by frequency and 3% by volume. Hydraulic oil is 26% by frequency and 10% by volume. All other categories are less than 1% by frequency and volume. Refined oil spills occur in conjunction with oil exploration and production. The refined oil spills correlate to the volume of Alaska North Slope crude oil produced. As production of crude oil has declined, so has the number of refined oil spills. Table A.1-6d shows that from January 1989-December 2000, the spill rate for refined oil is 440 spills per billion barrels produced. Table A.1-6e shows the assumed refined oil spills during the lifetime of the Proposal and alternatives.

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Table A.1-1a
Number of Blowouts per Year in the Gulf of Mexico and Pacific OCS Regions

		Total Incidents with Condensate/ Oil	Amount of Condensate/ Oil (Barrels)			Production				Drilling				Workover/ Completion	Wells Drilled
Year	Number of Blowouts		Development	Exploration	Total Exploration and Development	Total	Fire	Hurricane	Other	Total	Exploration	Development	Unknown	Total	Total
1956	1	0	—	—	0	—	—	—	—	—	—	—	—	—	—
1957	1	0	—	—	0	—	—	—	—	—	—	—	—	—	—
1958	2	1	Minimal	—	1	1	1	—	—	—	—	—	—	—	—
1959	1	0	—	—	0	—	—	—	—	—	—	—	—	—	—
1960	2	0	—	—	0	—	—	—	—	—	—	—	—	—	—
1961	0	0	—	—	0	—	—	—	—	—	—	—	—	—	—
1962	1	0	—	—	0	—	—	—	—	—	—	—	—	—	—
1963	1	0	—	—	0	—	—	—	—	—	—	—	—	—	—
1964	7	3	10,380	—	10,380	3	1	2	—	—	—	—	—	—	—
1965	5	2	1688	—	1,688	1		1	—	1	—	—	1	—	—
1966	2	2	Minimal	—	1	—	—	—	—	1	—	—	1	—	—
1967	1	1	Minimal	—	1	1	—	—	1	—	—	—	—	—	—
1968	9	0	—	—	0	—	—	—	—	—	—	—	—	—	—
1969	3	3	82500	—	82500	2	—	—	2	1	—	1	—	—	—
1970	23	3	83000	—	83000	2	2	—	—	1	—	1	—	—	—
1971	9	1	450	—	450	1	1	—	—	—	—	—	—	—	851
1972	5	1	Minimal	—	1	—	—	—	—	1	—	—	1	—	845
1973	3	1	Minimal	—	1	—	—	—	—	1	—	1	—	—	820
1974	6	2	275	—	275	2	—	2	—	—	—	—	—	—	802
1975	7	1	Minimal	—	1	—	—	—	—	—	—	—	—	1	842
1976	6	0	—	—	0	—	—	—	—	—	—	—	—	—	1078
1977	10	0	—	—	0	—	—	—	—	—	—	—	—	—	1240
1978	12	1	Minimal	—	1	—	—	—	—	—	—	—	—	1	1164
1979	5	2	Minimal	—	1	—	—	—	—	2	—	2	—	—	1140
1980	8	2	1	—	1	1	—	—	1	1	—	1	—	—	1158
1981	10	4	64	—	64	—	—	—	—	2	—	2	—	2	1208
1982	9	2	Minimal	—	1	—	—	—	—	1	—	1	—	1	1255
1983	12	0	—	—	0	—	—	—	—	—	—	—	—	—	1180
1984	5	0	—	—	0	—	—	—	—	—	—	—	—	—	1352
1985	6	1	40	—	40	1	—	—	1	—	—	—	—	—	1169
1986	2	0	—	—	0	—	—	—	—	—	—	—	—	—	694
1987	13	1	60	—	60	—	—	—	—	1	—	1	—	—	845
1988	3	0	—	—	0	—	—	—	—	—	—	—	—	—	950
1989	12	0	—	—	0	—	—	—	—	—	—	—	—	—	947
1990	7	3	20.5	—	20.5	1	—	—	1	—	—	—	—	2	1018
1991	6	1	—	0.8	0.8	—	—	—	—	1	1	—	—	—	726
1992	1	1	—	100	100	—	—	—	—	1	1	—	—	—	431
1993	2	0	—	—	0	—	—	—	—	—	—	—	—	—	879
1994	0	0	—	—	0	—	—	—	—	—	—	—	—	—	845
1995	1	0	—	—	0	—	—	—	—	—	—	—	—	—	798
1996	4	0	—	—	0	—	—	—	—	—	—	—	—	—	889
1997	5	0	—	—	0	—	—	—	—	—	—	—	—	—	954
1998	7	1	1.5	—	1.5	1	—	—	1	—	—	—	—	—	993
1999	5	0	—	—	0	—	—	—	—	—	—	—	—	—	962
2000	9	3	—	200	200	—	—	—	—	2	2	—	—	1	1315
Total	258	43	178,480	300.8	0	17	—	—	—	17	—	—	—	9	29350

Source:
USDOI, MMS, Alaska OCS Region (2002).

Table A1-1b
Properties of Alaska North Slope Crude Oil (Pump Station 1)

Property		Weathering (Volume %)		
in English Units	**in Metric Units**	**0**	**11.5**	**20.0**
Density (g/cm^3)	**Density (g/m L)**	—	—	—
34°F	1°C	0.887	0.926	0.943
60°F	15°C	0.876	0.914	0.935
85°F	30°C	—	—	—
Viscosity	**Viscosity**	—		—
Dynamic (cP)	**Dynamic (mPa.s)**			
60°F	15°C	38.9	471.3	9031.3
85°F	30°C	17.6	93.4	665.0
Kinematic (cST)	**Kinematic (mm $^{z/s}$)**			
60°F	15°C	43.9	509.0	9577.2
85°F	30°C	20.1	102.2	711.2
Interfacial Tensions @ 72°F (dynes/cm)	**Interfacial Tensions @ 22°C (mNm)**	—	—	—
Air/Oil	Air/Oil	31.8	34.2	35.3
Oil/Seawater	Oil/Seawater	24.0	27.0	25.0
Pour Point	**Pour Point**	—	—	—
°F	**—**	<9	9	30
—	**°C**	<-13	-13	-1
Flash Point	**Flash Point**	—		—
°F	**—**	<9	19	252
22	**°C**	<-13	-7	-122
Emulsion Formation @ 72°F	**Emulsion Formation @ 22°C**	—	—	—
Tendency	Tendency	0.40	0.86	1.00
Stability	Stability	0.00	0.006	1.00
—	—			

ASTM Modified Distillation (°C)				
Evaporation (% volume)	**Liquid Temperature**		**Vapor Temperature**	
	°F	**°C**	**°F**	**°C**
1B.P	171.68	77.6	95.9	35.5
5	297.32	147.4	128.66	53.7
10	359.42	181.9	149.36	65.2
15	416.3	213.5	166.82	74.9
20	478.94	248.3	184.1	84.5
25	543.56	284.2	201.02	93.9
30	596.48	313.6	238.28	114.6
35	645.08	340.6	251.42	121.9

Source:
S.L. Ross Environmental Research Ltd. (1994).

Table A1-1c
Land Segment ID and the Percent Type of Shoreline Closest to the Ocean

ID	Geographic Place Names	1A	1B	3A	3C	4	5	6A	6B	7	8A	8B	8E	9A	9B	10 A	10 E	U
1	Cape Thompson, Akoviknak and Mapsorak Lagoon	4	—	—	—	—	96	—	—	—	—	—	—	—	—	—	—	—
2	Aiautak Lagoon Teshekpak Lake	—	—	—	—	—	100	—	—	—	—	—	—	—	—	—	—	—
3	Ipiutak Lagoon, Marryat Inlet, Point Hope	9	—	—	—	—	86	—	—	—	—	—	—	—	—	—	—	—
4	Angayutak Mountain, Cape Dyer, Kilikralik Point	68	—	—	—	—	27	—	—	—	—	—	—	—	—	—	—	—
5	Alokut Point, Cape Lewis, Cape Lisburne	35	—	—	—	—	56	—	—	—	—	—	—	—	—	—	—	—
6	Ayugatak Lagoon	51	—	—	—	—	46	—	—	—	—	—	—	—	—	—	—	—
7	Cape Sabine, Pitmegea River	51	—	—	9	—	40	—	—	—	—	—	—	—	—	—	—	—
8	Agiak Lagoon, Punuk Lagoon	—	—	—	10	—	86	—	—	—	—	—	—	—	—	—	—	—
9	Cape Beaufort, Omalik Lagoon	—	—	—	45	—	50	—	—	—	—	—	—	—	—	—	—	—
10	Kuchaurak Creek, Kuchiak Creek	—	—	20	3	—	34	—	—	—	—	—	1	12	9	10	10	—
11	Kukpowruk River, Naokok, Sitkok Point	—	—	34	7	—	21	—	—	—	—	—	—	25	7	2	2	3
12	Kokolik River, Point Lay, Siksrikpak Point	—	—	30	3	—	7	—	—	—	—	—	3	19	19	—	5	14
13	Akunik Pass, Tungaich Point, Tungak Creek	—	—	27	14	—	7	—	—	—	—	—	—	19	8	—	3	22
14	Kasegaluk Lagoon, Solivik Island, Utukok River	—	—	21	8	—	1	—	—	—	—	—	—	19	9	—	—	43
15	Akeonik, Icy Cape, Icy Cape Pass	—	—	25	12	—	14	—	—	—	—	—	3	16	18	—	2	10
16	Akoliakatat Pass, Avak Inlet, Tunalik River	—	—	21	21	—	7	—	—	—	—	—	4	10	7	—	10	20
17	Nivat Point, Nokotlek Point, Ongorakvik River	—	—	47	10	—	30	—	—	—	—	—	—	2	9	1	1	1
18	Kuk River, Point Collie, Sigeakruk Point,	—	—	46	13	—	23	—	—	—	—	—	1	3	2	—	9	3
19	Point Belcher, Wainwright, Wainwright Inlet	—	—	26	26	—	37	—	—	—	—	—	—	—	11	—	—	—
20	Eluksingiak Point, Igklo River, Kugrua Bay	—	—	23	42	—	16	—	—	—	—	—	9	4	2	—	5	—
21	Peard Bay, Point Franklin, Seahorse Islands, Tachinisok Inlet	—	—	60	26	—	7	—	—	—	—	—	5	-	2	—	—	—
22	Skull Cliff	5	—	—	78	—	17	—	—	—	—	—	—	—	—	—	—	—
23	Nulavik, Loran Radio Station	1	—	—	91	—	8	—	—	—	—	—	—	—	—	—	—	—
24	Walakpa River, Will Rogers and Wiley Post Memorial	—	—	—	4	—	96	—	—	—	—	—	—	—	—	—	—	—
25	Barrow, Browerville, Elson Lagoon	—	—	—	—	20	38	—	—	2	—	—	28	—	—	—	10	1
26	Dease Inlet, Plover Islands, Sanigaruak Island	—	—	11	—	15	23	—	—	13	—	—	35	—	—	—	3	—
27	Igalik Island, Kulgurak Island, Kurgorak Bay, Tangent Point	—	—	7	—	4	5	—	—	7	—	—	34	27	3	—	13	—
28	Cape Simpson, Piasuk River, Sinclair River, Tulimanik Island	—	—	—	—	4	5	—	—	3	—	—	19	48	2	—	4	15
29	Ikpikpuk River, Point Poleakoon, Smith Bay	—	—	—	—	-	—	—	—	-	—	—	8	73	—	—	—	19
30	Drew Point, Kolovik, McLeod Point,	—	—	—	—	25	—	—	—	15	—	—	60	—	—	—	—	—

Table A1-1c (continued)
Land Segment ID and the Percent Type of Shoreline Closest to the Ocean

ID	Geographic Place Names	1A	1B	3A	3C	4	5	6A	6B	7	8A	8B	8E	9A	9B	10 A	10 E	U
31	Lonely, Pitt Point, Pogik Bay, Smith River	—	—	—	—	9	8	—	—	4	—	—	27	30	—	—	—	22
32	Cape Halkett, Esook Trading Post, Garry Creek	—	—	0	3	16	—	—	—	5	—	—	72	—	—	—	4	—
33	Atigaru Point, Eskimo Islands, Harrison Bay,	—	—	15	27	8	2	—	—	2	—	—	16	—	—	1	22	7
34	Fish Creek, Tingmeachsiovik River	—	—	11	4	—	—	—	—	12	—	—	3	32	—	—	38	—
35	Anachlik Island, Colville River, Colville River Delta	—	—	7	2	—	—	—	—	42	—	—	2	36	—	1	8	—
36	Kalubik Creek, Oliktok Point, Thetis Mound,	—	—	19	0	—	12	1	—	8	—	—	9	1	—	—	25	25
37	Beechey Point, Bertoncini Island, Bodfish Island, Cottle Island, Jones Islands, Milne Point, Simpson Lagoon	—	—	41	5	—	18	—	—	7	—	—	8	0	—	—	10	11
38	Gwydyr Bay, Kuparuk River, Long Island	—	—	10	1	—	23	—	—	6	—	—	3	23	—	—	26	7
39	Duck Island, Foggy Island, Gull Island, Heald Point, Howe Island, Niakuk Islands, Point Brower	—	—	3	4	—	14	1	—	9	—	1	2	51	—	—	10	4
40	Foggy Island Bay, Kadleroshilik River, Lion Point, Shaviovik River, Tigvariak Island	—	—	10	1	—	8	—	—	27	—	—	4	5	—	—	39	5
41	Bullen Point, Point Gordon, Reliance Point	—	—	10	3	—	39	—	—	5	—	—	3	—	—	—	25	15
42	Flaxman Island, Maguire Islands, North Star Island, Point Hopson, Point Sweeney, Point Thomson, Staines River	—	—	11	3	—	37	2	—	8	—	—	7	—	—	—	14	18
43	Brownlow Point, Canning River, Tamayariak River	—	—	—	2	18	6	—	—	12	—	—	7	35	—	—	1	19
44	Camden Bay, Collinson Point, Katakturuk River, Konganevik Point, Simpson Cove	—	—	—	—	8	30	—	—	9	—	—	14	2	2	—	10	26
45	Anderson Point, Carter Creek, Itkilyariak Creek, Kajutakrok Creek, Marsh Creek, Sadlerochit River	—	—	—	—	14	30	—	—	21	—	—	6	5	—	2	—	23
46	Arey Island, Arey Lagoon, Barter Island, Hulahula River, Okpilak River	—	—	—	—	2	7	—	—	23	—	—	14	10	—	—	—	43
47	Bernard Harbor, Jago Lagoon, Kaktovik, Kaktovik Lagoon	—	—	—	—	4	23	—	—	19	—	—	6	15	—	—	—	34
48	Griffin Point, Oruktalik Lagoon, Pokok Lagoon	—	—	—	—	13	24	—	—	20	—	—	15	12	—	1	—	15
49	Angun Lagoon, Beaufort Lagoon, Nuvagapak Lagoon,	—	—	—	—	28	11	—	—	32	—	—	15	0	—	—	1	13
50	Aichilik River, Egaksrak Lagoon, Egaksrak River, Icy Reef, Kongakut River, Siku Lagoon	—	—	—	—	3	12	—	—	7	—	—	3	39	—	—	3	34
51	Demarcation Bay, Demarcation Point, Gordon, Pingokraluk Lagoon	—	—	—	—	9	51	—	—	14	—	—	8	1	—	—	—	17

Key:
ID = identification (number).
3A = Fine- to Medium-grained Sand Beaches.
3C = Tundra Cliffs.
5= Mixed Sand and Gravel Beaches.
6A = Gravel Beaches.
7 = Exposed Tidal Flats.
8B = Sheltered, Solid Man-made Structures.
8E = Peat Shorelines.
9A= Sheltered Tidal Flats
10A = Salt- and Brackish- water Marshes.
10E = Inundated Low-lying Tundra.
U= Unranked.
Source:
Research Planning Institute (2002).

Table A1-2a
Number and Name of Environmental Resource Areas, Their Vulnerable Period in the Oil Spill Trajectory Model and Their Location on Environmental Resource Area Map A-2a, Map A-2b, Map A-2c, or Map A-2d

ID	NAME	NAME 2	VULNERABLE	MAP	ID	NAME	VULNERABLE	MAP
1	Kasegaluk Lagoon	Solivik Island, Icy Cape	May-October	A-2a	45	Whale Concentration Area	May-October	A-2c
2	Point Barrow, Plover Islands	Elson Lagoon, Dease Inlet	May-October	A-2a	46	Herald Shoal Polynya	January-December	A-2d
3	Thetis and Jones Islands	Spy, Pingok, Bertoncini, Bodfish Islands	May-October	A-2c	47	Ice/Sea Segment 10	January-December	A-2d
4	Cottle and Return Islands, West Dock	Long, Egg, and Stump Islands	May-October	A-2c	48	Ice/Sea Segment 11	January-December	A-2d
5	Midway Islands	Reindeer and Argo Islands	May-October	A-2c	49	Hanna's Shoal Polynya	January-December	A-2d
6	Cross and No Name Islands	—	May-October	A-2c	50	Ice/Sea Segment 12	January-December	A-2d
7	Endicott Causeway	—	May-October	A-2c	51	Ice/Sea Segment 13	January-December	A-2d
8	McClure Islands	Narwhal, Jeanette, and Karluk Islands	May-October	A-2c	52	Ice/Sea Segment 14	January-December	A-2d
9	Stockton Islands	Pole and Belvedere Islands	May-October	A-2c	53	Ice/Sea Segment 15	January-December	A-2a
10	Tigvariak Island	—	May-October	A-2c	54	Ice/Sea Segment 16a	January-December	A-2a
11	Maguire Islands	Challenge, Alaska, Dutchess, Northstar	May-October	A-2c	55	Ice/Sea Segment 17	January-December	A-2c
12	Flaxman Island	—	May-October	A-2c	56	Ice/Sea Segment 18a	January-December	A-2c
13	Barrier Islands	Canning River	May-October	A-2c	57	Ice/Sea Segment 19	January-December	A-2c
14	Anderson Point Barrier Islands	—	May-October	A-2c	58	Ice/Sea Segment 20a	January-December	A-2c
15	Arey and Barter Islands, Bernard Spit	—	May-October	A-2c	59	Ice/Sea Segment 21	January-December	A-2c
16	Jago and Tapkaurak Spits	Takaurak and Oruktalik Lagoon	May-October	A-2c	60	Ice/Sea Segment 22	January-December	A-2c
17	Angun and Beaufort Lagoons	Barrier Islands	May-October	A-2c	61	Ice/Sea Segment 22	January-December	A-2c
18	Icy Reef	Demarcation Bay	May-October	A-2c	62	Ice/Sea Segment 24a	January-December	A-2c
19	Chukchi Spring Lead 1	—	April-June	A-2d	63	Ledyard Bay	July-October	A-2a
20	Chukchi Spring Lead 2	—	April-June	A-2a	64	Peard Bay	July-October	A-2a
21	Chukchi Spring Lead 3	—	April-June	A-2a	65	ERA 1	May-October	A-2a
22	Chukchi Spring Lead 4	—	April-June	A-2a	66	ERA 2	May-October	A-2a
23	Chukchi Spring Lead 5	—	April-June	A-2a	67	Ice/Sea Segment 16b	May-October	A-2a
24	Beaufort Spring Lead 6	—	April-June	A-2a	68	Harrison Bay	May-October	A-2a
25	Beaufort Spring Lead 7	—	April-June	A-2a	69	Harrison Bay/Colville Delta	May-October	A-2a
26	Beaufort Spring Lead 8	—	April-June	A-2a	70	ERA 3	May-October	A-2a
27	Beaufort Spring Lead 9	—	April-June	A-2a	71	Simpson Lagoon	May-October	A-2b
28	Beaufort Spring Lead 10	—	April-June	A-2a	72	Gwyder Bay	May-October	A-2b
29	Ice/Sea Segment 1	—	September-October	A-2b	73	Prudhoe Bay	May-October	A-2b
30	Ice/Sea Segment 2	—	September-October	A-2b	74	Cross Island ERA	May-October	A-2c
31	Ice/Sea Segment 3	—	September-October	A-2b	75	Water over Boulder Patch 1	January-December	A-2b
32	Ice/Sea Segment 4	—	September-October	A-2b	76	Water over Boulder Patch 2	January-December	A-2b
33	Ice/Sea Segment 5	—	September-October	A-2b	77	Foggy Island Bay	May-October	A-2b
34	Ice/Sea Segment 6	—	September-October	A-2b	78	Mikkelsen Bay	May-October	A-2b
35	Ice/Sea Segment 7	—	September-October	A-2b	79	ERA 4	May-October	A-2c
36	Ice/Sea Segment 8	—	September-October	A-2b	80	Ice/Sea Segment 18b	May-October	A-2c
37	Ice/Sea Segment 9	—	September-October	A-2b	81	Simpson Cove	May-October	A-2b
38	Point Hope Subsistence Area	—	January-December	A-2d	82	ERA 5	May-October	A-2c
39	Point Lay Subsistence Area	—	January-December	A-2d	83	Kaktovik ERA	May-October	A-2b
40	Wainwright Subsistence Area	—	January-December	A-2d	84	Ice/Sea Segment 20b	May-October	A-2c
41	Barrow Subsistence Area 1	—	April-May	A-2d	85	ERA 6	May-October	A-2b
42	Barrow Subsistence Area 2	—	August-October	A-2d	86	ERA 7	May-October	A-2c
43	Nuiqsut Subsistence Area	—	August-October	A-2c	87	ERA 8	May-October	A-2c
44	Kaktovik Subsistence Area	—	August-October	A-2b	88	Ice Sea Segment 24b	May-October	A-2c

Table A1-2b
Land Segment ID and the Geographic Place Names within the Land Segment

ID	Geographic Place Names	ID	Geographic Place Names
1	Cape Thompson, Akoviknak and Mapsorak Lagoon	34	Fish Creek, Tingmeachsiovik River
2	Aiautak Lagoon Teshekpak Lake	35	Anachlik Island, Colville River, Colville River Delta
3	Ipiutak Lagoon, Marryat Inlet, Point Hope	36	Kalubik Creek, Oliktok Point, Thetis Mound,
4	Angayutak Mountain, Cape Dyer, Kilikralik Point	37	Beechey Point, Bertoncini Island, Bodfish Island, Cottle Island, Jones Islands, Milne Point, Simpson Lagoon
5	Alokut Point, Cape Lewis, Cape Lisburne	38	Gwydyr Bay, Kuparuk River, Long Island
6	Ayugatak Lagoon	39	Duck Island, Foggy Island, Gull Island, Heald Point, Howe Island, Niakuk Islands, Point Brower
7	Cape Sabine, Pitmegea River	40	Foggy Island Bay, Kadleroshilik River, Lion Point, Shaviovik River, Tigvariak Island
8	Agiak Lagoon, Punuk Lagoon	41	Bullen Point, Point Gordon, Reliance Point
9	Cape Beaufort, Omalik Lagoon	42	Flaxman Island, Maguire Islands, North Star Island, Point Hopson, Point Sweeney, Point Thomson, Staines River
10	Kuchaurak Creek, Kuchiak Creek	43	Brownlow Point, Canning River, Tamayariak River
11	Kukpowruk River, Naokok, Naokok Pass, Sitkok Point	44	Camden Bay, Collinson Point, Katakturuk River, Konganevik Point, Simpson Cove
12	Epizetka River, Kokolik River, Point Lay, Siksrikpak Point	45	Anderson Point, Carter Creek, Itkilyariak Creek, Kajutakrok Creek, Marsh Creek, Sadlerochit River
13	Akunik Pass, Tungaich Point, Tungak Creek	46	Arey Island, Arey Lagoon, Barter Island, Hulahula River, Okpilak River
14	Kasegaluk Lagoon, , Solivik Island, Utukok River	47	Bernard Harbor, Jago Lagoon, Kaktovik, Kaktovik Lagoon
15	Akeonik, Icy Cape, Icy Cape Pass	48	Griffin Point, Oruktalik Lagoon, Pokok Lagoon
16	Akoliakatat Pass, Avak Inlet, Tunalik River	49	Angun Lagoon, Beaufort Lagoon, Nuvagapak Lagoon,
17	Mitliktavik, Nivat Point, Nokotlek Point, Ongorakvik River	50	Aichilik River, Egaksrak Lagoon, Egaksrak River, Icy Reef, Kongakut River, Siku Lagoon
18	Kilmantavi, Kuk River, Point Collie, Sigeakruk Point,	51	Demarcation Bay, Demarcation Point, Gordon, Pingokraluk Lagoon
19	Point Belcher, Wainwright, Wainwright Inlet	52	Clarence Lagoon, Backhouse River
20	Eluksingiak Point, Igklo River, Kugrua Bay	53	Komakuk Beach, Fish Creek
21	Peard Bay, Point Franklin, Seahorse Islands, Tachinisok Inlet	54	Nunaluk Spit
22	Skull Cliff	55	Herschel Island
23	Nulavik, Loran Radio Station	56	Ptarmagin Bay
24	Walakpa River, Will Rogers and Wiley Post Memorial	57	Roland & Phillips Bay, Kay Point
25	Barrow, Browerville, Elson Lagoon	58	Sabine Point
26	Dease Inlet, Plover Islands, Sanigaruak Island	59	Shingle Point
27	Igalik Island, Kulgurak Island, Kurgorak Bay, Tangent Point	60	Trent and Shoalwater Bays
28	Cape Simpson, Piasuk River, Sinclair River, Tulimanik Island	61	Shallow Bay, West Channel
29	Ikpikpuk River, Point Poleakoon, Smith Bay	62	**Shallow Bay**
30	Drew Point, Kolovik, McLeod Point,	63	Outer Shallow Bay, Olivier Islands
31	Lonely AFS Airport, Pitt Point, Pogik Bay, Smith River	64	Middle Channel, Gary Island
32	Cape Halkett, Esook Trading Post, Garry Creek	65	Kendall Island
33	Atigaru Point, Eskimo Islands, Harrison Bay, Kalikpik River, Saktuina Point	66	North Point, Pullen Island

Key:
ID = identification (number).

Table A1-3
Assumptions about how Launch Areas are serviced by Pipelines for the Oil-Spill-Trajectory Analysis

Spill Boxes	Serviced by Pipelines
LA01 & LA02	P1 to P8
LA03	P2 to P8
LA04	P8
LA05 & LA06	P2 to P9
LA07	P3 to P10
LA08	P9
LA09	P4 to P10
LA10	P10
LA11	P5 to P11
LA12	P12
LA13	P5 to P12
LA14	P6 to P12
LA15	P13
LA16, LA17 & LA18	P7 to P13

Table A1-4
Launch Area and Pipeline Segment Exclusions by Sale Scenario for Production and Development

Sale 186/195	
Alternative I	LA1-LA6, LA11, LA13, LA14, LA16, LA18, P1, P2, P5, P6, P8, P11
Alternative III	LA1-LA6, LA11, LA13, LA14, LA16, LA18, P1, P2, P5, P6, P8, P11
Alternative IV	LA1-LA6, LA11, LA13, LA14, LA16, LA18, P1, P2, P5, P6, P8, P11
Alternative V	LA1-LA6, LA11, LA13, LA14, LA16, LA18, P1, P2, P5, P6, P8, P11
Alternative VI	LA1-LA6, LA11, LA13, LA14, LA16, LA18, P1, P2, P5, P6, P8, P11
Alternative III, IV, V and VI, are the same as Alternative I	

Note:
Where the majority (≥80%) of the spill points were removed from the spill area based on the scenario the spill area was excluded even if a small portion (<20%) of the spill area could be leased.

Sale 202	
Alternative I	LA8, LA10
Alternative III	LA8, LA10
Alternative IV	LA8, LA10
Alternative V	LA8, LA10
Alternative VI	LA8, LA10
Alternatives IV, V and VI, are the same as Alternative I.	

Table A1-5
Estimated Percent Chance of One or More Platform, Pipeline and Total Spills for Alternative I (Sales 186, 195 and 202) and Their Alternatives

Alternative		Percent Chance of One or More Platform Spills	Percent Chance of One or More Pipeline Spills	Percent Chance of One or More Spills Total
I	Alternative I	6	5	10
II	No Sale	0	0	0
III	Barrow Subsistence Whale Deferral	6	5	10
IV	Nuiqsut Subsistence Whale Deferral	6	4	10
V	Kaktovik Subsistence Whale Deferral	6	5	10
VI	Eastern Deferral	6	5	10

Table A1-6a
Small Spills Greater than or Equal to 1 Gallon and Less than 1,000 Barrels Table A1-6a Small Crude-Oil Spills: Estimated Spill Rates for the Alaska North Slope

Small Crude-Oil Spills ≤500 barrels, 1898-2000	
Total Volume of Spills	135,127 gallons
—	3,217 barrels
Total Number of Spills	1,178 spills
Average Spill Size	2.7 barrels
Production (Crude Oil)	6.6 billion barrels
Spill Rate	178 spills/billion barrels of crude oil produced

Note:
Oil-spill databases are from the ADEC, Anchorage, Juneau, and Fairbanks. Alaska North Slope production data are derived from the TAPS throughput data from Alyeska Pipeline.
Source:
USDOI, MMS, Alaska OCS Region, 2002.

Small Crude-Oil Spills > 500 barrels and <1,000, 1985-2000	
Total Volume of Spills	171,150 gallons
—	4,075 barrels
Total Number of Spills	6
Average Spill Size	680 barrels
Production (Crude Oil)	9.36 billion barrels
Spill Rate	0.64 spills/billion barrels of crude oil produced

Note:
Oil-spill databases are from the ADEC, Anchorage, Juneau, and Fairbanks. BP Alaska Inc. and Arco. Alaska North Slope production data are derived from the TAPS throughput data from Alyeska Pipeline.
Source:
USDOI, MMS, Alaska OCS Region, 2002.

Table A1-6b
Small Crude-Oil Spills: Assumed Spills over the Production Life of the Beaufort Multiple-Sale

Sales 186, 195, and 202 Alternative	Assumed Small Crude-Oil Spills ≤500 barrels				
	Resources (Bbbl)[1]	Spill Rate (Spills/Bbbl)	Assumed Spill Size (bbl)	Estimated Number of Spills	Estimated Total Spill Volume (bbl)
I	0.46	178	3	82	246
II	0	178	3	0	0
III	0.456	178	3	81	243
IV	0.436	178	3	78	234
V	0.447	178	3	80	240
VI	0.446	178	3	79	237
Alternative	**Assumed Small Crude-Oil Spills > 500 and ≤1,000 barrels**				
I	0.46	0.64	680	0.29	0
II	0	0.64	680	0	0
III	0.456	0.64	680	0.29	0
IV	0.436	0.64	680	0.28	0
V	0.447	0.64	680	0.29	0
VI	0.446	0.64	680	0.29	0

Notes:
[1]The estimation of oil spills is based on the estimated resources.
Source:
USDOI, MMS, Alaska OCS Region (2002).

Table A1-6c
Small Crude-Oil Spills: Assumed Size Distribution over the Production Life of the Beaufort Multiple-Sale

Size[2]	Alternative I	Alternative II	Alternative III	Alternative IV	Alternative V	Alternative VI
1 gallon	16	0	15	15	15	15
>1 and ≤5 gallons	29	0	28	27	28	28
>5 gallons and <1 bbl	16	0	17	16	16	16
Total <1 bbl	61	0	60	58	59	59
≥1 bbl and ≤bbl 5	17	0	17	16	17	16
>5 and ≤25 bbl	3	0	3	3	3	3
> 25 and ≤500 bbl	1	0	1	1	1	1
>500 and ≤1,000 bbl	0	0	0	0	0	0
Total >1 and ≤1,000bbl	21	0	21	20	21	20
Total Volume (bbl)	246	0	243	234	240	237

Notes:
[1] Estimated number of spills is rounded to the nearest whole number.
[2] Spill-size distributions are allocated by multiplying the total estimated number of spills by the fraction of spills in that size category from the ADEC database.
Source:
USDOI, MMS, Alaska OCS Region (2002).

Table A1-6d
Small Refined-Oil Spills:

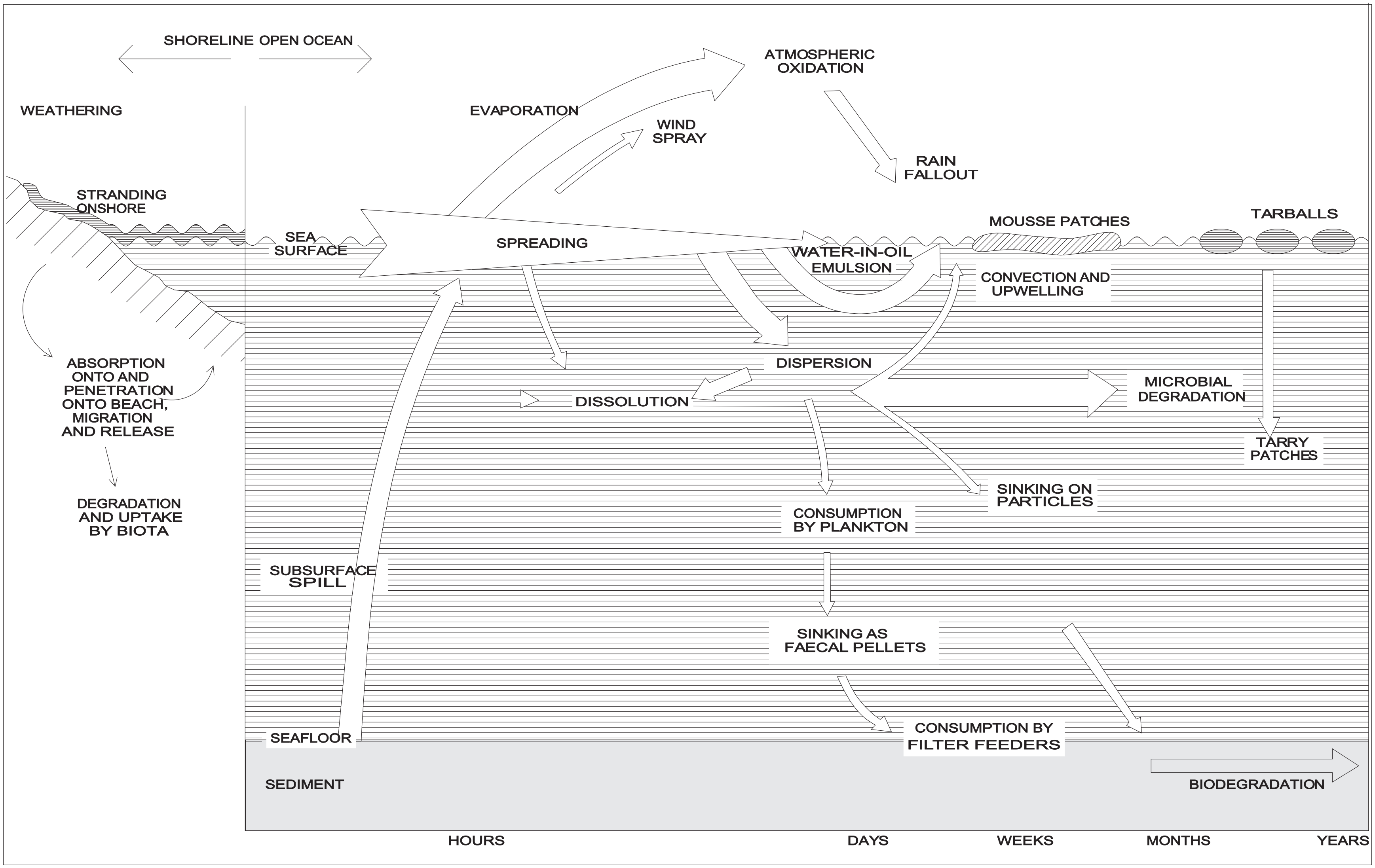
Estimated Spill Rate for the Alaska North Slope, 1989-2000	
Total Volume of Spills	94,195 gallons
	2,243 barrels
Total Number of Spills	2,915 spills
Average Spill Size	0.7 barrels
Production (Crude Oil)	6.6 billion barrels
Spill Rate	440 spills/billion barrels of crude oil produced

Source: USDOI, MMS, Alaska OCS Region (2002).

Table A1-6e
Small Refined-Oil Spills: Assumed Spills over the Production Life of the Beaufort Multiple-Sale

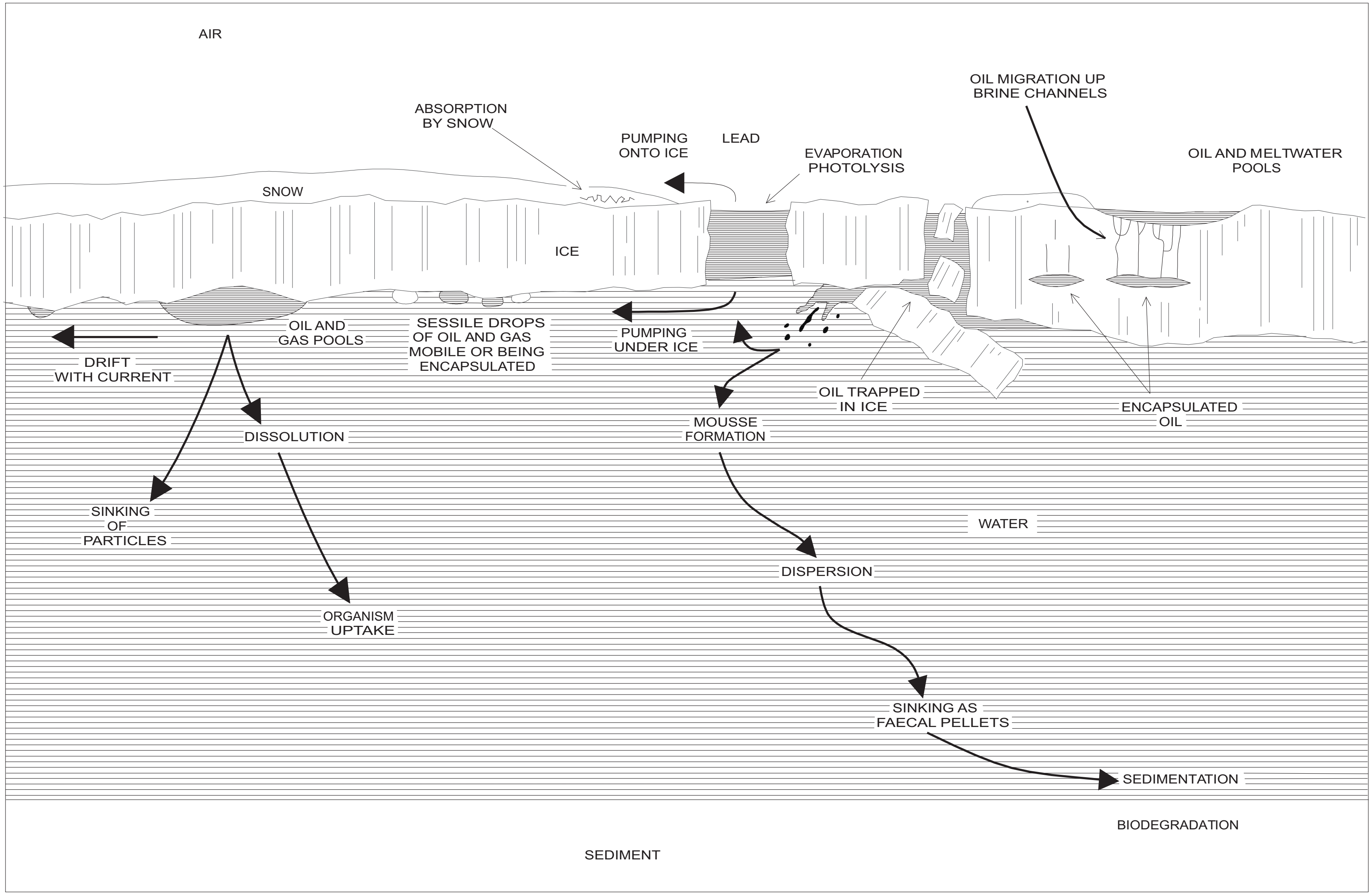
Sales 186, 195, and 202 Alternative	Resource Range (Bbbl)	Spill Rate (Spills/Bbbl)	Average Spill Size (bbl)	Estimated Number of Spills[1]	Estimated Total Spill Volume (bbl)[1]
I	0.46	440	0.7 (29 gal)	202	141
II	0	440	0.7 (29 gal)	0	0
III	0.456	440	0.7 (29 gal)	201	141
IV	0.436	440	0.7 (29 gal)	192	134
V	0.447	440	0.7 (29 gal)	197	138
VI	0.446	440	0.7 (29 gal)	197	138

Note:
[1] The fractional estimated mean spill number and volume is rounded to the nearest whole number.
Bbbl = Billion barrels.
bbl = barrel.
gal = gallon.
Source:
USDOI, MMS, Alaska OCS Region (2002).



Source: After MacKay, 1985, and Rasmussen, (1985).

Figure A-1. Fate of Oil Spills in the Ocean During Arctic Summer



Source: After Hillman and Shafer (1983), and Mackay, (1985).

Figure A-2. Fate of Oil Spills in the Ocean During Arctic Winter

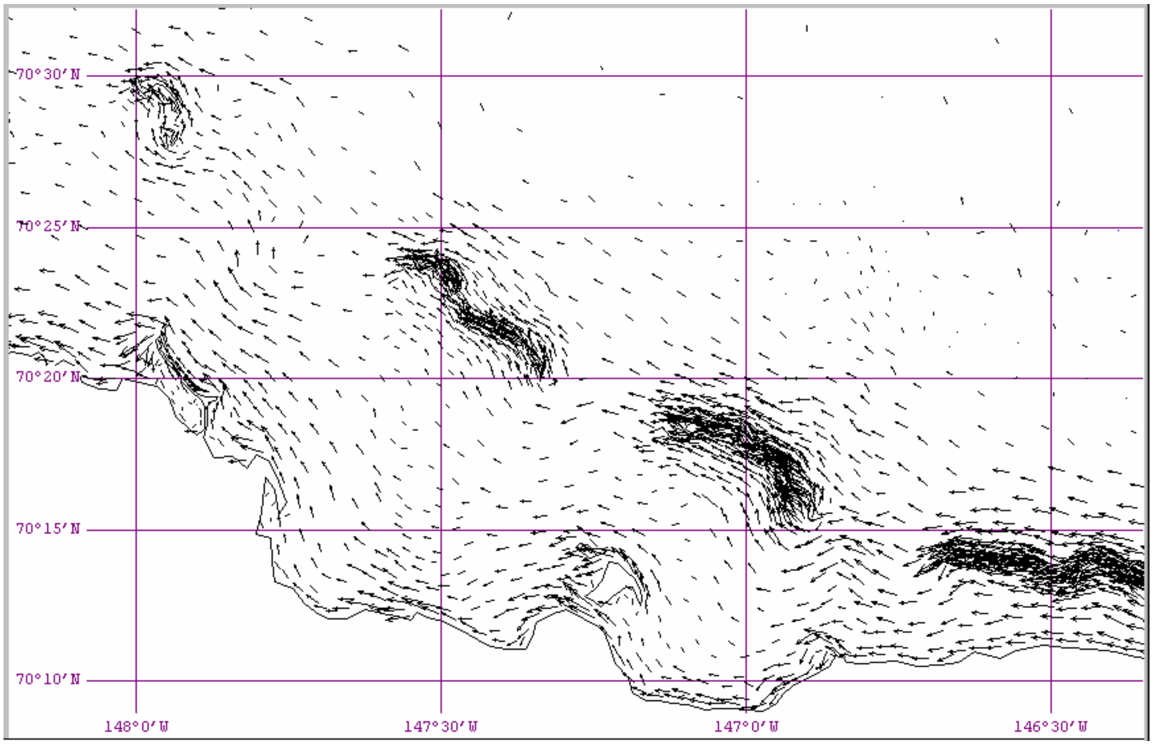


Figure A-3 Nearshore Surface Currents Simulated by the NOAA Model for a Wind from the East at 10 Meters Per Second.

APPENDIX A-2

SUPPORTING TABLES FOR THE OSRA APPENDIX

OIL SPILL RISK ANALYSIS CONDITIONAL AND COMBINED PROBABILITIES TABLE LIST

Table A2-76 Annual Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 60 Days, Beaufort Sea Sales 186, 195 and 202

Table A2-77 Annual Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 180 Days, Beaufort Sea Sales 186, 195 and 202

Table A2-78 Annual Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 360 Days, Beaufort Sea Sales 186, 195 and 202

Table A2-79 Winter Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 3 Days, Beaufort Sea Sales 186, 195 and 202

Table A2-80 Winter Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 10 Days, Beaufort Sea Sales 186, 195 and 202

Table A2-81 Winter Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 30 Days, Beaufort Sea Sales 186, 195 and 202

Table A2-82 Winter Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 60 Days, Beaufort Sea Sales 186, 195 and 202

Table A2-83 Winter Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 180 Days, Beaufort Sea Sales 186, 195 and 202

Table A2-84 Winter Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 360 Days, Beaufort Sea Sales 186, 195 and 202

Table A2-85 Summer Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 3 Days, Beaufort Sea Sales 186, 195 and 202

Table A2-86 Summer Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 10 Days, Beaufort Sea Sales 186, 195 and 202

Table A2-87 Summer Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 30 Days, Beaufort Sea Sales 186, 195 and 202

Table A2-88 Summer Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 60 Days, Beaufort Sea Sales 186, 195 and 202

Table A2-89 Summer Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 180 Days, Beaufort Sea Sales 186, 195 and 202

Table A2-90 Summer Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 360 Days, Beaufort Sea Sales 186, 195 and 202

Table A2-1 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
—	Land	:	5	1	5	1	5	:	4	:	1	:	2	:	:	1	:	3	6	1	1	:	:	:	:	1	12	8	7	6	6	6
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	:	5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	:	:	:	:	:
3	Thetis and Jones Islands	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	8	1	:	:
4	Cottle & Return Islands, West Dock	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	6	1	:
5	Midway Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:
6	Cross and No Name Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:
7	Endicott Causeway	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:
8	McClure Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	6	:
9	Stockton Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11	Maguire Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1
12	Flaxman Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4
13	Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	:	1	:	:	:	:	:	:
16	Jago and Tapkaurak Spits	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	:	:	:	:	:	:	1	:	:	:	:	:	:
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
24	Beaufort Spring Lead 6	14	5	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	10	1	:	:	:	:	:	:	:	:	:	:	:
25	Beaufort Spring Lead 7	6	12	2	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	20	1	:	:	:	:	:	2	:	:	:	:	:
26	Beaufort Spring Lead 8	1	:	12	1	8	1	:	:	:	:	:	:	:	:	:	:	:	:	2	4	:	:	:	:	:	1	:	:	:	:	:
27	Beaufort Spring Lead 9	1	1	10	4	8	3	:	:	:	:	:	:	:	:	:	:	:	:	3	9	:	:	:	:	:	3	:	:	:	:	:
28	Beaufort Spring Lead 10	:	:	:	:	5	2	12	1	3	:	:	:	:	:	:	:	:	:	:	3	6	:	:	:	:	:	2	:	:	:	:
29	Ice/Sea Segment 1	3	12	1	3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	6	:	:	:	:	:	:	3	:	:	:	:	:
30	Ice/Sea Segment 2	:	1	2	10	3	8	:	:	:	:	:	:	:	:	:	:	:	:	2	5	:	:	:	:	:	7	1	:	:	:	:
31	Ice/Sea Segment 3	:	:	:	:	1	5	3	11	1	2	:	:	:	:	:	:	:	:	:	2	4	1	:	:	:	:	8	2	:	:	:
32	Ice/Sea Segment 4	:	:	:	:	:	:	1	1	4	11	3	3	:	:	:	:	:	:	:	:	3	16	7	:	:	:	:	7	8	:	:
33	Ice/Sea Segment 5	:	:	:	:	:	:	:	:	:	1	1	9	4	:	2	:	:	:	:	:	:	:	10	2	:	:	:	:	1	7	:
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	:	:	:	:	1	1	1	12	:	7	:	:	:	:	:	:	3	1	:	:	:	:	1	10
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	6	3	:	:	:	:	:	:	10	:	:	:	:	:	1
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
41	Barrow Subsistence Area 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
42	Barrow Subsistence Area 2	5	22	1	6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	10	1	:	:	:	:	:	15	:	:	:	:	:
43	Nuiqsut Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	11	1	:	:	:	:	:	:	:	:	:	3	1	:	:	:	:	1	8	:
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	7	:	:	:	:	:	:	8	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-1 (continued) Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
49	Hanna's Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
50	Ice/Sea Segment 12	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
51	Ice/Sea Segment 13	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
52	Ice/Sea Segment 14	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
53	Ice/Sea Segment 15	:	3	14	43	23	37	3	1	:	:	:	:	:	:	:	:	:	:	4	71	3	:	:	:	:	14	5	:	:	:	:
54	Ice/Sea Segment 16a	:	:	:	:	3	15	51	21	20	3	:	:	:	:	:	:	:	:	:	6	60	5	:	:	:	:	35	3	:	:	:
55	Ice/Sea Segment 17	:	:	:	:	:	:	2	1	33	33	41	10	5	:	:	:	:	:	:	:	9	**	41	:	:	:	:	18	27	1	:
56	Ice/Sea Segment 18a	:	:	:	:	:	:	:	:	:	1	2	41	38	14	14	:	:	:	:	:	:	:	44	43	:	:	:	:	2	38	2
57	Ice/Sea Segment 19	:	:	:	:	:	:	:	:	:	:	:	1	:	2	52	15	46	1	:	:	:	:	:	19	59	:	:	:	:	:	70
58	Ice/Sea Segment 20a	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	28	5	2	:	:	:	:	:	1	9	:	:	:	:	:	1
59	Ice/Sea Segment 21	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
60	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
61	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
62	Ice/Sea Segment 24a	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
65	ERA 1	1	5	2	19	:	1	:	:	:	:	:	:	:	:	:	:	:	:	13	4	:	:	:	:	:	26	:	:	:	:	:
66	ERA 2	:	:	:	1	1	17	2	5	:	:	:	:	:	:	:	:	:	:	:	4	2	:	:	:	:	:	8	:	:	:	:
67	Ice/Sea Segment 16b	:	:	:	:	1	7	25	11	10	1	:	:	:	:	:	:	:	:	:	3	30	3	:	:	:	:	17	2	:	:	:
68	Harrison Bay	:	:	:	:	:	1	:	4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	12	:	:	:	:
69	Harrison Bay/Colville Delta	:	:	:	:	:	:	:	3	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	:	:	:
70	ERA 3	:	:	:	:	:	:	3	3	7	14	:	:	:	:	:	:	:	:	:	:	11	10	:	:	:	:	:	24	1	:	:
71	Simpson Lagoon	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	9	2	:	:
72	Gwyder Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
74	Cross Island ERA	:	:	:	:	:	:	:	:	:	1	:	21	2	:	1	:	:	:	:	:	:	:	3	1	:	:	:	:	2	16	:
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	:	:	:	:	4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	4	:
76	Water over Boulder Patch 2	:	:	:	:	:	:	:	:	:	:	:	4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	6	:
77	Foggy Island Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	9	:
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
79	ERA 4	:	:	:	:	:	:	:	:	:	:	:	11	1	:	3	:	:	:	:	:	:	:	1	1	:	:	:	:	:	11	1
80	Ice/Sea Segment 18b	:	:	:	:	:	:	:	:	:	1	1	21	19	7	7	:	:	:	:	:	:	:	22	20	:	:	:	:	1	19	1
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
82	ERA 5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	15	:	:	:	:	:	:	:	1	:	:	:	:	:	2
83	Kaktovik ERA	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	9	14	:	:	:	:	:	:	14	:	:	:	:	:	:
84	Ice/Sea Segment 20b	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	15	3	1	:	:	:	:	:	1	6	:	:	:	:	:	1
85	ERA 6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	6	:	:	:	:	:	:	:	:	:	:	:	:	:
86	ERA 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
87	ERA 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
88	Ice Sea Segment 24b	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-2 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
—	Land	6	15	5	15	4	13	4	13	2	6	1	6	1	:	3	1	9	17	9	7	4	3	2	2	7	22	16	14	10	10	9
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	4	12	2	3	1	1	:	:	:	:	:	:	:	:	:	:	:	:	6	1	:	:	:	:	:	3	:	:	:	:	:
3	Thetis and Jones Islands	:	:	:	:	:	:	1	2	2	6	1	2	:	:	:	:	:	:	:	:	1	4	1	:	:	:	:	10	4	1	:
4	Cottle & Return Islands, West Dock	:	:	:	:	:	:	:	:	1	3	1	3	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	2	8	2	:
5	Midway Islands	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:
6	Cross and No Name Islands	:	:	:	:	:	:	:	:	:	1	:	3	1	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	2	3	:
7	Endicott Causeway	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	:
8	McClure Islands	:	:	:	:	:	:	:	:	:	:	:	2	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	7	:
9	Stockton Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	1
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11	Maguire Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2
12	Flaxman Island	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	4
13	Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	4	1	:	:	:	:	:	1	3	:	:	:	:	:	1
16	Jago and Tapkaurak Spits	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	4	:	:	:	:	:	:	3	:	:	:	:	:	:
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	:	:	:	:	:	:	:	:	:	:	:	:	:
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	:	:	:	:	:	:	:	:	:	:	:	:	:
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
24	Beaufort Spring Lead 6	16	10	5	3	2	1	:	:	:	:	:	:	:	:	:	:	:	:	15	4	:	:	:	:	:	3	:	:	:	:	:
25	Beaufort Spring Lead 7	9	15	4	5	1	1	:	:	:	:	:	:	:	:	:	:	:	:	21	4	:	:	:	:	:	5	:	:	:	:	:
26	Beaufort Spring Lead 8	2	2	14	5	11	4	1	1	:	:	:	:	:	:	:	:	:	:	4	8	1	:	:	:	:	3	1	:	:	:	:
27	Beaufort Spring Lead 9	1	2	12	8	11	6	2	1	:	:	:	:	:	:	:	:	:	:	5	13	2	:	:	:	:	6	1	:	:	:	:
28	Beaufort Spring Lead 10	:	:	1	1	7	5	16	5	7	3	1	:	:	:	:	:	:	:	:	5	12	3	1	:	:	:	6	3	1	:	:
29	Ice/Sea Segment 1	6	13	3	4	1	1	:	:	:	:	:	:	:	:	:	:	:	:	9	2	:	:	:	:	:	4	:	:	:	:	:
30	Ice/Sea Segment 2	1	3	4	11	5	9	2	2	1	:	:	:	:	:	:	:	:	:	3	8	2	:	:	:	:	8	1	:	:	:	:
31	Ice/Sea Segment 3	:	:	1	1	2	7	6	13	3	4	1	1	:	:	:	:	:	:	1	3	6	4	1	:	:	:	10	5	2	:	:
32	Ice/Sea Segment 4	:	:	:	:	:	:	2	2	6	12	6	5	2	:	1	:	:	:	:	:	5	16	8	1	:	:	1	9	11	2	:
33	Ice/Sea Segment 5	:	:	:	:	:	:	:	:	:	2	3	11	6	2	4	:	:	:	:	:	:	1	12	3	:	:	:	:	3	9	1
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	:	:	:	:	2	1	2	14	1	9	:	:	:	:	:	1	5	3	:	:	:	:	2	11
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	4	8	4	:	:	:	:	:	1	12	:	:	:	:	:	3
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	5	:	:	:	:	:	:	2	:	:	:	:	:	:
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
41	Barrow Subsistence Area 1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
42	Barrow Subsistence Area 2	10	24	5	10	3	3	:	:	:	:	:	:	:	:	:	:	:	:	14	4	:	:	:	:	:	17	1	:	:	:	:
43	Nuiqsut Subsistence Area	:	:	:	:	:	:	:	:	:	2	1	13	3	1	1	:	:	:	:	:	:	1	5	2	:	:	:	1	3	10	1
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	9	8	:	:	:	:	:	1	11	:	:	:	:	:	2

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-2 (continued) Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
49	Hanna's Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
50	Ice/Sea Segment 12	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
51	Ice/Sea Segment 13	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
52	Ice/Sea Segment 14	10	4	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	:	:	:	:	:	:	1	:	:	:	:	:
53	Ice/Sea Segment 15	4	7	22	51	33	47	9	7	2	1	:	:	:	:	:	:	:	:	10	73	10	1	:	:	:	20	12	1	:	:	:
54	Ice/Sea Segment 16a	:	:	3	3	9	22	59	37	32	15	6	2	1	:	:	:	:	:	1	11	67	19	4	:	:	1	45	18	7	1	:
55	Ice/Sea Segment 17	:	:	:	:	1	1	7	6	42	46	51	25	16	2	3	:	:	:	:	1	14	**	52	4	:	:	2	27	45	12	1
56	Ice/Sea Segment 18a	:	:	:	:	:	:	:	:	1	3	5	51	42	19	29	1	2	:	:	:	:	2	47	47	1	:	:	1	6	48	10
57	Ice/Sea Segment 19	:	:	:	:	:	:	:	:	:	:	:	3	2	6	59	19	56	4	:	:	:	:	1	23	63	:	:	:	:	3	75
58	Ice/Sea Segment 20a	:	:	:	:	:	:	:	:	:	:	:	:	:	5	6	39	18	8	:	:	:	:	:	8	27	:	:	:	:	1	9
59	Ice/Sea Segment 21	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	5	:	:	:	:	:	:	2	:	:	:	:	:	:
60	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
61	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
62	Ice/Sea Segment 24a	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
65	ERA 1	3	9	6	24	4	5	1	1	:	:	:	:	:	:	:	:	:	:	16	9	1	:	:	:	:	27	1	:	:	:	:
66	ERA 2	:	:	2	3	4	20	5	10	2	2	:	:	:	:	:	:	:	:	1	6	6	2	:	:	:	1	13	3	:	:	:
67	Ice/Sea Segment 16b	:	:	1	2	4	11	29	20	17	9	3	1	1	:	:	:	:	:	:	5	35	11	2	:	:	:	23	11	4	:	:
68	Harrison Bay	:	:	:	:	:	2	1	7	:	1	:	:	:	:	:	:	:	:	:	1	1	1	:	:	:	:	14	1	:	:	:
69	Harrison Bay/Colville Delta	:	:	:	:	:	1	1	6	1	3	:	:	:	:	:	:	:	:	:	:	2	2	:	:	:	:	3	6	2	:	:
70	ERA 3	:	:	:	:	:	1	6	8	13	22	4	3	1	:	:	:	:	:	:	1	15	21	3	:	:	:	3	30	9	1	:
71	Simpson Lagoon	:	:	:	:	:	:	:	1	1	4	1	2	:	:	:	:	:	:	:	:	1	2	1	:	:	:	:	11	5	1	:
72	Gwyder Bay	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	:	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
74	Cross Island ERA	:	:	:	:	:	:	:	:	:	2	2	24	4	1	2	:	:	:	:	:	:	1	7	2	:	:	:	1	5	19	1
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	:	:	1	:	5	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	5	1
76	Water over Boulder Patch 2	:	:	:	:	:	:	:	:	:	:	:	5	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	8	1
77	Foggy Island Bay	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	9	:
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
79	ERA 4	:	:	:	:	:	:	:	:	:	1	1	14	2	1	5	:	:	:	:	:	:	:	3	2	:	:	:	:	1	14	2
80	Ice/Sea Segment 18b	:	:	:	:	:	:	:	:	1	2	3	27	21	9	14	:	1	:	:	:	:	1	24	22	:	:	:	1	4	25	5
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
82	ERA 5	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	1	18	1	:	:	:	:	:	2	4	:	:	:	:	:	5
83	Kaktovik ERA	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	3	14	17	:	:	:	:	:	1	19	:	:	:	:	:	3
84	Ice/Sea Segment 20b	:	:	:	:	:	:	:	:	:	:	:	:	:	3	4	21	11	5	:	:	:	:	:	4	16	:	:	:	:	:	6
85	ERA 6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	10	:	:	:	:	:	:	:	:	:	:	:	:	:
86	ERA 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
87	ERA 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
88	Ice Sea Segment 24b	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-3 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
—	Land	17	26	15	25	14	22	13	22	9	15	6	13	5	3	8	7	16	27	20	17	14	12	7	5	14	29	24	23	17	16	16
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	10	16	5	7	3	3	1	1	:	:	:	:	:	:	:	:	:	:	12	4	1	:	:	:	:	6	1	:	:	:	:
3	Thetis and Jones Islands	:	:	:	:	:	:	2	3	4	8	4	4	2	1	1	:	:	:	:	:	2	6	4	1	:	:	1	12	7	3	1
4	Cottle & Return Islands, West Dock	:	:	:	:	:	:	:	1	2	4	2	5	2	1	1	:	:	:	:	:	1	3	3	1	:	:	:	3	10	3	1
5	Midway Islands	:	:	:	:	:	:	:	:	:	1	1	3	1	:	1	:	:	:	:	:	:	1	1	1	:	:	:	1	2	2	:
6	Cross and No Name Islands	:	:	:	:	:	:	:	:	:	1	1	4	1	1	1	:	:	:	:	:	:	1	2	1	:	:	:	1	2	5	:
7	Endicott Causeway	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	3	:
8	McClure Islands	:	:	:	:	:	:	:	:	:	:	:	3	1	:	1	:	:	:	:	:	:	:	1	:	:	:	:	:	1	8	:
9	Stockton Islands	:	:	:	:	:	:	:	:	:	:	:	2	:	:	1	:	:	:	:	:	:	:	1	:	:	:	:	:	:	3	1
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11	Maguire Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	3
12	Flaxman Island	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	1	:	:	:	:	:	:	1	:	:	:	:	:	1	5
13	Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	1	:	:	:	:	:	1
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	2	6	2	:	:	:	:	:	1	5	:	:	:	:	:	2
16	Jago and Tapkaurak Spits	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	4	5	:	:	:	:	:	1	6	:	:	:	:	:	2
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	5	:	:	:	:	:	:	1	:	:	:	:	:	1
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	6	:	:	:	:	:	:	1	:	:	:	:	:	:
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
24	Beaufort Spring Lead 6	17	12	7	6	4	2	2	1	1	:	:	:	:	:	:	:	:	:	16	6	2	:	:	:	:	5	1	:	:	:	:
25	Beaufort Spring Lead 7	11	16	6	6	4	3	2	1	1	:	:	:	:	:	:	:	:	:	21	7	1	1	:	:	:	6	1	:	:	:	:
26	Beaufort Spring Lead 8	3	3	15	7	12	6	4	2	2	1	1	:	1	:	:	:	:	:	6	10	3	2	1	:	:	5	2	1	1	:	:
27	Beaufort Spring Lead 9	2	3	13	9	12	8	4	2	2	2	1	1	1	:	:	:	:	:	6	15	4	2	1	:	:	7	3	2	1	:	:
28	Beaufort Spring Lead 10	:	:	2	2	8	6	18	8	10	6	5	2	3	1	1	:	:	:	:	6	15	7	4	1	:	1	8	5	4	1	1
29	Ice/Sea Segment 1	7	13	5	5	3	2	1	1	1	:	:	:	:	:	:	:	:	:	10	4	1	:	:	:	:	5	1	:	:	:	:
30	Ice/Sea Segment 2	2	4	6	12	6	10	4	3	2	1	1	:	:	:	:	:	:	:	5	9	3	1	:	:	:	9	2	1	1	:	:
31	Ice/Sea Segment 3	1	1	2	2	3	8	8	14	6	6	3	2	2	:	:	:	:	:	1	4	8	6	3	1	:	1	11	7	4	1	:
32	Ice/Sea Segment 4	:	:	1	:	1	1	3	4	8	14	8	7	5	2	2	:	:	:	:	1	6	18	11	2	:	:	2	10	12	4	1
33	Ice/Sea Segment 5	:	:	:	:	:	:	1	:	1	2	4	12	8	3	5	1	1	:	:	:	:	2	12	4	1	:	:	1	4	10	2
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	:	:	:	1	3	2	3	14	2	9	1	:	:	:	:	1	6	4	:	:	:	1	3	12
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	:	:	1	1	2	3	6	9	5	:	:	:	:	:	3	13	:	:	:	:	1	4
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	3	6	:	:	:	:	:	1	4	:	:	:	:	:	2
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	4	:	:	:	:	:	:	2	:	:	:	:	:	:
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
41	Barrow Subsistence Area 1	3	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	1	:	:	:	:	:
42	Barrow Subsistence Area 2	14	25	9	13	6	6	3	2	1	1	:	:	:	:	:	:	:	:	17	8	2	1	:	:	:	19	3	1	:	:	:
43	Nuiqsut Subsistence Area	:	:	:	:	:	:	:	1	1	2	2	14	4	2	3	:	:	:	:	:	:	1	6	3	:	:	:	2	4	11	2
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	2	3	5	11	9	:	:	:	:	:	2	13	:	:	:	:	1	5

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-3 (continued) Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
49	Hanna's Shoal Polynya	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:
50	Ice/Sea Segment 12	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
51	Ice/Sea Segment 13	3	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	1	:	:	:	:	:
52	Ice/Sea Segment 14	18	10	8	5	3	2	1	:	:	:	:	:	:	:	:	:	:	:	12	4	:	:	:	:	:	4	:	:	:	:	:
53	Ice/Sea Segment 15	8	11	27	53	38	51	15	12	8	6	4	2	2	:	:	:	:	:	14	75	15	7	3	1	:	23	17	7	4	1	:
54	Ice/Sea Segment 16a	2	2	7	6	15	27	63	44	42	28	18	10	8	2	3	:	:	:	3	16	71	33	15	3	:	3	48	29	18	6	1
55	Ice/Sea Segment 17	1	:	1	1	3	4	14	12	47	52	56	34	28	10	11	2	2	:	1	3	20	**	59	12	1	:	6	32	50	19	5
56	Ice/Sea Segment 18a	:	:	:	:	:	:	1	1	3	5	8	54	44	23	34	4	5	:	:	:	1	4	49	49	3	:	1	3	9	50	14
57	Ice/Sea Segment 19	:	:	:	:	:	:	:	:	:	1	1	5	3	8	61	23	58	6	:	:	:	1	3	25	64	:	:	:	1	5	76
58	Ice/Sea Segment 20a	:	:	:	:	:	:	:	:	:	:	:	2	3	11	15	47	27	15	:	:	:	:	1	16	36	:	:	:	:	3	18
59	Ice/Sea Segment 21	:	:	:	:	:	:	:	:	:	:	:	:	:	3	3	9	7	11	:	:	:	:	:	3	9	:	:	:	:	1	4
60	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	:	:	:	:	:	:	2	:	:	:	:	:	:
61	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
62	Ice/Sea Segment 24a	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	:	:	:	:	:
65	ERA 1	4	10	8	26	7	9	4	3	2	1	1	:	:	:	:	:	:	:	17	13	4	1	:	:	:	28	4	2	1	:	:
66	ERA 2	1	1	4	5	6	22	9	13	5	5	2	2	1	:	:	:	:	:	2	9	10	5	2	:	:	2	16	6	3	1	:
67	Ice/Sea Segment 16b	1	1	4	4	8	14	32	24	23	17	10	6	5	1	2	:	:	:	2	8	38	19	8	2	:	2	25	17	11	4	1
68	Harrison Bay	:	:	1	1	1	3	3	9	2	3	1	1	1	:	:	:	:	:	:	1	3	2	1	:	:	:	15	3	2	1	:
69	Harrison Bay/Colville Delta	:	:	1	1	1	2	3	8	3	6	2	2	1	:	:	:	:	:	:	1	4	5	2	:	:	:	4	8	3	1	:
70	ERA 3	:	:	1	1	2	3	9	11	17	26	9	7	5	1	2	:	:	:	:	2	17	24	9	2	:	:	6	32	15	5	1
71	Simpson Lagoon	:	:	:	:	:	:	1	2	3	6	3	4	2	1	1	:	:	:	:	:	2	4	3	1	:	:	1	12	8	3	1
72	Gwyder Bay	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	1	3	1	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
74	Cross Island ERA	:	:	:	:	:	:	1	1	1	3	3	25	6	2	4	1	1	:	:	:	1	2	8	4	1	:	:	2	6	21	2
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	:	:	1	1	6	1	:	1	:	:	:	:	:	:	1	1	1	:	:	:	:	2	7	1
76	Water over Boulder Patch 2	:	:	:	:	:	:	:	:	:	1	1	5	1	:	1	:	:	:	:	:	:	1	1	1	:	:	:	:	2	10	1
77	Foggy Island Bay	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	10	:
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1
79	ERA 4	:	:	:	:	:	:	:	:	1	1	1	15	3	2	6	:	1	:	:	:	:	1	4	3	1	:	:	1	2	15	2
80	Ice/Sea Segment 18b	:	:	:	:	:	:	1	1	2	4	5	28	23	11	16	1	2	:	:	:	1	3	25	23	1	:	:	2	7	27	6
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1
82	ERA 5	:	:	:	:	:	:	:	:	:	:	:	1	1	1	5	2	19	2	:	:	:	:	:	3	5	:	:	:	:	1	6
83	Kaktovik ERA	:	:	:	:	:	:	:	:	:	:	:	1	:	2	5	7	17	18	:	:	:	:	:	3	22	:	:	:	:	1	7
84	Ice/Sea Segment 20b	:	:	:	:	:	:	:	:	:	:	:	2	2	6	8	25	16	8	:	:	:	:	1	9	21	:	:	:	:	3	10
85	ERA 6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	13	:	:	:	:	:	:	2	:	:	:	:	:	1
86	ERA 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	4	:	:	:	:	:	:	1	:	:	:	:	:	:
87	ERA 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
88	Ice Sea Segment 24b	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-4 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
—	Land	24	33	22	32	20	29	19	28	16	22	12	20	11	10	15	14	22	35	28	23	19	19	15	12	21	35	30	29	25	22	22
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	12	20	8	9	5	4	3	2	2	1	1	1	1	:	:	:	:	:	15	6	2	2	1	:	:	7	2	1	1	:	:
3	Thetis and Jones Islands	:	:	:	:	1	1	3	4	5	10	5	6	3	1	2	:	:	:	:	1	3	7	5	1	:	:	2	15	8	4	1
4	Cottle & Return Islands, West Dock	:	:	:	:	:	:	1	1	2	5	3	6	2	1	1	:	:	:	:	:	1	3	3	1	:	:	:	4	12	4	1
5	Midway Islands	:	:	:	:	:	:	:	:	1	2	1	3	1	:	1	:	:	:	:	:	:	1	1	1	:	:	:	1	2	3	:
6	Cross and No Name Islands	:	:	:	:	:	:	:	:	1	1	1	4	1	1	1	:	:	:	:	:	:	1	2	1	:	:	:	1	2	6	:
7	Endicott Causeway	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	4	:
8	McClure Islands	:	:	:	:	:	:	:	:	:	1	:	3	1	:	1	:	:	:	:	:	:	:	1	1	:	:	:	:	1	10	:
9	Stockton Islands	:	:	:	:	:	:	:	:	:	:	:	2	1	:	1	:	:	:	:	:	:	:	1	1	:	:	:	:	1	4	1
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11	Maguire Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	:	:	:	:	1	1	:	:	:	:	:	2	3
12	Flaxman Island	:	:	:	:	:	:	:	:	:	:	:	1	:	1	1	:	1	:	:	:	:	:	:	1	:	:	:	:	:	2	5
13	Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	1	:	:	:	:	:	1
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	2	6	2	:	:	:	:	:	1	6	:	:	:	:	:	3
16	Jago and Tapkaurak Spits	:	:	:	:	:	:	:	:	:	:	:	1	1	2	2	3	5	6	:	:	:	:	1	2	7	:	:	:	:	1	3
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	6	:	:	:	:	:	1	1	:	:	:	:	:	1
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	2	8	:	:	:	:	:	1	2	:	:	:	:	:	1
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	1	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	1	:	:	:	:	:
24	Beaufort Spring Lead 6	17	13	9	7	5	3	3	1	2	1	1	:	1	1	:	:	:	:	17	7	3	1	1	:	:	7	2	1	:	:	:
25	Beaufort Spring Lead 7	12	17	7	7	5	4	3	1	2	1	1	1	1	1	:	:	:	:	22	7	3	1	1	:	:	7	2	1	1	:	:
26	Beaufort Spring Lead 8	3	4	16	8	13	7	5	3	4	3	2	1	2	1	1	1	:	:	7	11	5	3	2	1	:	6	4	2	2	:	1
27	Beaufort Spring Lead 9	2	4	14	10	12	9	6	3	4	3	3	1	2	1	1	1	:	:	7	15	6	3	2	1	:	8	4	3	2	1	1
28	Beaufort Spring Lead 10	:	:	2	2	8	7	19	9	11	7	6	3	4	2	3	1	1	:	:	6	16	7	5	3	1	1	10	6	5	2	2
29	Ice/Sea Segment 1	8	14	5	6	4	3	2	1	1	1	:	:	:	:	:	:	:	:	10	4	1	1	:	:	:	5	1	:	:	:	:
30	Ice/Sea Segment 2	3	4	6	12	7	10	4	3	3	2	2	1	1	:	:	:	:	:	5	9	4	2	1	:	:	9	3	2	1	:	:
31	Ice/Sea Segment 3	2	1	3	2	4	8	8	14	6	7	4	3	2	1	1	:	:	:	2	5	9	7	3	1	:	1	11	7	5	2	:
32	Ice/Sea Segment 4	1	:	1	:	1	1	4	4	8	14	9	8	6	2	2	:	:	:	1	1	6	18	12	2	:	:	2	11	12	5	1
33	Ice/Sea Segment 5	:	:	:	:	:	:	1	1	2	3	4	12	8	4	5	1	1	:	:	:	1	2	13	4	1	:	1	2	5	10	2
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	:	:	1	1	3	2	3	15	2	9	1	:	:	:	:	1	6	4	:	:	:	1	4	12
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	:	:	1	1	3	4	6	9	5	:	:	:	:	1	3	13	:	:	:	:	2	4
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	:	:	1	1	3	3	4	4	7	:	:	:	:	:	2	5	:	:	:	:	1	2
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	3	5	:	:	:	:	:	1	3	:	:	:	:	:	1
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
41	Barrow Subsistence Area 1	3	2	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	3	1	:	:	:	:	:	1	:	:	:	:	:
42	Barrow Subsistence Area 2	14	25	11	14	8	7	4	3	2	1	1	1	1	:	:	:	:	:	18	9	3	2	1	:	:	20	3	1	1	:	:
43	Nuiqsut Subsistence Area	:	:	:	:	:	:	1	1	1	3	3	14	5	2	3	:	:	:	:	:	1	2	7	3	:	:	:	2	4	11	2
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	1	1	3	4	5	11	9	:	:	:	:	:	3	13	:	:	:	:	1	5

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-4 (continued) Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	3	2	1	1	1	:	1	:	1	:	:	:	:	:	:	:	:	:	2	1	1	1	:	:	:	1	:	:	:	:	:
49	Hanna's Shoal Polynya	8	4	5	3	3	1	1	:	:	:	:	:	:	:	:	:	:	:	6	2	1	1	:	:	:	2	1	:	:	:	:
50	Ice/Sea Segment 12	3	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	3	1	:	:	:	:	:	1	:	:	:	:	:
51	Ice/Sea Segment 13	4	3	2	2	1	:	1	:	:	:	:	:	:	:	:	:	:	:	4	1	1	:	:	:	:	2	:	:	:	:	:
52	Ice/Sea Segment 14	20	12	11	7	6	3	2	1	1	1	1	:	:	:	:	:	:	:	15	7	2	1	1	:	:	6	1	:	:	:	:
53	Ice/Sea Segment 15	9	12	29	54	39	52	17	14	11	9	8	5	5	3	3	1	1	:	16	75	17	10	8	3	:	25	19	9	7	3	2
54	Ice/Sea Segment 16a	4	3	9	8	17	29	65	46	45	31	22	14	13	6	6	2	2	:	5	18	72	36	19	7	2	5	50	32	22	10	3
55	Ice/Sea Segment 17	2	1	3	2	5	6	17	14	49	54	58	36	31	13	13	4	3	:	1	4	23	**	61	14	3	1	8	34	51	22	8
56	Ice/Sea Segment 18a	:	:	:	:	1	1	2	2	4	7	9	55	45	24	35	5	5	1	:	1	2	6	50	50	3	:	1	4	11	52	15
57	Ice/Sea Segment 19	:	:	:	:	:	:	:	:	1	1	2	6	4	9	62	24	59	7	:	:	:	1	4	26	65	:	:	1	2	7	77
58	Ice/Sea Segment 20a	:	:	:	:	:	:	:	:	1	1	1	4	5	15	18	50	30	17	:	:	:	1	3	20	39	:	:	:	1	5	22
59	Ice/Sea Segment 21	:	:	:	:	:	:	:	:	:	:	:	1	1	6	8	15	12	13	:	:	:	:	:	8	15	:	:	:	:	2	9
60	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	1	2	2	5	4	6	:	:	:	:	:	2	6	:	:	:	:	:	2
61	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	3	2	1	:	:	:	:	:	2	2	:	:	:	:	:	2
62	Ice/Sea Segment 24a	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	:	:	:	:	:	:	1	:	:	:	:	:	1
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	2	1	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	1	:	:	:	:	:
65	ERA 1	5	11	9	27	8	10	5	4	3	2	2	1	1	1	1	:	:	:	18	13	5	3	2	:	:	30	5	2	2	1	:
66	ERA 2	2	2	4	6	7	23	10	15	7	7	4	3	2	1	1	1	1	:	2	9	11	7	4	1	1	3	18	8	4	1	1
67	Ice/Sea Segment 16b	2	2	5	5	9	15	33	25	24	19	12	8	6	3	3	2	2	:	3	9	39	21	10	4	1	3	27	19	13	6	2
68	Harrison Bay	:	:	1	1	1	4	3	10	2	4	2	1	1	:	1	:	:	:	:	1	3	2	2	1	:	:	17	4	3	1	:
69	Harrison Bay/Colville Delta	:	:	1	1	2	3	4	10	5	7	3	3	2	1	1	:	:	:	1	2	5	6	3	1	:	:	5	10	5	2	:
70	ERA 3	1	:	2	1	3	4	10	12	18	27	11	9	7	3	3	1	1	:	:	3	19	25	11	4	1	1	7	34	16	8	2
71	Simpson Lagoon	:	:	:	:	1	1	2	3	4	7	4	5	3	1	1	:	:	:	:	1	3	5	5	1	:	:	2	14	10	4	1
72	Gwyder Bay	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	1	4	1	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:
74	Cross Island ERA	:	:	:	:	:	:	1	1	2	4	3	25	6	3	4	1	1	:	:	:	1	3	9	4	1	:	1	2	6	23	3
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	:	1	1	1	7	1	:	1	:	:	:	:	:	:	1	1	1	:	:	:	:	2	9	1
76	Water over Boulder Patch 2	:	:	:	:	:	:	:	:	1	1	1	6	1	:	1	:	:	:	:	:	:	1	1	1	:	:	:	:	2	13	1
77	Foggy Island Bay	:	:	:	:	:	:	:	:	:	1	1	3	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	1	12	:
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1
79	ERA 4	:	:	:	:	:	:	:	:	1	2	2	15	3	2	6	:	1	:	:	:	:	1	4	3	1	:	:	1	3	17	3
80	Ice/Sea Segment 18b	:	:	:	:	:	:	1	1	3	4	5	29	23	11	16	1	2	:	:	:	1	3	26	23	1	:	1	3	7	28	7
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1
82	ERA 5	:	:	:	:	:	:	:	:	:	:	:	1	1	2	5	2	20	2	:	:	:	:	:	3	6	:	:	:	:	2	6
83	Kaktovik ERA	:	:	:	:	:	:	:	:	:	:	:	1	1	3	6	8	18	19	:	:	:	:	1	4	22	:	:	:	:	2	8
84	Ice/Sea Segment 20b	:	:	:	:	:	:	:	:	:	:	1	3	3	8	10	25	17	10	:	:	:	:	2	10	21	:	:	:	1	4	12
85	ERA 6	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	3	15	:	:	:	:	:	2	4	:	:	:	:	:	2
86	ERA 7	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	2	6	:	:	:	:	:	1	2	:	:	:	:	:	1
87	ERA 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
88	Ice Sea Segment 24b	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	:	:	:	:	:	:	:	1	:	:	:	:	:	1

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-5 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
—	Land	35	49	35	49	34	46	34	48	31	40	27	40	28	30	36	37	47	64	40	39	34	35	32	33	45	55	49	46	44	44	42
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	17	29	13	14	9	8	5	4	3	2	2	1	2	2	1	1	1	:	21	11	5	3	2	1	1	10	4	2	1	1	1
3	Thetis and Jones Islands	:	:	1	1	2	3	6	8	9	17	10	10	7	3	4	1	1	:	:	3	7	13	11	4	1	1	6	24	15	7	1
4	Cottle & Return Islands, West Dock	:	:	:	:	1	1	2	2	4	8	5	10	4	2	2	:	1	:	:	1	2	6	6	2	:	:	1	5	21	5	1
5	Midway Islands	:	:	:	:	:	:	1	:	1	2	1	4	1	1	1	:	:	:	:	:	1	1	1	1	:	:	:	1	3	4	1
6	Cross and No Name Islands	:	:	:	:	:	:	:	:	1	2	1	6	2	1	3	1	1	:	:	:	1	2	3	2	:	:	:	1	3	9	2
7	Endicott Causeway	:	:	:	:	:	:	:	:	1	1	1	3	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	2	7	:
8	McClure Islands	:	:	:	:	:	:	:	:	:	1	1	4	1	1	2	:	:	:	:	:	:	1	1	1	:	:	:	:	1	16	1
9	Stockton Islands	:	:	:	:	:	:	:	:	:	:	:	3	1	1	2	:	1	:	:	:	:	:	1	1	:	:	:	:	1	5	2
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11	Maguire Islands	:	:	:	:	:	:	:	:	:	:	:	2	1	1	2	:	1	:	:	:	:	:	1	1	:	:	:	:	:	2	6
12	Flaxman Island	:	:	:	:	:	:	:	:	:	:	:	1	1	1	2	:	1	:	:	:	:	:	:	1	1	:	:	:	:	2	7
13	Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	4	1	:	:	:	:	:	1	2	:	:	:	:	:	1
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	1	:	:	:	:	:	:
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	:	1	1	2	4	4	10	4	:	:	:	:	1	2	9	:	:	:	:	2	5
16	Jago and Tapkaurak Spits	:	:	:	:	:	:	:	:	1	1	1	1	1	3	3	5	7	10	:	:	:	:	1	2	9	:	:	:	:	1	3
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	2	9	:	:	:	:	:	1	2	:	:	:	:	:	1
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	1	:	1	1	3	3	13	:	:	:	:	:	2	3	:	:	:	:	1	1
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	2	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	1	:	:	:	:	:
24	Beaufort Spring Lead 6	19	15	10	8	6	5	4	2	3	2	2	1	2	2	1	1	1	:	18	9	4	2	2	2	1	8	3	1	1	1	1
25	Beaufort Spring Lead 7	13	20	9	9	6	5	4	2	3	2	3	1	2	2	1	1	1	:	24	9	4	2	2	2	1	9	2	2	1	1	1
26	Beaufort Spring Lead 8	4	6	17	10	14	8	6	4	5	4	4	2	3	3	2	3	1	:	8	12	6	5	3	2	2	7	5	5	2	1	2
27	Beaufort Spring Lead 9	4	6	15	13	14	11	7	5	5	4	4	2	3	3	2	2	1	:	8	16	7	5	3	2	2	12	5	5	3	1	2
28	Beaufort Spring Lead 10	1	1	3	4	10	9	21	12	13	9	8	5	6	4	4	3	2	:	1	8	17	9	6	4	3	3	15	8	8	4	4
29	Ice/Sea Segment 1	8	14	6	6	4	3	2	1	1	1	:	:	:	:	:	:	:	:	11	5	2	1	:	:	:	6	2	1	:	:	:
30	Ice/Sea Segment 2	3	5	7	12	8	11	5	3	3	2	2	1	1	:	:	:	:	:	6	10	5	3	2	:	:	9	3	2	2	:	:
31	Ice/Sea Segment 3	2	1	3	3	4	8	9	14	6	7	5	3	2	1	1	1	1	:	2	5	9	7	4	1	1	2	11	7	5	2	:
32	Ice/Sea Segment 4	1	:	1	1	2	2	4	4	9	15	11	8	7	3	2	1	1	:	1	1	6	19	13	3	1	1	2	11	13	5	1
33	Ice/Sea Segment 5	:	:	:	:	:	:	1	1	2	3	4	12	8	4	5	1	1	:	:	:	1	2	13	5	1	:	1	2	5	10	2
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	:	:	1	1	3	3	3	15	2	9	1	:	:	:	:	1	6	4	:	:	:	1	4	12
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	:	:	1	1	3	4	6	10	5	:	:	:	:	1	4	13	:	:	:	:	2	5
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	:	:	1	1	3	3	5	4	7	:	:	:	:	:	3	5	:	:	:	:	2	3
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	:	1	2	2	3	3	5	4	6	:	:	:	:	1	3	5	:	:	:	:	2	2
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	2	1	1	1	1	:	:	:	:	:	1	:	:	1	:	1	:	:	2	1	:	:	:	:	:	1	:	:	:	:	:
41	Barrow Subsistence Area 1	3	2	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	3	1	:	:	:	:	:	1	:	:	:	:	:
42	Barrow Subsistence Area 2	16	26	12	15	10	8	6	4	4	2	3	1	2	2	1	1	1	:	18	10	5	3	1	2	1	21	5	4	1	1	1
43	Nuiqsut Subsistence Area	:	:	:	:	:	:	1	1	1	3	3	14	5	2	3	:	:	:	:	:	1	2	7	3	:	:	1	2	4	11	2
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	1	1	3	5	5	11	9	:	:	:	:	1	3	13	:	:	:	:	1	5

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-5 (continued) Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	:	:	:	:	:	1	1	:	:	:	:	:	1
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	6	4	4	2	2	1	1	1	2	1	1	1	1	1	:	:	:	:	5	2	1	1	1	:	:	2	:	2	1	1	:
49	Hanna's Shoal Polynya	13	9	9	6	5	4	3	2	2	1	2	1	2	1	1	:	:	:	11	6	3	2	2	1	:	5	2	1	1	1	1
50	Ice/Sea Segment 12	5	4	3	2	2	1	1	:	1	1	1	:	1	1	1	:	:	:	5	1	1	1	1	1	:	3	:	1	1	:	:
51	Ice/Sea Segment 13	6	4	4	3	2	1	1	1	1	1	1	:	1	1	1	1	1	:	5	2	1	1	1	1	1	4	1	1	1	:	:
52	Ice/Sea Segment 14	23	15	14	9	9	5	4	2	3	2	2	1	2	2	1	2	1	:	17	10	4	3	3	1	2	8	3	3	2	1	1
53	Ice/Sea Segment 15	10	14	30	57	41	55	21	17	15	12	12	7	8	6	6	5	4	1	16	76	21	13	11	5	3	30	23	14	9	4	5
54	Ice/Sea Segment 16a	5	5	11	11	19	31	66	51	49	38	28	20	18	10	10	5	4	1	6	19	75	42	26	11	4	7	55	39	27	15	6
55	Ice/Sea Segment 17	3	2	4	4	7	8	20	18	51	58	60	40	34	16	16	6	4	1	2	6	26	**	64	17	3	2	10	40	56	26	10
56	Ice/Sea Segment 18a	:	:	1	1	1	1	3	2	6	8	11	58	46	24	37	5	6	1	:	1	3	8	51	51	4	:	2	5	12	56	16
57	Ice/Sea Segment 19	:	:	:	:	1	:	1	:	1	2	2	8	5	11	63	26	63	8	:	:	:	2	4	27	65	:	1	1	2	11	79
58	Ice/Sea Segment 20a	2	1	2	:	1	:	1	:	2	1	3	6	8	19	22	53	35	21	1	1	1	2	5	23	43	1	:	1	2	9	28
59	Ice/Sea Segment 21	2	1	1	:	1	:	1	:	1	1	2	3	4	11	12	22	17	18	2	1	:	1	2	13	20	:	:	1	1	4	13
60	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	1	2	3	7	8	13	9	10	:	:	:	:	2	8	11	:	:	:	1	3	8
61	Ice/Sea Segment 22	:	:	:	:	:	:	1	:	1	1	2	3	4	7	7	9	7	4	:	:	1	1	2	6	7	:	:	1	1	4	8
62	Ice/Sea Segment 24a	:	:	:	:	:	:	:	:	:	1	1	2	2	4	4	5	5	3	:	:	:	1	1	4	5	:	:	:	1	3	5
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	3	2	2	1	1	:	1	:	:	:	:	:	:	1	:	1	1	:	2	1	1	:	:	1	1	1	:	:	:	:	:
65	ERA 1	6	14	11	32	10	12	7	5	4	3	3	2	2	2	2	1	1	:	19	15	7	4	2	1	1	36	8	3	2	1	1
66	ERA 2	2	2	6	8	9	28	15	23	12	14	9	7	6	4	4	3	2	:	3	12	16	13	8	4	3	5	26	14	9	4	4
67	Ice/Sea Segment 16b	3	3	6	7	11	18	37	31	29	25	17	13	10	5	6	3	3	1	3	11	43	27	16	6	3	5	33	27	20	10	4
68	Harrison Bay	:	:	1	1	1	5	4	13	4	5	3	3	2	1	2	:	1	:	:	2	4	4	3	2	1	:	24	5	4	3	1
69	Harrison Bay/Colville Delta	1	1	2	2	3	5	7	16	8	12	7	5	5	2	2	1	1	:	1	4	8	11	6	3	1	1	8	19	9	4	1
70	ERA 3	1	1	3	3	4	6	14	19	23	36	16	15	11	5	7	2	2	:	1	5	23	32	18	7	2	1	10	45	23	13	4
71	Simpson Lagoon	:	:	1	1	2	3	5	7	8	14	8	10	6	3	3	1	1	:	:	3	6	11	10	3	1	1	5	22	19	6	1
72	Gwyder Bay	:	:	:	:	:	:	:	1	1	2	1	2	1	:	:	:	:	:	:	:	1	1	1	:	:	:	:	1	7	1	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:
74	Cross Island ERA	:	:	:	1	:	1	2	1	3	6	5	31	8	4	7	1	1	:	:	:	2	5	11	5	1	:	1	3	8	31	5
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	:	1	2	1	9	1	1	2	:	1	:	:	:	:	1	2	1	:	:	:	1	3	14	2
76	Water over Boulder Patch 2	:	:	:	:	:	:	:	:	1	1	1	8	1	1	2	:	:	:	:	:	:	1	2	1	:	:	:	:	3	23	2
77	Foggy Island Bay	:	:	:	:	:	:	:	:	:	1	1	4	:	:	1	:	:	:	:	:	:	1	1	:	:	:	:	:	2	18	:
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1
79	ERA 4	:	:	:	:	:	:	1	1	1	2	2	18	4	2	8	1	1	:	:	:	1	2	5	4	1	:	1	1	4	22	4
80	Ice/Sea Segment 18b	:	:	:	1	1	1	2	2	4	6	7	34	25	12	18	2	3	:	:	:	2	5	28	24	1	:	1	4	9	33	8
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	1	1
82	ERA 5	:	:	:	:	:	:	:	:	:	:	:	1	1	2	7	3	28	3	:	:	:	:	1	4	8	:	:	:	:	3	8
83	Kaktovik ERA	:	:	:	:	:	:	:	:	:	1	1	3	2	5	9	12	28	26	:	:	:	1	2	6	32	:	:	:	1	4	11
84	Ice/Sea Segment 20b	:	:	:	:	:	:	:	:	1	1	2	4	4	9	12	28	22	14	:	:	:	1	3	11	25	:	:	:	1	7	16
85	ERA 6	:	:	:	:	:	:	:	:	:	:	:	1	1	3	4	6	6	25	:	:	:	:	1	4	7	:	:	:	:	1	3
86	ERA 7	:	:	:	:	:	:	:	:	:	:	:	1	1	3	3	4	4	9	:	:	:	:	1	3	5	:	:	:	:	1	2
87	ERA 8	:	:	:	:	:	:	:	:	:	:	:	1	1	4	4	5	5	4	:	:	:	:	1	3	4	:	:	:	:	1	4
88	Ice Sea Segment 24b	:	:	:	:	:	:	:	:	:	:	:	1	2	3	3	5	4	3	:	:	:	:	1	3	5	:	:	:	:	2	4

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-6 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
—	Land	45	59	48	60	48	59	49	63	48	57	48	60	51	56	60	65	71	83	50	53	49	53	53	57	70	66	63	61	61	64	67
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	20	33	15	17	12	10	7	5	6	4	5	3	4	3	3	2	2	:	24	13	7	5	3	3	1	14	6	3	3	2	2
3	Thetis and Jones Islands	1	1	2	1	4	4	8	10	12	22	14	14	11	5	5	2	1	:	1	4	9	17	16	6	1	1	8	29	20	9	3
4	Cottle & Return Islands, West Dock	:	:	:	:	1	1	2	3	5	9	7	12	6	2	3	1	1	:	:	1	3	7	9	2	1	:	1	6	25	8	2
5	Midway Islands	:	:	:	:	:	:	1	1	1	2	1	5	1	1	2	:	:	:	:	:	1	2	2	1	:	:	:	1	3	4	1
6	Cross and No Name Islands	:	:	:	:	:	:	:	:	1	2	2	7	3	2	3	1	1	:	:	:	1	2	4	3	:	:	:	1	3	10	2
7	Endicott Causeway	:	:	:	:	:	:	:	:	1	1	1	3	:	:	1	:	:	:	:	:	:	1	1	:	:	:	:	1	2	8	:
8	McClure Islands	:	:	:	:	:	:	:	:	:	1	1	5	1	1	3	1	1	:	:	:	:	1	1	1	1	:	:	:	1	18	2
9	Stockton Islands	:	:	:	:	:	:	:	:	:	1	1	3	1	1	3	:	1	:	:	:	:	:	1	1	1	:	:	:	1	5	3
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1
11	Maguire Islands	:	:	:	:	:	:	:	:	:	:	:	2	1	1	2	:	1	:	:	:	:	:	1	1	:	:	:	:	:	2	7
12	Flaxman Island	:	:	:	:	:	:	:	:	:	:	:	1	1	1	2	1	1	:	:	:	:	:	1	2	1	:	:	:	:	2	9
13	Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	1	2	1	5	1	:	:	:	:	:	1	2	:	:	:	:	:	2
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	:	:	:	:	:	:	:	1	:	:	:	:	:	1
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	1	1	1	3	5	5	12	5	:	:	:	:	1	4	10	:	:	:	:	2	6
16	Jago and Tapkaurak Spits	:	:	:	:	:	:	:	1	1	1	1	2	2	5	5	7	9	12	:	:	:	:	1	5	12	:	:	:	1	2	5
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	3	2	11	:	:	:	:	:	2	2	:	:	:	:	1	2
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	1	1	2	2	5	5	16	:	:	:	:	:	3	5	:	:	:	:	1	2
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	2	2	1	1	1	:	1	:	1	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	1	:	:	:	:	:
24	Beaufort Spring Lead 6	19	17	10	9	7	5	4	3	3	2	3	2	2	2	1	2	1	:	19	9	4	3	3	2	1	8	3	2	2	1	1
25	Beaufort Spring Lead 7	14	22	10	10	7	6	5	3	4	3	3	2	2	2	1	2	1	:	25	10	5	3	2	2	1	9	3	2	2	1	1
26	Beaufort Spring Lead 8	5	6	17	11	14	9	6	4	5	4	4	2	3	3	2	3	1	:	8	12	7	5	3	2	2	8	5	5	3	1	2
27	Beaufort Spring Lead 9	4	7	16	14	15	12	8	5	6	5	5	3	3	3	2	2	2	:	9	17	8	5	3	3	2	14	6	6	4	2	2
28	Beaufort Spring Lead 10	1	1	4	4	11	11	22	14	15	11	10	6	8	5	4	3	2	:	1	9	19	12	8	5	3	3	16	10	10	5	4
29	Ice/Sea Segment 1	9	15	7	6	5	4	2	2	1	1	1	:	:	:	:	:	:	:	11	5	2	1	:	:	:	6	2	1	:	:	:
30	Ice/Sea Segment 2	3	5	7	12	8	11	5	4	4	3	3	1	2	1	1	1	1	:	6	10	5	3	2	1	1	9	3	3	2	1	1
31	Ice/Sea Segment 3	2	1	3	3	4	8	9	14	6	7	5	3	2	1	1	1	1	1	2	5	9	7	4	2	2	2	11	7	5	2	1
32	Ice/Sea Segment 4	1	:	1	1	2	2	4	4	9	15	11	8	7	3	3	1	1	1	1	1	6	19	13	3	1	1	2	11	13	6	2
33	Ice/Sea Segment 5	:	:	:	:	:	:	1	1	2	3	4	12	8	4	5	1	1	:	:	:	1	2	13	5	1	:	1	2	5	10	2
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	:	:	1	1	3	3	3	15	2	9	1	:	:	:	:	1	6	4	:	:	:	1	4	12
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	:	:	1	1	3	4	7	10	5	:	:	:	:	1	4	13	:	:	:	:	2	5
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	:	:	1	1	3	3	5	5	7	:	:	:	:	:	3	5	:	:	:	:	2	3
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	:	1	2	2	3	3	5	5	6	:	:	:	:	2	3	5	:	:	:	:	2	3
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	2	2	1	1	1	:	1	:	1	:	1	:	1	1	1	2	1	:	2	1	1	1	1	1	1	2	:	:	1	:	1
41	Barrow Subsistence Area 1	3	2	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	3	1	:	:	:	:	:	1	:	:	:	:	:
42	Barrow Subsistence Area 2	17	27	13	15	10	8	6	4	5	3	4	2	3	3	3	3	2	:	19	11	6	4	2	3	2	21	5	5	2	1	2
43	Nuiqsut Subsistence Area	:	:	:	1	:	:	1	1	1	3	3	14	5	2	3	:	:	:	:	:	1	2	7	3	:	:	1	2	5	12	2
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	1	1	3	5	5	11	9	:	:	:	:	1	3	13	:	:	:	:	1	5

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-6 (continued) Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	2	1	1	:	:	:	:	1	1	2	:	:	:	:	:	1
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	6	4	4	2	3	1	2	1	2	1	1	1	1	1	1	:	:	:	5	2	1	1	1	:	:	3	:	3	1	1	:
49	Hanna's Shoal Polynya	14	9	9	7	6	4	3	2	3	2	2	1	2	1	1	1	:	:	12	7	3	2	2	1	:	5	2	2	1	1	1
50	Ice/Sea Segment 12	6	4	3	2	2	1	1	1	2	1	2	1	1	1	1	1	:	:	5	2	1	1	1	1	1	4	:	1	1	:	1
51	Ice/Sea Segment 13	6	4	4	3	2	1	1	1	1	1	1	:	1	1	1	2	1	:	5	2	1	1	1	1	1	5	1	1	1	:	1
52	Ice/Sea Segment 14	24	16	14	10	10	6	5	3	4	3	3	2	3	3	2	3	1	:	18	10	5	3	4	1	2	9	4	4	2	1	2
53	Ice/Sea Segment 15	11	15	31	59	42	56	22	18	17	14	13	9	11	7	7	6	5	1	17	76	22	15	13	7	5	31	24	16	10	5	6
54	Ice/Sea Segment 16a	6	6	12	12	20	33	67	53	51	41	31	23	21	11	12	7	6	2	7	21	76	45	29	12	6	9	58	42	30	16	7
55	Ice/Sea Segment 17	3	2	4	4	8	8	21	21	52	60	61	43	35	17	18	6	5	1	3	6	27	**	65	18	4	3	11	42	58	28	11
56	Ice/Sea Segment 18a	:	:	1	1	1	2	3	2	6	9	11	59	46	25	38	6	6	1	1	1	3	8	52	51	4	1	2	5	13	58	17
57	Ice/Sea Segment 19	1	1	1	1	2	1	1	1	2	2	3	9	6	12	64	27	65	9	:	1	1	2	5	28	66	1	1	1	3	12	80
58	Ice/Sea Segment 20a	3	2	3	2	4	2	4	2	4	3	6	9	10	21	26	54	39	25	3	3	3	3	7	25	46	1	2	2	4	11	30
59	Ice/Sea Segment 21	2	1	2	1	2	1	2	2	3	2	3	5	7	13	15	25	21	22	2	2	2	2	4	16	23	:	1	2	2	6	16
60	Ice/Sea Segment 22	1	1	2	1	3	1	3	3	3	3	4	6	7	12	13	17	15	12	1	2	3	3	5	12	16	1	1	2	3	8	13
61	Ice/Sea Segment 22	1	1	2	1	2	2	3	2	4	4	5	7	7	11	11	12	11	5	1	2	3	4	5	9	11	1	2	4	4	8	12
62	Ice/Sea Segment 24a	1	1	1	1	1	1	2	1	3	3	4	5	6	7	6	7	8	5	1	1	2	3	4	6	7	:	2	3	3	6	6
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	3	2	2	1	1	:	1	:	:	:	1	:	:	1	:	2	1	:	2	1	1	:	:	1	1	1	:	:	:	:	1
65	ERA 1	7	15	13	35	12	14	8	7	6	5	5	3	4	4	4	3	2	:	20	17	9	6	4	3	1	37	9	4	3	2	3
66	ERA 2	3	3	7	9	10	30	18	27	15	17	12	10	9	7	6	5	4	1	4	13	19	17	11	7	4	5	29	18	13	6	6
67	Ice/Sea Segment 16b	3	4	7	9	12	20	39	35	32	29	21	16	13	7	8	5	4	1	4	13	46	31	19	8	4	7	36	31	23	12	5
68	Harrison Bay	:	:	1	1	2	5	5	15	4	6	3	4	3	2	3	2	1	1	:	2	6	5	4	3	2	:	28	7	5	4	2
69	Harrison Bay/Colville Delta	1	1	3	2	4	6	9	20	11	16	9	7	7	3	3	2	1	:	1	5	10	14	9	4	1	2	11	24	12	5	1
70	ERA 3	2	1	3	3	5	7	16	22	26	40	20	19	14	7	9	4	3	1	2	6	25	37	22	9	3	2	12	50	27	16	6
71	Simpson Lagoon	1	1	2	1	4	4	7	9	10	18	12	13	10	4	5	2	1	:	1	4	7	14	14	4	1	1	7	26	24	8	3
72	Gwyder Bay	:	:	:	:	:	:	1	1	1	2	1	3	1	:	1	:	:	:	:	:	1	2	2	1	:	:	:	1	8	2	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	1	1	1	1	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1	1	:
74	Cross Island ERA	:	:	:	1	:	1	2	1	3	6	6	33	9	5	9	2	2	:	:	:	2	5	12	7	1	:	1	4	9	34	6
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	:	1	2	2	10	2	1	3	1	1	:	:	:	:	1	2	1	1	:	:	1	3	16	3
76	Water over Boulder Patch 2	:	:	:	:	:	:	:	:	1	2	1	9	1	1	3	1	1	:	:	:	:	1	2	2	1	:	:	:	3	26	3
77	Foggy Island Bay	:	:	:	:	:	:	:	:	1	1	1	5	1	:	1	:	:	:	:	:	:	1	1	:	:	:	:	:	2	20	1
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2
79	ERA 4	:	:	:	:	:	1	1	1	2	3	3	20	5	3	9	1	2	:	:	:	1	2	6	5	1	:	1	2	4	24	5
80	Ice/Sea Segment 18b	:	:	:	1	1	1	2	2	4	7	7	36	25	12	20	2	3	:	:	:	2	6	29	25	1	:	2	4	10	35	9
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	:	:	:	:	:	1	1
82	ERA 5	:	:	:	:	:	:	:	:	:	:	:	2	1	3	9	5	31	4	:	:	:	:	1	6	10	:	:	:	:	3	11
83	Kaktovik ERA	:	:	:	:	:	:	:	:	1	1	2	4	4	9	13	18	35	31	:	:	:	1	3	11	40	:	:	1	1	5	17
84	Ice/Sea Segment 20b	1	:	1	:	1	1	2	1	2	2	3	6	5	10	15	30	27	18	:	1	2	2	4	13	29	:	1	1	2	9	19
85	ERA 6	:	:	:	:	:	:	:	:	:	:	1	2	2	6	7	11	11	31	:	:	:	:	1	7	13	:	:	:	:	2	7
86	ERA 7	:	:	1	:	1	:	1	:	1	1	2	2	3	5	6	9	8	12	:	1	1	1	2	5	10	:	:	:	1	2	6
87	ERA 8	1	1	1	1	2	1	1	1	1	1	2	3	3	7	7	8	9	7	1	1	1	1	2	6	8	1	1	:	1	3	9
88	Ice Sea Segment 24b	:	:	1	:	1	1	1	:	1	1	2	3	4	6	5	6	7	5	:	1	1	1	2	5	7	:	1	1	1	4	6

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-7 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
25	Barrow, Elson Lagoon	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	:	:	:	:	:	1
26	Dease Inlet	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
27	Kurgorak Bay	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
28	Cape Simpson	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	3	:	3	1	1	:
29	Ikpikpuk River, Smith Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	2	1	:	5	2	2	1	1	1
30	Drew Point, McLeod Point,	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	4	:	1	1	:	1
31	Lonely, Pitt Point, Pogik Bay	:	:	:	1	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	5	1	1	1	:	1
32	Cape Halkett,	:	:	:	:	:	2	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	3	4	1	2	9	4	4	2	1	2
33	Atigaru Point, Kogru River	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	15	13	7	5	31	24	16	10	5	6
34	Fish Creek	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	45	29	12	6	9	58	42	30	16	7
35	Colville River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	**	65	18	4	3	11	42	58	28	11
36	Oliktok Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	8	52	51	4	1	2	5	13	58	17
37	Milne Point, Simpson Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	5	28	66	1	1	1	3	12	80
38	Kuparuk River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	7	25	46	1	2	2	4	11	30
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	2	4	16	23	:	1	2	2	6	16
40	Foggy Island Bay, Kadleroshilik River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	5	12	16	1	1	2	3	8	13
41	Bullen Point, Point Gordon, Reliance Pt.	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	4	5	9	11	1	2	4	4	8	12
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	4	6	7	:	2	3	3	6	6
43	Brownlow Point, Canning River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
45	Anderson Point, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	1	1	:	:	:	:	1
46	Arey Island, Barter Island,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	6	4	3	1	37	9	4	3	2	3
47	Kaktovik	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	17	11	7	4	5	29	18	13	6	6
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	31	19	8	4	7	36	31	23	12	5
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	5	4	3	2	:	28	7	5	4	2
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	14	9	4	1	2	11	24	12	5	1
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	37	22	9	3	2	12	50	27	16	6

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-8 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
25	Barrow, Elson Lagoon	3	4	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	1	:	:	:	:	:
26	Dease Inlet	1	5	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	1	:	:	:	:	:	1	:	:	:	:	:
27	Kurgorak Bay	1	2	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	:	:	:	:	:
28	Cape Simpson	:	3	1	3	:	1	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	7	:	:	:	:	:
29	Ikpikpuk River, Smith Bay	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	7	:	:	:	:	:
30	Drew Point, McLeod Point,	:	1	1	4	1	1	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	3	:	:	:	:	:
31	Lonely, Pitt Point, Pogik Bay	:	:	1	2	2	5	1	1	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	1	1	:	:	:	:
32	Cape Halkett,	:	:	:	1	1	4	1	4	:	1	:	:	:	:	:	:	:	:	:	1	1	1	:	:	:	:	6	1	:	:	:
33	Atigaru Point, Kogru River	:	:	:	:	:	1	1	3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	6	1	:	:	:
34	Fish Creek	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1	:	:	:	:
35	Colville River	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	2	:	:	:
36	Oliktok Point	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	8	1	:	:
37	Milne Point, Simpson Lagoon	:	:	:	:	:	:	:	:	:	2	:	1	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	2	3	1	:
38	Kuparuk River	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	1	:
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	:
40	Foggy Island Bay, Kadleroshilik River,	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:
41	Bullen Point, Point Gordon, Reliance Pt.	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	6
43	Brownlow Point, Canning River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1
45	Anderson Point, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Arey Island, Barter Island,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	1	:	:	:	:	:	:
47	Kaktovik	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	3	:	:	:	:	:	:	4	:	:	:	:	:	:
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	:	:	:	:	:	:	1	:	:	:	:	:	:
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:
52	Clarence Lagoon, Backhouse River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
53	Komakuk Beach, Fish Creek	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-9 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
24	Walakpa Bay, Walakpa River	2	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
25	Barrow, Elson Lagoon	6	7	2	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	5	1	:	:	:	:	:	2	:	:	:	:	:
26	Dease Inlet	4	7	2	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	5	2	:	:	:	:	:	3	:	:	:	:	:
27	Kurgorak Bay	2	4	1	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	1	:	:	:	:	:
28	Cape Simpson	1	4	2	5	1	2	1	1	:	:	:	:	:	:	:	:	:	:	2	3	1	:	:	:	:	9	1	:	:	:	:
29	Ikpikpuk River, Smith Bay	:	1	1	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	8	:	:	:	:	:
30	Drew Point, McLeod Point,	1	1	2	5	2	2	1	1	:	:	:	:	:	:	:	:	:	:	2	3	1	:	:	:	:	4	1	:	:	:	:
31	Lonely, Pitt Point, Pogik Bay	1	1	2	3	3	6	2	2	1	1	1	:	:	:	:	:	:	:	1	3	2	1	:	:	:	1	2	1	:	:	:
32	Cape Halkett	:	:	1	1	2	5	2	6	1	2	1	1	1	:	:	:	:	:	:	2	4	2	1	:	:	:	8	3	1	1	:
33	Atigaru Point, Kogru River	:	:	:	:	1	1	1	5	1	1	:	:	:	:	:	:	:	:	:	1	1	1	:	:	:	:	7	1	1	:	:
34	Fish Creek	:	:	:	:	:	1	1	3	1	1	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	2	1	1	:	:
35	Colville River	:	:	:	:	:	1	1	2	1	2	:	:	:	:	:	:	:	:	:	:	1	2	:	:	:	:	1	3	1	:	:
36	Oliktok Point	:	:	:	:	:	:	1	1	1	2	1	1	1	:	:	:	:	:	:	:	1	2	1	:	:	:	:	9	1	1	:
37	Milne Point, Simpson Lagoon	:	:	:	:	:	:	:	:	1	3	1	2	1	:	:	:	:	:	:	:	:	1	1	:	:	:	:	2	5	1	:
38	Kuparuk River	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	4	1	:
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1	1	4	:
40	Foggy Island Bay, Kadleroshilik River,	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	4	:
41	Bullen Point, Point Gordon, Reliance Pt.	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1	6
43	Brownlow Point, Canning River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	1	1	:	:	:	:	:	1
44	Collinson Point, Konganevik Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1
45	Anderson Point, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	1
46	Arey Island, Barter Island,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	1	:	:	:	:	:	1	2	:	:	:	:	:	1
47	Kaktovik	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	4	4	:	:	:	:	:	1	6	:	:	:	:	:	2
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	4	:	:	:	:	:	1	2	:	:	:	:	:	1
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	1
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	5	:	:	:	:	:	:	:	:	:	:	:	:	:
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	4	:	:	:	:	:	:	1	:	:	:	:	:	:
52	Clarence Lagoon, Backhouse River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:
53	Komakuk Beach, Fish Creek	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
54	Nunaluk Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
55	Herschel Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-10 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
22	Skull Cliff	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Nulavik	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
24	Walakpa Bay, Walakpa River	2	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	1	:	:	:	:	:
25	Barrow, Elson Lagoon	9	9	4	4	3	2	1	1	1	1	1	:	:	:	:	:	:	:	7	3	1	1	:	:	:	2	1	:	:	:	:
26	Dease Inlet	4	8	3	3	2	2	1	1	1	1	:	:	:	:	:	:	:	:	7	2	1	1	:	:	:	3	1	:	:	:	:
27	Kurgorak Bay	2	4	2	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	3	1	:	:	:	:	:	2	:	:	:	:	:
28	Cape Simpson	2	4	2	6	2	3	1	1	1	1	:	:	:	:	:	:	:	:	3	3	1	1	:	:	:	12	2	:	:	:	:
29	Ikpikpuk River, Smith Bay	1	1	1	3	1	1	1	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	9	1	:	:	:	:
30	Drew Point, McLeod Point,	1	1	2	6	2	3	2	1	1	1	1	:	:	:	:	:	:	:	2	3	2	1	1	:	:	4	1	1	1	:	:
31	Lonely, Pitt Point, Pogik Bay	1	1	3	4	4	8	3	3	2	2	1	1	1	:	:	:	:	:	1	4	3	2	1	:	:	2	3	2	1	:	1
32	Cape Halkett	:	:	1	1	2	6	3	7	2	3	2	1	1	:	1	:	:	:	:	2	4	3	2	1	:	:	9	4	2	1	:
33	Atigaru Point, Kogru River	:	:	:	1	1	2	1	4	1	2	1	1	:	:	:	:	:	:	:	1	1	1	1	:	:	:	8	2	1	:	:
34	Fish Creek	:	:	:	:	1	1	2	4	2	2	1	1	1	:	:	:	:	:	:	1	2	1	1	:	:	:	2	2	1	1	:
35	Colville River	:	:	:	:	1	1	1	3	1	2	1	1	1	:	:	:	:	:	:	1	1	2	1	:	:	:	1	4	1	1	:
36	Oliktok Point	:	:	:	:	:	1	1	2	1	3	1	1	1	:	:	:	:	:	:	1	2	2	2	:	:	:	1	9	2	1	:
37	Milne Point, Simpson Lagoon	:	:	:	:	:	:	:	1	1	3	1	3	1	1	1	:	:	:	:	:	1	2	2	:	:	:	:	3	6	2	1
38	Kuparuk River	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	4	1	:
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	1	1	5	:
40	Foggy Island Bay, Kadleroshilik River,	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1	5	:
41	Bullen Point, Point Gordon, Reliance Pt.	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	:	:	:	:	:	:	:	:	1	:	:	:	:	:	2	7
43	Brownlow Point, Canning River	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	3	:	:	:	:	:	:	1	1	:	:	:	:	1	1
44	Collinson Point, Konganevik Point,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1
45	Anderson Point, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	1
46	Arey Island, Barter Island,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	4	1	:	:	:	:	:	1	2	:	:	:	:	:	1
47	Kaktovik	:	:	:	:	:	:	:	:	:	:	:	1	:	1	2	3	5	4	:	:	:	:	1	1	7	:	:	:	:	1	2
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	2	4	:	:	:	:	:	1	2	:	:	:	:	1	1
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	4	:	:	:	:	:	1	1	:	:	:	:	:	1
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	6	:	:	:	:	:	1	1	:	:	:	:	:	1
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	5	:	:	:	:	:	1	2	:	:	:	:	:	1
52	Clarence Lagoon, Backhouse River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	4	:	:	:	:	:	:	1	:	:	:	:	:	:
53	Komakuk Beach, Fish Creek	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	:	:	:	:	:	:	1	:	:	:	:	:	:
54	Nunaluk Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
55	Herschel Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	1	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-11 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
19	Wainwright, Wainwright Inlet	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
22	Skull Cliff	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Nulavik	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
24	Walakpa Bay, Walakpa River	3	3	1	1	1	1	1	:	1	:	:	:	:	:	:	:	:	:	2	1	:	:	1	:	1	1	:	:	:	:	:
25	Barrow, Elson Lagoon	13	14	7	6	5	4	3	2	2	1	2	1	2	1	1	1	:	:	11	6	3	2	1	1	:	5	2	1	1	1	1
26	Dease Inlet	6	11	5	5	3	2	1	1	1	1	1	:	:	:	:	:	:	:	9	3	1	1	1	1	:	4	1	1	1	:	:
27	Kurgorak Bay	3	5	2	3	2	1	1	1	1	:	:	:	:	:	:	:	:	:	4	2	1	:	:	:	:	2	1	:	:	:	:
28	Cape Simpson	2	6	4	11	3	4	2	2	1	1	1	:	1	:	:	:	:	:	4	5	2	1	1	:	:	21	3	1	:	:	:
29	Ikpikpuk River, Smith Bay	1	2	2	4	2	2	1	1	1	1	:	:	:	:	:	:	:	:	1	2	1	1	1	:	:	11	1	:	:	:	:
30	Drew Point, McLeod Point,	1	2	3	7	3	4	3	2	2	1	1	1	1	:	1	:	:	:	2	3	2	1	1	1	:	5	2	2	1	:	1
31	Lonely, Pitt Point, Pogik Bay	2	2	5	6	6	13	6	6	4	5	4	3	3	2	2	1	1	:	2	7	4	5	4	2	1	2	6	4	3	1	2
32	Cape Halkett	:	:	2	1	3	8	5	11	4	6	3	3	3	1	2	1	1	:	1	3	6	5	4	2	1	1	14	7	4	4	1
33	Atigaru Point, Kogru River	:	:	1	1	1	2	2	5	2	2	1	1	1	:	1	:	:	:	:	1	2	2	1	1	:	:	9	2	1	1	:
34	Fish Creek	:	:	1	1	1	1	2	5	2	2	1	1	1	1	:	:	:	:	:	1	2	2	1	1	:	:	3	2	2	1	:
35	Colville River	:	:	1	1	1	1	2	5	3	5	2	2	2	1	1	:	:	:	:	1	2	4	2	1	:	:	1	7	3	1	:
36	Oliktok Point	:	:	1	:	1	1	2	3	3	4	2	2	2	1	1	:	:	:	:	1	3	4	3	1	:	:	3	11	3	2	:
37	Milne Point, Simpson Lagoon	:	:	:	:	1	1	1	2	2	5	3	5	2	1	1	:	:	:	:	:	2	4	4	1	:	:	2	4	13	2	1
38	Kuparuk River	:	:	:	:	:	:	:	:	:	1	1	2	1	:	:	:	:	:	:	:	:	1	1	:	:	:	:	1	5	1	:
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	:	:	1	1	1	4	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	1	2	10	:
40	Foggy Island Bay, Kadleroshilik River,	:	:	:	:	:	:	:	:	:	1	1	2	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1	7	:
41	Bullen Point, Point Gordon, Reliance Pt.	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	:	:	2	1	1	2	:	1	:	:	:	:	:	1	1	1	:	:	:	:	2	8
43	Brownlow Point, Canning River	:	:	:	:	:	:	:	:	:	:	:	1	:	:	2	1	5	1	:	:	:	:	:	1	2	:	:	:	:	1	2
44	Collinson Point, Konganevik Point,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	1	1
45	Anderson Point, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	1	:	:	:	:	:	1
46	Arey Island, Barter Island,	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	5	1	:	:	:	:	:	1	4	:	:	:	:	1	2
47	Kaktovik	:	:	:	:	:	:	:	:	:	:	1	1	1	2	3	4	7	6	:	:	:	:	1	2	9	:	:	:	1	1	3
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	2	2	7	:	:	:	:	:	1	3	:	:	:	:	1	2
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	6	:	:	:	:	:	1	1	:	:	:	:	:	1
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	2	9	:	:	:	:	:	1	2	:	:	:	:	:	1
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	2	8	:	:	:	:	:	1	3	:	:	:	:	1	1
52	Clarence Lagoon, Backhouse River	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	2	2	8	:	:	:	:	:	1	3	:	:	:	:	:	1
53	Komakuk Beach, Fish Creek	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	2	2	5	:	:	:	:	:	1	2	:	:	:	:	:	1
54	Nunaluk Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	2	:	:	:	:	:	1	1	:	:	:	:	:	1
55	Herschel Island	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	1	3	:	:	:	:	:	1	2	:	:	:	:	:	2
56	Ptarmigan Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	:	:	:	:	:	:	1	:	:	:	:	:	1
57	Roland & Phillips Bay, Kay Point	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	1	1	1	:	:	:	:	:	:	1	:	:	:	:	1	:
60	Trent and Shoalwater Bays	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:
63	Outer Shallow Bay, Olivier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	:	:	:	:	:	:	1	:	:	:	:	:	1
64	Middle Channel, Gary Island	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	:	:	:	:	:	1	1	:	:	:	:	:	1
65	Kendall Island	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	:	:	:	:	:	1	1	:	:	:	:	:	:
66	North Point, Pullen Island	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	:	:	:	:	:	1	1	:	:	:	:	:	1

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-12 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
19	Wainwright, Wainwright Inlet	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
21	Peard Bay, Point Franklin	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Skull Cliff	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Nulavik	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
24	Walakpa Bay, Walakpa River	3	3	2	1	1	1	1	:	1	1	1	1	1	1	1	1	:	:	3	1	1	1	1	1	1	1	:	:	1	:	1
25	Barrow, Elson Lagoon	15	17	9	8	7	5	4	3	3	2	3	2	3	2	2	2	1	:	13	8	4	3	3	2	1	7	3	1	2	2	1
26	Dease Inlet	7	12	5	5	4	3	2	1	1	1	1	1	1	1	1	1	1	:	10	4	2	1	1	1	:	5	2	1	1	:	:
27	Kurgorak Bay	3	6	3	4	2	2	1	1	1	:	1	:	1	1	:	:	:	:	4	3	1	1	:	1	:	3	1	1	:	:	:
28	Cape Simpson	3	7	5	13	5	5	3	2	2	2	2	1	1	1	1	:	1	:	5	6	3	2	1	1	:	23	3	1	1	:	1
29	Ikpikpuk River, Smith Bay	1	2	2	4	2	3	2	1	1	1	1	:	1	1	1	:	1	:	2	2	1	1	1	:	1	13	2	:	1	:	1
30	Drew Point, McLeod Point,	2	2	4	8	4	5	4	3	3	2	2	1	2	1	2	1	1	:	3	4	4	2	2	1	:	6	2	2	1	1	1
31	Lonely, Pitt Point, Pogik Bay	3	3	6	7	8	15	7	8	6	7	6	5	5	5	4	3	3	:	3	8	6	7	6	4	3	2	7	7	5	3	4
32	Cape Halkett	1	1	2	2	3	9	7	14	6	8	5	5	4	3	3	2	2	1	1	4	8	7	6	4	3	1	16	10	7	5	2
33	Atigaru Point, Kogru River	:	:	1	1	1	2	2	6	2	2	1	2	1	1	1	1	:	:	:	1	2	2	1	1	:	:	10	2	1	1	1
34	Fish Creek	:	:	1	1	1	2	3	7	3	3	2	1	1	1	1	1	:	:	:	2	3	3	2	1	1	1	4	3	2	1	:
35	Colville River	:	1	1	1	1	2	3	6	3	6	4	3	3	1	1	:	:	:	1	2	3	5	3	2	:	:	3	9	5	2	:
36	Oliktok Point	:	:	1	1	1	2	3	4	4	6	3	3	3	1	1	:	:	:	:	2	4	5	4	1	:	1	3	13	4	2	1
37	Milne Point, Simpson Lagoon	:	:	:	:	1	1	2	2	3	7	4	7	4	2	2	1	:	:	:	1	2	4	6	1	:	:	2	4	15	4	1
38	Kuparuk River	:	:	:	:	:	:	:	:	1	1	1	3	1	:	:	:	:	:	:	:	:	1	2	1	:	:	:	1	6	2	:
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	:	1	1	2	1	4	1	:	1	:	:	:	:	:	:	1	1	:	:	:	:	1	2	12	:
40	Foggy Island Bay, Kadleroshilik River,	:	:	:	:	:	:	:	:	:	1	1	2	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	1	8	:
41	Bullen Point, Point Gordon, Reliance Pt.	:	:	:	:	:	:	:	:	:	:	:	3	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	:	:	2	1	1	2	1	1	:	:	:	:	:	1	1	1	:	:	:	:	2	9
43	Brownlow Point, Canning River	:	:	:	:	:	:	:	:	:	:	:	1	:	1	2	2	6	1	:	:	:	:	:	2	3	:	:	:	:	1	2
44	Collinson Point, Konganevik Point,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	1	1
45	Anderson Point, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	:	:	:	:	:	:	:	1	:	:	:	:	:	1
46	Arey Island, Barter Island,	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	2	6	1	:	:	:	:	:	1	4	:	:	:	:	1	2
47	Kaktovik	:	:	:	:	:	:	:	:	1	1	1	2	2	4	5	6	10	8	:	:	:	1	2	4	11	:	:	:	1	2	5
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	1	2	2	3	3	8	:	:	:	:	:	2	4	:	:	:	:	1	3
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	2	1	7	:	:	:	:	:	1	2	:	:	:	:	:	2
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	3	11	:	:	:	:	:	2	3	:	:	:	:	:	2
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	1	1	2	2	4	4	10	:	:	:	:	:	2	4	:	:	:	:	1	2
52	Clarence Lagoon, Backhouse River	:	:	:	:	:	:	:	:	:	:	:	1	1	3	3	4	4	11	:	:	:	:	1	2	5	:	:	:	:	1	2
53	Komakuk Beach, Fish Creek	:	:	:	:	:	:	:	:	:	:	1	1	1	2	3	4	3	7	:	:	:	:	1	2	4	:	:	:	1	1	3
54	Nunaluk Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	2	2	:	:	:	:	:	1	2	:	:	:	:	1	1
55	Herschel Island	:	:	:	:	:	:	1	1	1	1	1	1	1	2	3	4	3	4	:	1	1	1	1	3	3	:	1	1	:	1	3
56	Ptarmigan Bay	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	1	1	1	:	:	:	:	1	1	1	:	:	:	:	1	1
57	Roland & Phillips Bay, Kay Point	:	:	:	:	:	:	:	:	:	:	:	2	1	1	1	2	1	1	:	:	:	:	1	1	1	:	:	:	:	3	1
58	Sabine Point	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1
59	Shingle Point	1	:	1	:	1	:	1	1	1	1	1	1	1	1	1	1	1	:	:	1	1	1	1	1	1	:	:	1	1	:	:
60	Trent and Shoalwater Bays	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	:	:	:	:	:	1	1	:	:	:	:	:	1
62	Shallow Bay, West Channel	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1
63	Outer Shallow Bay, Olivier Islands	:	:	1	:	1	:	:	:	:	:	:	:	1	1	1	1	2	1	:	:	:	:	:	1	1	:	:	:	:	:	2
64	Middle Channel, Gary Island	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	2	2	2	:	:	:	:	:	1	2	:	:	:	:	1	2
65	Kendall Island	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	2	1	:	:	:	:	:	1	1	:	:	:	:	:	1
66	North Point, Pullen Island	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	2	:	:	:	:	:	1	1	:	:	:	:	1	2

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-13 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13

Notes: All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A2-14 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13

Notes: All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A2-15 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
22	Beaufort Sea	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Beaufort Sea	1	1	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	1	:	:	:	:	:
24	Beaufort Sea	1	1	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	1	:	:	:	:	:
25	Beaufort Sea	1	1	2	1	2	1	1	1	1	:	:	:	:	:	:	:	:	:	1	2	1	:	:	:	:	1	1	:	:	:	:
26	Beaufort Sea	1	:	1	:	2	1	1	1	1	1	1	:	:	:	:	:	:	:	:	1	1	1	:	:	:	:	1	:	:	:	:
27	Beaufort Sea	:	:	1	:	1	1	1	:	1	:	1	:	:	:	:	:	:	:	1	1	:	1	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-16 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
18	Chukchi Sea	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
19	Chukchi Sea	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Sea	2	1	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	1	:	:	:	:	:
21	Chukchi Sea	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	:	:	:	:	:
22	Beaufort Sea	1	1	1	1	1	1	1	:	1	:	:	:	:	:	:	:	:	:	1	1	1	:	1	:	:	:	1	:	:	:	:
23	Beaufort Sea	3	2	2	2	2	2	1	1	1	1	1	:	1	:	:	:	:	:	2	2	1	1	1	:	:	1	1	1	:	:	:
24	Beaufort Sea	3	2	2	1	2	1	1	1	1	:	:	:	1	:	:	:	:	:	3	1	1	:	1	:	:	1	1	:	:	:	:
25	Beaufort Sea	3	2	3	2	3	2	3	2	2	1	1	1	1	1	1	1	:	:	2	3	2	1	1	2	1	2	2	1	1	1	:
26	Beaufort Sea	1	1	3	1	3	2	3	2	3	2	3	2	3	2	1	1	1	:	2	2	3	3	3	2	1	1	1	1	2	1	1
27	Beaufort Sea	1	1	2	1	3	2	3	2	3	2	3	2	2	2	1	1	:	:	2	2	2	2	2	2	:	1	1	2	2	1	1
28	Beaufort Sea	1	:	1	:	1	1	1	1	1	1	2	1	1	1	1	1	:	:	1	1	1	1	1	:	1	:	1	:	:	:	1
29	Beaufort Sea	:	:	:	:	:	:	1	:	:	:	1	:	1	1	:	1	:	:	:	:	:	:	1	1	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-17 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
18	Chukchi Sea	4	3	3	2	2	2	1	:	1	:	1	:	:	:	:	:	:	:	3	2	1	1	:	:	:	1	1	:	:	:	:
19	Chukchi Sea	5	3	3	2	2	1	1	1	1	:	1	:	1	1	:	:	:	:	4	2	1	:	1	:	:	2	1	:	:	:	:
20	Chukchi Sea	5	3	3	2	2	1	1	1	:	:	:	:	:	:	:	:	:	:	4	3	1	:	:	:	:	2	:	:	:	:	:
21	Chukchi Sea	2	2	1	1	1	1	1	:	:	:	:	:	:	:	:	:	:	:	2	1	1	1	:	:	:	1	:	:	:	:	:
22	Beaufort Sea	2	1	2	1	2	1	1	:	1	:	1	1	:	:	:	:	:	:	1	1	1	:	1	:	:	1	1	:	1	1	:
23	Beaufort Sea	3	2	3	2	3	2	2	1	1	1	1	1	1	1	1	:	:	:	3	2	2	1	1	1	:	2	2	1	1	1	:
24	Beaufort Sea	3	2	3	2	2	2	2	1	2	1	1	1	1	:	1	:	:	:	3	2	2	1	1	1	:	2	2	1	1	1	:
25	Beaufort Sea	3	2	4	3	4	3	4	3	3	2	3	2	3	2	2	1	1	:	3	4	4	2	2	3	1	2	3	2	2	2	1
26	Beaufort Sea	2	2	3	2	4	3	5	3	5	4	5	3	5	4	4	3	3	1	3	4	5	5	4	4	3	2	3	3	3	2	3
27	Beaufort Sea	2	2	4	3	6	4	7	5	7	6	8	5	7	6	5	3	2	1	2	4	6	7	6	6	1	2	6	5	5	4	4
28	Beaufort Sea	3	2	3	2	4	4	4	2	4	3	5	3	4	4	3	3	3	2	3	4	4	4	4	3	3	2	3	1	2	1	2
29	Beaufort Sea	2	1	2	1	2	1	2	2	2	2	2	2	3	3	2	3	2	1	2	1	2	2	3	3	2	1	1	1	2	1	1
30	Beaufort Sea	:	:	:	:	:	:	1	:	1	1	1	1	1	:	1	1	1	:	:	:	1	1	1	1	:	:	:	1	1	1	1
31	Beaufort Sea	:	:	:	:	:	:	1	1	1	1	1	1	1	:	:	:	:	:	:	1	1	1	1	1	:	:	:	:	1	:	:
34	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
35	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	1	:	1	1	1	1	:	:	:	:	:	:	1	1	1	:	:	:	:	:	:
36	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	:	:	:	:	:	:	1	1	:	:	:	:	1	1
37	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	1	:	1	2	1	2	2	1	:	:	:	:	1	1	2	:	:	:	1	:	1
38	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	1	1	:	:	:	:	:	1	2	:	:	:	:	:	1

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-18 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
17	Chukchi Sea	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:
18	Chukchi Sea	4	3	3	2	2	2	1	1	1	1	1	:	:	:	:	:	:	:	3	2	1	1	:	:	:	2	1	:	:	:	:
19	Chukchi Sea	5	3	3	2	2	2	1	1	1	1	1	1	1	1	:	:	:	:	5	2	1	1	1	:	:	2	1	1	:	:	:
20	Chukchi Sea	5	3	3	2	2	1	1	1	:	:	:	:	:	:	:	:	:	:	4	3	1	:	:	:	:	2	1	:	:	:	:
21	Chukchi Sea	2	2	1	1	1	1	1	:	:	:	:	:	:	:	:	:	:	:	2	1	1	1	:	:	:	1	:	:	:	:	:
22	Beaufort Sea	3	2	2	1	2	1	1	:	1	:	1	1	:	:	:	:	:	:	2	1	1	:	1	:	:	1	1	:	1	1	:
23	Beaufort Sea	3	2	3	2	3	2	2	1	1	1	1	1	1	1	1	:	:	:	3	2	2	1	1	1	:	2	2	1	1	1	:
24	Beaufort Sea	3	2	3	2	2	2	2	1	2	1	1	1	1	:	1	:	:	:	3	2	2	1	1	1	:	2	2	1	1	1	:
25	Beaufort Sea	4	3	4	3	4	3	4	3	3	2	3	2	3	3	2	1	1	:	3	4	4	2	2	3	1	2	3	2	2	2	1
26	Beaufort Sea	2	2	4	3	5	4	6	4	6	4	5	4	5	5	4	4	3	1	3	4	6	5	5	4	3	2	4	3	3	3	4
27	Beaufort Sea	2	2	4	4	6	5	8	7	8	7	9	6	8	7	6	3	2	1	3	5	8	8	7	7	2	3	8	7	7	5	4
28	Beaufort Sea	3	2	4	3	5	5	5	3	5	4	5	4	5	5	3	3	3	2	3	4	5	5	4	3	4	2	3	2	3	3	3
29	Beaufort Sea	2	1	2	1	2	1	2	2	2	2	2	2	3	3	3	3	2	1	2	1	2	2	3	3	2	1	2	1	2	2	2
30	Beaufort Sea	1	:	:	:	1	:	1	:	1	1	1	1	1	1	1	1	1	:	:	:	1	2	1	1	:	:	:	1	1	1	1
31	Beaufort Sea	:	:	:	:	:	:	1	1	1	1	1	1	1	:	:	:	:	:	:	1	1	1	1	1	:	:	:	1	1	:	:
33	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
34	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
35	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	1	:	:	:	:	:	:	1	1	1	:	:	:	:	1	:
36	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	1	1	2	2	2	2	2	:	:	:	:	1	1	2	2	:	:	:	1	1	2
37	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	1	1	2	3	2	3	3	1	:	:	:	:	1	2	2	:	:	:	1	1	2
38	Beaufort Sea	:	:	1	:	1	:	:	:	:	:	1	1	1	2	1	2	1	1	:	1	:	:	:	1	2	:	1	:	:	1	2

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

A2-19 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
—	Land	1	13	2	13	2	13	:	9	:	3	:	6	:	:	2	:	8	15	2	2	1	1	:	:	3	29	18	13	11	16	13
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	1	15	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	3	:	:	:	:	:
3	Thetis and Jones Islands	:	:	:	:	:	:	:	1	1	7	:	1	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	19	3	1	:
4	Cottle & Return Islands, West Dock	:	:	:	:	:	:	:	:	:	3	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	15	1	:
5	Midway Islands	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	1	:
6	Cross and No Name Islands	:	:	:	:	:	:	:	:	:	:	:	4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	4	:
7	Endicott Causeway	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	:
8	McClure Islands	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	14	:
9	Stockton Islands	:	:	:	:	:	:	:	:	:	:	:	2	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	1
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11	Maguire Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	3
12	Flaxman Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	9
13	Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	2	:	:	:	:	:	:	2	:	:	:	:	:	:
16	Jago and Tapkaurak Spits	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	5	:	:	:	:	:	:	2	:	:	:	:	:	:
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	:	:	:	:	:	:	:	:	:	:	:	:	:
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	:	:	:	:	:	:	:	:	:	:	:	:	:
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
24	Beaufort Spring Lead 6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
25	Beaufort Spring Lead 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
26	Beaufort Spring Lead 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
27	Beaufort Spring Lead 9	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
28	Beaufort Spring Lead 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29	Ice/Sea Segment 1	8	26	2	6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	15	1	:	:	:	:	:	7	:	:	:	:	:
30	Ice/Sea Segment 2	1	3	7	23	7	17	1	1	:	:	:	:	:	:	:	:	:	:	4	13	1	:	:	:	:	16	1	:	:	:	:
31	Ice/Sea Segment 3	:	:	:	1	2	12	7	25	1	3	:	:	:	:	:	:	:	:	:	4	9	2	:	:	:	:	19	6	:	:	:
32	Ice/Sea Segment 4	:	:	:	:	:	:	2	3	9	24	7	7	1	:	:	:	:	:	:	:	8	35	15	:	:	:	:	16	20	1	:
33	Ice/Sea Segment 5	:	:	:	:	:	:	:	:	:	2	3	21	9	1	5	:	:	:	:	:	:	1	25	4	:	:	:	:	4	18	1
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	:	:	:	:	2	2	2	28	1	17	:	:	:	:	:	1	6	1	:	:	:	:	4	23
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	4	14	6	:	:	:	:	:	1	22	:	:	:	:	:	2
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	7	:	:	:	:	:	:	1	:	:	:	:	:	:
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
41	Barrow Subsistence Area 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
42	Barrow Subsistence Area 2	15	64	3	16	:	1	:	:	:	:	:	:	:	:	:	:	:	:	30	3	:	:	:	:	:	44	:	:	:	:	:
43	Nuiqsut Subsistence Area	:	:	:	:	:	:	:	:	:	1	1	32	3	:	1	:	:	:	:	:	:	:	8	1	:	:	:	:	3	22	:
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	16	20	:	:	:	:	:	1	24	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-19 (continued) Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
49	Hanna's Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
50	Ice/Sea Segment 12	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
51	Ice/Sea Segment 13	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
52	Ice/Sea Segment 14	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
53	Ice/Sea Segment 15	1	3	16	41	25	35	3	1	:	:	:	:	:	:	:	:	:	:	6	74	3	:	:	:	:	14	5	:	:	:	:
54	Ice/Sea Segment 16a	:	:	:	:	3	15	51	21	21	3	:	:	:	:	:	:	:	:	:	7	62	5	:	:	:	:	37	3	:	:	:
55	Ice/Sea Segment 17	:	:	:	:	:	:	2	1	35	34	41	10	4	:	:	:	:	:	:	:	9	**	40	:	:	:	:	18	29	1	:
56	Ice/Sea Segment 18a	:	:	:	:	:	:	:	:	:	1	3	41	40	13	12	:	:	:	:	:	:	:	45	41	:	:	:	:	3	39	1
57	Ice/Sea Segment 19	:	:	:	:	:	:	:	:	:	:	:	1	1	4	55	15	46	1	:	:	:	:	:	20	58	:	:	:	:	1	72
58	Ice/Sea Segment 20a	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	31	6	2	:	:	:	:	:	2	11	:	:	:	:	:	2
59	Ice/Sea Segment 21	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
60	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
61	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
62	Ice/Sea Segment 24a	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
65	ERA 1	2	12	5	38	1	1	:	:	:	:	:	:	:	:	:	:	:	:	28	7	:	:	:	:	:	54	:	:	:	:	:
66	ERA 2	:	:	1	2	3	36	3	9	:	:	:	:	:	:	:	:	:	:	:	9	4	:	:	:	:	:	17	:	:	:	:
67	Ice/Sea Segment 16b	:	:	:	:	3	15	51	21	21	3	:	:	:	:	:	:	:	:	:	7	62	5	:	:	:	:	37	3	:	:	:
68	Harrison Bay	:	:	:	:	:	3	:	11	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	29	:	:	:	:
69	Harrison Bay/Colville Delta	:	:	:	:	:	:	:	8	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	6	:	:	:
70	ERA 3	:	:	:	:	:	:	7	8	15	27	:	:	:	:	:	:	:	:	:	:	24	18	1	:	:	:	:	48	2	:	:
71	Simpson Lagoon	:	:	:	:	:	:	:	1	:	4	:	1	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	20	5	1	:
72	Gwyder Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	:	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:
74	Cross Island ERA	:	:	:	:	:	:	:	:	:	2	1	44	4	:	1	:	:	:	:	:	:	:	9	1	:	:	:	:	4	32	:
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	:	:	:	:	6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	11	:
76	Water over Boulder Patch 2	:	:	:	:	:	:	:	:	:	:	:	6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	16	:
77	Foggy Island Bay	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	20	:
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:
79	ERA 4	:	:	:	:	:	:	:	:	:	:	:	25	2	:	5	:	:	:	:	:	:	:	2	3	:	:	:	:	:	26	2
80	Ice/Sea Segment 18b	:	:	:	:	:	:	:	:	:	1	3	41	40	13	12	:	:	:	:	:	:	:	45	41	:	:	:	:	3	39	1
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
82	ERA 5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	32	:	:	:	:	:	:	1	3	:	:	:	:	:	4
83	Kaktovik ERA	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	22	29	:	:	:	:	:	1	30	:	:	:	:	:	:
84	Ice/Sea Segment 20b	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	31	6	2	:	:	:	:	:	2	11	:	:	:	:	:	2
85	ERA 6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	13	:	:	:	:	:	:	:	:	:	:	:	:	:
86	ERA 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
87	ERA 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
88	Ice Sea Segment 24b	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-20 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
	Land	17	43	14	41	12	35	9	33	4	17	3	17	3	1	10	4	24	43	25	20	11	9	5	6	18	56	41	29	23	27	20
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	13	32	5	9	1	2	:	:	:	:	:	:	:	:	:	:	:	:	17	4	:	:	:	:	:	10	:	:	:	:	:
3	Thetis and Jones Islands	:	:	:	:	:	:	2	4	5	16	3	5	1	:	1	:	:	:	:	:	4	11	2	1	:	:	1	26	9	3	1
4	Cottle & Return Islands, West Dock	:	:	:	:	:	:	:	1	2	7	2	8	1	:	1	:	:	:	:	:	1	4	3	:	:	:	:	5	19	5	1
5	Midway Islands	:	:	:	:	:	:	:	:	:	3	1	4	1	:	1	:	:	:	:	:	:	2	2	1	:	:	:	1	6	3	1
6	Cross and No Name Islands	:	:	:	:	:	:	:	:	:	2	1	7	1	:	1	:	:	:	:	:	:	1	3	1	:	:	:	2	4	7	:
7	Endicott Causeway	:	:	:	:	:	:	:	:	:	1	:	2	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	2	5	:
8	McClure Islands	:	:	:	:	:	:	:	:	:	1	:	6	1	:	2	:	:	:	:	:	:	:	1	1	:	:	:	:	2	15	1
9	Stockton Islands	:	:	:	:	:	:	:	:	:	:	:	4	:	:	2	:	:	:	:	:	:	:	1	:	:	:	:	:	1	7	1
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11	Maguire Islands	:	:	:	:	:	:	:	:	:	:	:	3	:	:	2	:	:	:	:	:	:	:	1	:	:	:	:	:	:	3	4
12	Flaxman Island	:	:	:	:	:	:	:	:	:	:	:	2	1	:	2	:	1	:	:	:	:	:	:	1	:	:	:	:	:	3	9
13	Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	3	:	:	:	:	:	:	:	:	:	:	:	:	1	2
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	3	:	:	:	:	:	:	:	1	:	:	:	:	:	1
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	2	11	4	:	:	:	:	:	2	9	:	:	:	:	:	3
16	Jago and Tapkaurak Spits	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	7	10	:	:	:	:	:	1	10	:	:	:	:	:	2
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	10	:	:	:	:	:	:	:	:	:	:	:	:	:
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	12	:	:	:	:	:	:	1	:	:	:	:	:	:
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
24	Beaufort Spring Lead 6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
25	Beaufort Spring Lead 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
26	Beaufort Spring Lead 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
27	Beaufort Spring Lead 9	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
28	Beaufort Spring Lead 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29	Ice/Sea Segment 1	15	30	8	10	3	3	1	1	:	:	:	:	:	:	:	:	:	:	22	5	:	:	:	:	:	10	:	:	:	:	:
30	Ice/Sea Segment 2	4	8	13	27	14	21	5	4	2	1	:	:	:	:	:	:	:	:	9	22	5	:	:	:	:	19	3	1	:	:	:
31	Ice/Sea Segment 3	1	1	3	3	5	16	15	29	8	10	3	1	1	:	:	:	:	:	2	8	16	9	2	:	:	2	24	12	5	:	:
32	Ice/Sea Segment 4	:	:	:	:	1	1	6	6	16	29	14	12	5	1	1	:	:	:	:	1	12	38	20	1	:	:	3	20	27	7	:
33	Ice/Sea Segment 5	:	:	:	:	:	:	:	:	1	5	7	26	14	4	9	1	1	:	:	:	:	3	29	6	1	:	:	1	9	23	3
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	:	:	:	:	6	4	5	32	2	20	1	:	:	:	:	2	11	5	:	:	:	1	8	25
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	:	:	:	:	3	5	10	20	9	:	:	:	:	:	4	28	:	:	:	:	1	8
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	4	13	:	:	:	:	:	:	5	:	:	:	:	:	1
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	6	:	:	:	:	:	:	1	:	:	:	:	:	:
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
41	Barrow Subsistence Area 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
42	Barrow Subsistence Area 2	32	69	16	30	7	8	1	1	:	:	:	:	:	:	:	:	:	:	44	12	1	:	:	:	:	51	2	:	:	:	:
43	Nuiqsut Subsistence Area	:	:	:	:	:	:	:	:	1	5	4	37	8	2	4	:	:	:	:	:	:	3	15	3	:	:	:	3	8	28	2
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	2	5	6	26	23	:	:	:	:	:	3	31	:	:	:	:	:	7

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-20 (continued) Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
49	Hanna's Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
50	Ice/Sea Segment 12	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
51	Ice/Sea Segment 13	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
52	Ice/Sea Segment 14	7	2	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:
53	Ice/Sea Segment 15	6	10	29	51	38	45	10	7	2	1	:	:	:	:	:	:	:	:	16	78	10	1	:	:	:	23	13	2	:	:	:
54	Ice/Sea Segment 16a	1	1	4	4	11	24	60	39	34	16	6	2	1	:	:	:	:	:	1	13	72	22	4	:	:	1	49	19	7	1	:
55	Ice/Sea Segment 17	:	:	:	:	1	1	8	7	44	47	50	24	13	1	2	:	:	:	:	:	14	**	51	2	:	:	3	29	47	11	:
56	Ice/Sea Segment 18a	:	:	:	:	:	:	:	:	1	6	8	55	46	18	22	1	1	:	:	:	:	3	50	44	:	:	:	2	11	54	6
57	Ice/Sea Segment 19	:	:	:	:	:	:	:	:	:	:	:	5	4	9	63	19	56	2	:	:	:	:	2	25	60	:	:	:	1	5	78
58	Ice/Sea Segment 20a	:	:	:	:	:	:	:	:	:	:	:	1	1	7	10	45	24	8	:	:	:	:	:	9	32	:	:	:	:	1	15
59	Ice/Sea Segment 21	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	3	7	:	:	:	:	:	:	4	:	:	:	:	:	1
60	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
61	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
62	Ice/Sea Segment 24a	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
65	ERA 1	7	21	14	49	7	9	1	1	:	:	:	:	:	:	:	:	:	:	35	17	1	:	:	:	:	57	3	:	:	:	:
66	ERA 2	1	2	5	8	9	43	10	19	3	3	1	:	:	:	:	:	:	:	2	16	11	3	1	:	:	3	27	4	1	:	:
67	Ice/Sea Segment 16b	1	1	4	4	11	24	60	39	34	16	6	2	1	:	:	:	:	:	1	13	72	22	4	:	:	1	49	19	7	1	:
68	Harrison Bay	:	:	:	1	1	7	3	19	1	2	:	:	:	:	:	:	:	:	:	3	4	1	:	:	:	:	35	3	1	:	:
69	Harrison Bay/Colville Delta	:	:	:	:	:	2	4	17	2	8	1	1	:	:	:	:	:	:	:	1	6	5	1	:	:	:	8	14	3	1	:
70	ERA 3	:	:	:	:	1	2	15	19	28	43	7	5	1	:	:	:	:	:	:	2	32	40	6	:	:	:	8	58	17	2	:
71	Simpson Lagoon	:	:	:	:	:	:	1	4	3	12	2	5	1	:	1	:	:	:	:	:	3	5	2	1	:	:	:	27	12	3	1
72	Gwyder Bay	:	:	:	:	:	:	:	:	:	2	:	2	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	2	4	1	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:
74	Cross Island ERA	:	:	:	:	:	:	:	:	1	6	4	50	9	2	4	:	:	:	:	:	:	3	18	4	:	:	:	4	11	40	2
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	:	:	2	1	9	1	:	1	:	:	:	:	:	:	2	:	:	:	:	:	:	4	13	1
76	Water over Boulder Patch 2	:	:	:	:	:	:	:	:	:	1	:	8	1	:	2	:	:	:	:	:	:	1	:	:	:	:	:	:	3	17	1
77	Foggy Island Bay	:	:	:	:	:	:	:	:	:	:	:	4	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	2	21	:
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	2	1
79	ERA 4	:	:	:	:	:	:	:	:	:	2	2	32	6	2	9	:	1	:	:	:	:	1	8	5	:	:	:	1	4	34	4
80	Ice/Sea Segment 18b	:	:	:	:	:	:	:	:	1	6	8	55	46	18	22	1	1	:	:	:	:	3	50	44	:	:	:	2	11	54	6
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	1
82	ERA 5	:	:	:	:	:	:	:	:	:	:	:	1	:	2	9	2	40	2	:	:	:	:	:	6	8	:	:	:	:	1	10
83	Kaktovik ERA	:	:	:	:	:	:	:	:	:	:	:	:	:	2	5	8	35	32	:	:	:	:	:	3	40	:	:	:	:	:	8
84	Ice/Sea Segment 20b	:	:	:	:	:	:	:	:	:	:	:	1	1	7	10	45	24	8	:	:	:	:	:	9	32	:	:	:	:	1	15
85	ERA 6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	21	:	:	:	:	:	:	:	:	:	:	:	:	:
86	ERA 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	:	:	:	:	:	:	:	:	:	:	:	:	:
87	ERA 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
88	Ice Sea Segment 24b	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-21 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
—	Land	47	66	41	66	39	60	37	55	27	41	19	34	13	9	23	19	42	68	53	49	41	34	21	16	39	73	59	50	39	38	37
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	28	42	15	16	9	7	3	2	1	1	1	:	:	:	:	:	:	:	31	11	4	1	:	:	:	17	3	1	:	:	:
3	Thetis and Jones Islands	1	:	:	:	1	1	5	7	12	23	13	13	7	2	3	:	:	:	1	1	7	18	12	1	:	1	2	30	17	9	2
4	Cottle & Return Islands, West Dock	:	:	:	:	:	:	1	2	5	10	7	13	6	2	3	1	1	:	:	:	2	7	8	2	:	:	:	7	22	9	3
5	Midway Islands	:	:	:	:	:	:	1	1	1	4	2	6	2	1	2	:	1	:	:	:	1	2	2	2	1	:	:	3	6	6	1
6	Cross and No Name Islands	:	:	:	:	:	:	:	1	1	4	2	9	3	1	3	:	:	:	:	:	1	1	5	2	:	:	:	3	5	11	1
7	Endicott Causeway	:	:	:	:	:	:	:	:	1	1	1	3	1	:	1	:	:	:	:	:	:	1	1	:	:	:	:	1	4	6	:
8	McClure Islands	:	:	:	:	:	:	:	:	:	1	1	7	2	1	3	:	1	:	:	:	:	1	2	1	1	:	:	1	2	16	1
9	Stockton Islands	:	:	:	:	:	:	:	:	:	1	1	5	1	1	3	:	1	:	:	:	:	:	3	:	1	:	:	1	2	7	2
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11	Maguire Islands	:	:	:	:	:	:	:	:	:	:	:	4	1	:	2	:	1	:	:	:	:	:	2	1	1	:	:	:	1	4	4
12	Flaxman Island	:	:	:	:	:	:	:	:	:	1	:	3	1	1	3	:	1	:	:	:	:	:	1	1	1	:	:	1	1	3	10
13	Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	2	1	5	1	:	:	:	:	1	1	2	:	:	:	:	1	3
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	3	:	:	:	:	:	:	1	1	:	:	:	:	:	1
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	:	1	:	2	5	5	15	5	:	:	:	:	:	4	14	:	:	:	:	1	8
16	Jago and Tapkaurak Spits	:	:	:	:	:	:	:	:	:	:	:	1	1	2	5	8	12	13	:	:	:	:	:	3	17	:	:	:	:	1	6
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	2	13	:	:	:	:	:	1	1	:	:	:	:	:	2
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	3	16	:	:	:	:	:	:	3	:	:	:	:	:	1
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
24	Beaufort Spring Lead 6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
25	Beaufort Spring Lead 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
26	Beaufort Spring Lead 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
27	Beaufort Spring Lead 9	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
28	Beaufort Spring Lead 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29	Ice/Sea Segment 1	21	32	14	15	10	7	4	3	2	1	1	:	:	:	:	:	:	:	26	11	3	2	:	:	:	13	3	1	1	:	:
30	Ice/Sea Segment 2	7	11	17	29	20	24	12	8	7	4	3	1	1	:	:	:	:	:	13	25	11	5	2	:	:	21	6	4	2	:	:
31	Ice/Sea Segment 3	3	3	7	6	11	20	22	33	16	18	10	6	5	1	1	:	:	:	5	13	24	18	8	1	:	4	27	20	12	3	1
32	Ice/Sea Segment 4	2	:	2	1	3	3	10	10	22	35	23	21	17	5	5	:	:	:	1	2	16	44	31	4	:	:	6	26	32	14	3
33	Ice/Sea Segment 5	:	:	:	:	1	1	2	2	5	8	11	30	19	9	13	2	2	:	:	1	2	6	32	10	2	:	2	5	13	26	6
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	:	1	2	2	9	7	8	34	4	23	2	:	:	:	1	5	14	8	:	:	1	2	10	26
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	:	:	2	3	8	10	16	25	11	:	:	:	:	1	10	32	:	:	:	:	4	12
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	:	:	1	1	5	5	10	10	18	:	:	:	:	:	5	14	:	:	:	:	1	7
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	4	3	12	:	:	:	:	:	:	6	:	:	:	:	:	2
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
41	Barrow Subsistence Area 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
42	Barrow Subsistence Area 2	47	74	32	42	22	19	9	7	4	3	2	:	:	:	:	:	:	:	55	27	9	3	:	:	:	58	9	2	1	:	:
43	Nuiqsut Subsistence Area	:	:	:	:	:	1	1	2	4	9	8	40	13	6	8	1	1	:	:	:	2	6	19	8	1	:	1	6	13	32	4
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	2	1	6	12	14	33	26	:	:	:	:	:	8	39	:	:	:	:	2	16

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-21 (continued) Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Co:ce:tratio: Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Herald Shoal Poly:ya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segme:t 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segme:t 11	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	:	:	:	:	:
49	Ha::a's Shoal Poly:ya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
50	Ice/Sea Segme:t 12	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
51	Ice/Sea Segme:t 13	4	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	2	:	:	:	:	:
52	Ice/Sea Segme:t 14	16	8	7	3	3	1	:	:	:	:	:	:	:	:	:	:	:	:	10	2	:	:	:	:	:	3	:	:	:	:	:
53	Ice/Sea Segme:t 15	12	15	36	53	46	48	17	12	9	6	4	2	1	:	:	:	:	:	23	79	15	7	3	:	:	25	16	7	4	1	:
54	Ice/Sea Segme:t 16a	4	3	11	8	20	30	66	48	47	33	20	12	8	2	2	:	:	:	6	19	78	39	16	3	:	4	52	35	19	7	1
55	Ice/Sea Segme:t 17	1	:	2	1	4	4	15	14	51	55	57	35	28	7	7	:	1	:	:	3	21	**	62	7	:	1	8	38	56	19	3
56	Ice/Sea Segme:t 18a	:	:	:	:	:	1	2	2	6	11	13	59	49	22	27	3	3	:	:	:	2	7	55	45	2	:	1	7	18	58	9
57	Ice/Sea Segme:t 19	:	:	:	:	:	:	:	:	1	2	2	9	7	13	66	21	59	4	:	:	:	1	5	28	62	:	:	1	3	10	79
58	Ice/Sea Segme:t 20a	:	:	:	:	:	:	:	:	:	1	1	4	4	17	21	54	36	13	:	:	:	:	3	21	42	:	:	1	1	6	27
59	Ice/Sea Segme:t 21	:	:	:	:	:	:	:	:	:	:	:	1	1	5	6	15	12	15	:	:	:	:	:	6	16	:	:	:	:	2	8
60	Ice/Sea Segme:t 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	2	6	:	:	:	:	:	:	3	:	:	:	:	:	1
61	Ice/Sea Segme:t 22	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	:	:	:	:	:	:	1	1	:	:	:	:	:	:
62	Ice/Sea Segme:t 24a	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	4	3	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	1	:	:	:	:	:	2	:	:	:	:	:
65	ERA 1	12	24	21	53	16	17	7	6	2	2	1	:	:	:	:	:	:	:	37	25	6	2	:	:	:	58	9	2	:	:	:
66	ERA 2	4	5	9	11	15	46	18	24	9	8	5	2	2	:	:	:	:	:	7	21	21	9	4	:	:	6	32	8	4	:	:
67	Ice/Sea Segme:t 16b	4	3	11	8	20	30	66	48	47	33	20	11	8	2	2	:	:	:	6	19	78	39	16	3	:	4	52	35	19	7	1
68	Harriso: Bay	1	1	2	2	3	10	8	23	5	6	3	2	1	:	:	:	:	:	1	4	9	4	3	:	:	1	38	7	4	1	:
69	Harriso: Bay/Colville Delta	1	1	2	2	3	5	10	22	9	16	5	5	3	1	1	:	:	:	1	4	11	14	5	1	:	1	11	21	9	4	1
70	ERA 3	1	:	3	1	6	6	22	26	38	53	21	15	10	2	2	:	:	:	1	5	37	49	20	2	:	:	13	64	29	9	1
71	Simpso: Lagoo:	:	:	:	:	:	1	4	6	9	17	9	12	7	2	3	:	1	:	:	1	6	13	10	2	:	:	2	31	17	7	3
72	Gwyder Bay	:	:	:	:	:	:	:	:	1	2	1	4	1	1	1	:	:	:	:	:	:	1	2	1	:	:	:	2	4	2	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	1	:
74	Cross Isla:d ERA	:	:	:	:	:	1	1	2	4	10	8	53	14	6	8	1	1	:	:	:	2	6	21	9	1	:	1	7	15	43	4
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	1	1	2	2	11	2	:	2	:	1	:	:	:	:	3	2	1	1	:	:	1	5	16	1
76	Water over Boulder Patch 2	:	:	:	:	:	:	:	1	1	2	1	10	1	1	3	:	1	:	:	:	:	2	2	1	1	:	:	1	5	19	1
77	Foggy Isla:d Bay	:	:	:	:	:	:	:	:	1	1	1	5	1	:	1	:	:	:	:	:	:	1	:	1	:	:	:	1	3	22	:
78	Mikkelse: Bay	:	:	:	:	:	:	:	:	:	:	:	3	:	:	1	:	:	:	:	:	:	:	1	:	:	:	:	:	:	2	1
79	ERA 4	:	:	:	:	:	:	:	1	1	4	4	34	9	4	11	1	2	:	:	:	:	3	12	7	1	:	:	3	7	36	5
80	Ice/Sea Segme:t 18b	:	:	:	:	:	1	2	2	6	11	13	59	49	22	27	3	3	:	:	:	2	7	55	45	2	:	1	7	18	58	9
81	Simpso: Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	1	:	:	:	:	:	2
82	ERA 5	:	:	:	:	:	:	:	:	:	:	:	3	2	5	14	4	42	3	:	:	:	:	1	10	12	:	:	:	:	4	15
83	Kaktovik ERA	:	:	:	:	:	:	:	:	:	:	:	2	1	7	13	18	42	34	:	:	:	:	:	9	48	:	:	:	:	2	19
84	Ice/Sea Segme:t 20b	:	:	:	:	:	:	:	:	:	1	1	4	4	17	21	54	36	13	:	:	:	:	3	21	42	:	:	1	1	6	27
85	ERA 6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	3	29	:	:	:	:	:	:	5	:	:	:	:	:	1
86	ERA 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	11	:	:	:	:	:	:	3	:	:	:	:	:	1
87	ERA 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
88	Ice Sea Segme:t 24b	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-22 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
—	Land	55	72	53	72	50	68	47	63	41	53	32	47	29	27	40	38	55	78	62	59	50	48	37	32	54	77	64	61	52	49	51
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	30	44	18	18	11	9	5	4	3	2	1	1	:	:	:	:	:	:	33	13	6	3	:	:	:	17	4	2	1	:	:
3	Thetis and Jones Islands	1	:	1	1	2	2	6	8	14	24	15	15	11	3	4	1	1	:	1	3	9	20	15	3	1	1	4	31	19	12	3
4	Cottle & Return Islands, West Dock	:	:	:	:	1	1	2	3	6	11	9	14	8	3	4	1	1	:	:	1	3	8	11	3	1	:	1	8	24	10	3
5	Midway Islands	:	:	:	:	:	:	1	1	2	5	2	7	3	1	2	:	1	:	:	:	1	3	3	2	1	:	:	3	6	7	1
6	Cross and No Name Islands	:	:	:	:	:	:	1	1	2	4	2	10	4	2	3	:	1	:	:	:	2	2	5	3	:	:	:	3	5	11	1
7	Endicott Causeway	:	:	:	:	:	:	:	:	1	2	1	3	1	:	1	:	:	:	:	:	:	2	1	:	:	:	:	1	4	7	:
8	McClure Islands	:	:	:	:	:	:	:	1	1	2	1	8	3	1	3	:	1	:	:	:	:	1	2	1	1	:	:	1	2	18	1
9	Stockton Islands	:	:	:	:	:	:	:	1	:	1	1	6	2	1	3	:	1	:	:	:	:	1	3	1	1	:	:	1	2	9	2
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11	Maguire Islands	:	:	:	:	:	:	:	:	:	1	1	4	1	1	3	:	1	:	:	:	:	:	3	2	1	:	:	:	1	5	4
12	Flaxman Island	:	:	:	:	:	:	:	:	:	1	:	3	2	2	3	:	1	:	:	:	:	:	1	3	1	:	:	1	1	5	10
13	Barrier Islands	:	:	:	:	:	:	:	:	:	1	:	2	1	1	2	1	5	1	:	:	:	:	1	1	2	:	:	:	:	1	3
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	:	:	:	:	:	:	1	1	:	:	:	:	:	1
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	:	1	1	3	6	6	16	5	:	:	:	:	1	5	15	:	:	:	:	1	9
16	Jago and Tapkaurak Spits	:	:	:	:	:	:	:	:	:	:	:	1	2	6	8	10	13	13	:	:	:	:	1	6	18	:	:	:	:	1	9
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	1	1	3	3	5	4	13	:	:	:	:	:	4	3	:	:	:	:	1	4
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	1	1	2	3	5	6	17	:	:	:	:	:	3	7	:	:	:	:	1	3
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
24	Beaufort Spring Lead 6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
25	Beaufort Spring Lead 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
26	Beaufort Spring Lead 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
27	Beaufort Spring Lead 9	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
28	Beaufort Spring Lead 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29	Ice/Sea Segment 1	22	33	17	16	12	9	5	4	3	2	2	1	:	:	:	:	:	:	27	13	4	3	1	:	:	13	4	2	1	:	:
30	Ice/Sea Segment 2	9	12	20	30	22	26	15	9	10	7	7	3	4	1	1	:	:	:	15	29	13	8	6	:	:	22	7	6	5	2	:
31	Ice/Sea Segment 3	5	5	10	8	13	21	24	35	19	20	13	8	7	3	3	2	2	:	7	15	26	21	11	4	1	5	28	21	15	6	1
32	Ice/Sea Segment 4	4	1	4	2	4	4	12	12	24	36	25	23	20	7	7	1	1	:	3	3	17	45	33	7	1	2	7	27	33	17	4
33	Ice/Sea Segment 5	:	:	1	1	1	1	3	3	7	10	13	31	21	10	14	2	3	:	:	1	3	8	35	12	2	1	3	7	15	27	7
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	1	1	2	2	10	8	9	36	4	23	2	:	:	:	1	5	15	9	:	:	2	3	12	27
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	1	1	4	4	11	13	17	26	11	:	:	:	:	3	12	33	:	:	1	1	6	14
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	:	:	3	3	10	10	15	14	19	:	:	:	:	:	10	17	:	:	1	1	4	9
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	:	:	1	2	5	5	12	11	16	:	:	:	:	1	5	13	:	:	:	:	2	5
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	2	1	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	1	:	:	:	:	:
41	Barrow Subsistence Area 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
42	Barrow Subsistence Area 2	49	75	36	44	25	21	13	9	7	5	3	2	1	:	:	:	:	:	57	29	12	7	1	:	:	58	10	4	3	:	:
43	Nuiqsut Subsistence Area	:	:	1	1	1	1	2	3	5	10	9	41	14	7	9	1	1	:	:	1	3	7	20	9	1	1	2	8	14	32	5
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	1	:	3	3	11	16	17	34	26	:	:	:	:	2	11	39	:	:	1	1	4	18

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-22 (continued) Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	2	2	2	1	2	:	:	:	:	:	:	:	:	:	:	:	:	:	3	1	:	:	:	:	:	1	:	:	:	:	:
49	Hanna's Shoal Polynya	3	1	3	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	:	:	:	:	:	:
50	Ice/Sea Segment 12	3	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	:	:	:	:	:	:
51	Ice/Sea Segment 13	6	4	3	2	1	:	:	:	:	:	:	:	:	:	:	:	:	:	5	1	:	:	:	:	:	3	:	:	:	:	:
52	Ice/Sea Segment 14	18	9	10	5	6	2	1	:	1	:	1	:	:	:	:	:	:	:	11	4	1	1	1	:	:	5	1	:	:	:	:
53	Ice/Sea Segment 15	15	16	39	53	48	48	20	13	13	9	9	4	5	1	1	:	:	:	24	80	16	10	7	1	:	26	17	9	8	3	:
54	Ice/Sea Segment 16a	8	6	15	11	23	31	67	49	49	36	23	14	10	4	4	2	2	:	10	21	78	42	19	6	1	8	53	38	23	9	2
55	Ice/Sea Segment 17	4	1	4	3	6	6	17	16	53	57	60	37	32	10	8	1	1	:	2	5	24	**	64	9	1	2	11	40	57	21	3
56	Ice/Sea Segment 18a	:	:	1	:	1	1	4	4	8	12	15	59	50	23	27	3	4	:	:	:	3	9	57	46	2	:	2	8	19	58	9
57	Ice/Sea Segment 19	:	:	:	:	:	:	1	1	2	3	3	11	8	15	67	22	59	4	:	:	:	2	7	29	63	:	1	2	5	12	79
58	Ice/Sea Segment 20a	:	:	:	:	:	:	:	:	1	2	3	8	8	22	27	57	38	14	:	:	:	1	6	26	43	:	:	1	4	10	31
59	Ice/Sea Segment 21	:	:	:	:	:	:	:	:	:	:	:	3	3	11	14	24	21	18	:	:	:	:	1	15	24	:	:	:	1	4	16
60	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	1	1	4	3	9	7	11	:	:	:	:	1	2	10	:	:	:	:	:	4
61	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	1	1	2	3	5	4	1	:	:	:	:	:	3	4	:	:	:	:	1	3
62	Ice/Sea Segment 24a	:	:	:	:	:	:	:	:	:	:	:	:	:	2	2	3	1	:	:	:	:	:	:	1	3	:	:	:	:	:	3
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	5	3	3	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	4	1	:	:	:	:	:	2	:	:	:	:	:
65	ERA 1	13	24	23	54	17	17	8	7	3	2	2	1	1	:	:	:	:	:	37	26	7	3	:	:	:	58	9	3	1	:	:
66	ERA 2	5	5	10	12	16	46	20	25	11	9	7	3	3	2	1	:	:	:	7	22	22	10	5	1	:	7	32	10	6	1	:
67	Ice/Sea Segment 16b	7	6	14	10	22	31	67	49	49	35	22	14	10	4	4	2	2	:	8	21	78	42	18	6	1	7	53	37	22	9	2
68	Harrison Bay	1	1	2	3	3	10	8	24	6	7	4	3	2	1	1	:	:	:	1	4	10	5	5	1	:	1	39	8	5	1	:
69	Harrison Bay/Colville Delta	2	2	4	3	5	8	13	24	14	18	10	7	7	3	3	1	1	:	3	6	14	17	8	5	1	2	13	22	12	7	1
70	ERA 3	3	1	6	3	8	7	23	27	40	54	23	17	13	3	3	:	:	:	1	7	39	51	21	4	1	1	14	64	30	12	1
71	Simpson Lagoon	:	:	1	1	2	2	5	7	11	19	12	15	11	4	4	1	1	:	:	2	7	15	14	3	1	1	3	32	19	10	3
72	Gwyder Bay	:	:	:	:	:	:	:	1	1	3	2	4	2	1	1	:	:	:	:	:	:	2	2	1	:	:	:	3	5	2	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	1	1	1	1	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	2	1	:
74	Cross Island ERA	:	:	1	1	1	1	2	3	5	11	9	54	16	7	9	1	1	:	:	1	3	7	23	10	1	1	2	8	16	44	5
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	1	2	4	2	12	3	1	3	:	1	:	:	:	:	4	3	2	1	:	:	2	6	17	1
76	Water over Boulder Patch 2	:	:	:	:	:	:	1	1	2	3	2	11	3	1	3	:	1	:	:	:	:	3	3	2	1	:	:	1	6	21	1
77	Foggy Island Bay	:	:	:	:	:	:	:	:	1	2	1	6	1	:	1	:	:	:	:	:	:	2	1	1	:	:	:	1	4	23	:
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	3	:	:	1	:	:	:	:	:	:	:	1	:	:	:	:	:	:	2	1
79	ERA 4	:	:	:	:	:	:	1	1	2	5	5	35	10	4	12	1	2	:	:	:	:	4	13	8	1	:	:	4	8	37	5
80	Ice/Sea Segment 18b	:	:	1	:	1	1	4	4	8	12	15	59	50	23	27	3	3	:	:	:	3	9	57	46	2	:	2	8	19	58	9
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	1	1	:	:	:	:	:	2
82	ERA 5	:	:	:	:	:	:	:	:	:	1	:	4	3	6	15	5	43	3	:	:	:	:	1	11	12	:	:	1	1	6	15
83	Kaktovik ERA	:	:	:	:	:	:	:	:	:	1	:	3	3	11	17	20	43	35	:	:	:	:	2	12	48	:	:	1	1	4	21
84	Ice/Sea Segment 20b	:	:	:	:	:	:	:	:	1	2	3	7	7	21	26	56	38	14	:	:	:	1	6	25	43	:	:	1	4	9	31
85	ERA 6	:	:	:	:	:	:	:	:	:	:	:	1	1	3	4	8	9	31	:	:	:	:	:	3	12	:	:	:	:	1	5
86	ERA 7	:	:	:	:	:	:	:	:	:	:	:	:	:	2	2	4	4	14	:	:	:	:	:	1	6	:	:	:	:	:	2
87	ERA 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
88	Ice Sea Segment 24b	:	:	:	:	:	:	:	:	:	:	:	:	:	2	2	3	1	:	:	:	:	:	:	1	3	:	:	:	:	:	3

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-23 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
—	Land	57	73	56	74	53	69	49	64	43	57	37	54	38	38	50	48	65	84	63	61	51	50	45	42	66	78	65	63	58	58	59
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	30	44	18	18	12	9	5	4	3	2	1	1	:	:	:	:	:	:	33	14	6	3	:	:	:	17	4	2	1	:	:
3	Thetis and Jones Islands	1	1	2	1	3	3	7	8	15	25	17	16	12	4	5	1	2	:	1	4	9	21	18	4	1	1	4	32	21	12	3
4	Cottle & Return Islands, West Dock	:	:	1	:	1	1	2	3	7	13	10	15	9	3	4	1	1	:	:	2	4	10	13	3	1	:	1	9	26	10	3
5	Midway Islands	:	:	:	:	:	:	1	1	2	5	2	7	3	1	2	:	1	:	:	:	1	3	3	2	1	:	:	3	6	7	1
6	Cross and No Name Islands	:	:	:	:	:	:	1	1	2	4	2	10	4	2	3	:	1	:	:	:	2	2	5	3	:	:	:	3	5	11	1
7	Endicott Causeway	:	:	:	:	:	:	:	1	2	2	2	4	1	:	1	:	:	:	:	:	:	2	2	:	:	:	:	1	6	7	:
8	McClure Islands	:	:	:	:	:	:	:	1	1	2	1	8	3	1	3	:	1	:	:	:	:	1	2	1	1	:	:	1	2	18	1
9	Stockton Islands	:	:	:	:	:	:	:	1	:	1	1	6	2	1	3	:	1	:	:	:	:	1	3	1	1	:	:	1	2	9	2
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11	Maguire Islands	:	:	:	:	:	:	:	:	:	1	1	4	2	1	3	:	1	:	:	:	:	:	3	2	1	:	:	:	1	5	4
12	Flaxman Island	:	:	:	:	:	:	:	:	:	1	:	4	2	2	3	:	1	:	:	:	:	:	1	4	1	:	:	1	1	5	10
13	Barrier Islands	:	:	:	:	:	:	:	:	:	1	:	2	1	1	2	1	5	1	:	:	:	:	1	1	2	:	:	:	:	1	3
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	:	:	:	:	:	:	1	1	:	:	:	:	:	1
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	:	1	1	3	6	6	16	5	:	:	:	:	1	5	15	:	:	:	:	1	9
16	Jago and Tapkaurak Spits	:	:	:	:	:	:	:	:	:	:	1	1	2	7	8	11	13	13	:	:	:	:	1	6	18	:	:	:	:	2	9
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	1	1	3	4	5	4	13	:	:	:	:	:	4	4	:	:	:	:	1	4
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	2	1	3	4	6	7	17	:	:	:	:	1	5	8	:	:	:	:	3	4
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
24	Beaufort Spring Lead 6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
25	Beaufort Spring Lead 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
26	Beaufort Spring Lead 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
27	Beaufort Spring Lead 9	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
28	Beaufort Spring Lead 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29	Ice/Sea Segment 1	23	33	18	16	12	9	5	4	3	2	2	1	:	:	:	:	:	:	28	13	4	3	1	:	:	13	4	2	1	:	:
30	Ice/Sea Segment 2	9	12	20	30	23	26	15	9	11	7	7	4	4	1	1	:	:	:	15	29	13	8	6	1	:	22	7	7	6	2	:
31	Ice/Sea Segment 3	6	5	10	8	14	22	25	35	19	21	14	9	8	4	4	2	2	:	7	16	26	21	12	4	1	5	28	22	15	6	2
32	Ice/Sea Segment 4	5	2	5	2	5	5	12	12	25	37	28	25	21	8	7	2	2	1	3	4	18	46	36	7	2	2	7	28	36	18	4
33	Ice/Sea Segment 5	:	:	1	1	1	2	3	3	7	10	13	31	21	10	15	2	3	:	:	1	3	8	35	12	2	1	3	7	15	28	7
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	1	1	2	2	10	8	9	36	5	23	2	:	:	:	1	5	15	9	:	1	2	3	12	27
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	1	1	5	5	11	13	18	26	11	:	:	:	:	3	13	33	:	:	1	1	6	14
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	1	:	4	4	12	12	18	16	19	:	:	:	:	1	12	18	:	:	1	1	6	11
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	1	1	3	4	9	9	15	14	18	:	:	:	:	2	9	16	:	:	:	1	5	8
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	3	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	1	:	:	:	:	:
41	Barrow Subsistence Area 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
42	Barrow Subsistence Area 2	49	75	37	44	26	21	13	9	8	5	4	2	1	:	:	:	:	:	57	30	12	7	2	:	:	58	10	4	4	1	:
43	Nuiqsut Subsistence Area	:	:	1	1	1	1	2	3	5	10	9	41	14	7	9	1	1	:	:	1	3	7	20	9	1	1	2	8	14	32	5
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	1	:	3	3	11	16	17	34	26	:	:	:	:	2	11	39	:	:	1	1	4	18

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-23 (continued) Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	:	:	:	:	:	:
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	2	2	3	1	2	:	1	:	:	:	1	:	:	:	:	:	:	:	3	1	:	:	1	:	:	1	:	:	:	:	:
49	Hanna's Shoal Polynya	5	3	5	2	3	1	2	1	3	1	2	1	1	:	:	:	:	:	4	3	2	2	2	:	:	1	:	1	1	1	:
50	Ice/Sea Segment 12	3	2	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	1	:	:	:	:	:
51	Ice/Sea Segment 13	6	4	3	2	1	:	:	:	:	:	:	:	:	:	:	:	:	:	6	1	:	:	:	:	:	3	:	:	:	:	:
52	Ice/Sea Segment 14	18	9	11	5	6	2	1	1	1	1	2	1	2	:	:	:	:	:	12	4	1	1	2	:	:	5	1	1	:	2	:
53	Ice/Sea Segment 15	16	16	39	53	49	48	20	13	14	10	10	6	7	2	2	:	:	:	24	80	16	11	9	2	:	26	18	9	9	4	:
54	Ice/Sea Segment 16a	9	7	16	11	24	32	68	49	50	37	26	17	13	7	6	3	3	1	10	23	79	43	24	9	2	8	53	39	24	10	4
55	Ice/Sea Segment 17	4	2	5	3	7	7	18	17	54	57	62	38	34	13	10	4	3	1	2	5	24	**	65	12	2	3	12	40	57	22	5
56	Ice/Sea Segment 18a	:	:	1	1	1	2	4	4	8	12	15	59	51	24	28	4	4	:	:	:	3	9	57	47	3	:	3	8	19	58	10
57	Ice/Sea Segment 19	:	:	:	:	:	:	1	1	2	3	4	12	9	17	68	26	59	6	:	:	:	2	8	31	63	:	1	2	5	13	79
58	Ice/Sea Segment 20a	1	:	1	:	1	:	1	1	2	3	6	11	13	29	32	61	40	14	1	1	1	3	10	31	44	:	:	2	6	12	36
59	Ice/Sea Segment 21	:	:	1	:	1	:	1	1	1	2	2	7	8	18	21	32	26	19	:	1	1	1	4	24	28	:	:	1	2	9	24
60	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	1	1	3	3	5	11	9	17	14	15	:	:	:	1	3	8	18	:	:	:	1	4	12
61	Ice/Sea Segment 22	:	:	1	:	1	1	1	:	2	1	4	3	4	6	6	11	7	3	:	1	1	1	3	5	10	:	:	1	2	4	9
62	Ice/Sea Segment 24a	:	:	:	:	:	:	:	:	:	:	:	1	2	4	4	7	3	1	:	:	:	:	1	3	5	:	:	:	:	2	6
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	5	3	3	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	4	1	:	:	:	:	:	2	:	:	:	:	:
65	ERA 1	13	24	23	54	18	18	8	7	3	2	2	1	1	:	:	:	:	:	37	26	7	3	1	:	:	58	9	3	1	1	:
66	ERA 2	5	5	10	12	16	46	20	25	11	9	7	4	4	2	1	:	:	:	7	22	22	10	6	1	:	7	33	10	6	2	:
67	Ice/Sea Segment 16b	8	6	15	10	23	31	67	49	49	36	24	15	11	4	4	2	2	:	8	22	79	42	20	6	1	7	53	38	23	9	2
68	Harrison Bay	1	1	2	3	3	10	9	24	6	7	4	3	2	1	1	:	:	:	1	4	10	5	5	1	:	1	39	8	5	1	:
69	Harrison Bay/Colville Delta	2	2	4	4	6	9	14	24	14	18	11	8	8	4	3	2	2	:	3	7	15	18	9	5	1	2	14	23	13	8	2
70	ERA 3	3	1	6	3	8	8	23	27	40	54	25	17	13	4	4	:	1	:	1	7	39	52	23	4	1	1	15	64	31	12	1
71	Simpson Lagoon	:	:	2	1	3	2	6	7	11	19	14	15	12	4	5	1	2	:	:	4	8	16	15	4	2	1	3	32	20	11	4
72	Gwyder Bay	:	:	:	:	:	:	:	1	1	3	2	4	2	1	1	:	:	:	:	:	1	2	3	1	:	:	:	3	5	2	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	1	1	1	2	1	:	:	:	:	:	:	:	:	1	1	:	:	:	:	1	2	1	:
74	Cross Island ERA	:	:	1	1	1	1	2	3	5	11	9	54	16	7	9	1	1	:	:	1	3	7	23	10	1	1	2	8	17	44	5
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	1	2	4	2	13	3	1	3	:	1	:	:	:	:	4	3	2	1	:	:	2	7	18	1
76	Water over Boulder Patch 2	:	:	:	:	:	:	1	1	2	4	2	12	3	1	3	:	1	:	:	:	:	3	3	2	1	:	:	1	6	21	1
77	Foggy Island Bay	:	:	:	:	:	:	:	:	1	2	1	6	1	:	1	:	:	:	:	:	:	2	1	1	:	:	:	1	4	23	:
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	3	:	:	1	:	:	:	:	:	:	:	1	:	:	:	:	:	:	2	1
79	ERA 4	:	:	:	:	:	:	1	1	2	5	5	35	10	4	12	1	2	:	:	:	:	4	13	8	1	:	:	4	8	37	5
80	Ice/Sea Segment 18b	:	:	1	1	1	1	4	4	8	12	15	59	50	23	27	3	3	:	:	:	3	9	57	46	2	:	3	8	19	58	9
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	1	1	:	:	:	:	:	2
82	ERA 5	:	:	:	:	:	:	:	:	:	1	:	4	3	6	15	5	43	3	:	:	:	:	1	11	12	:	:	1	1	6	15
83	Kaktovik ERA	:	:	:	:	:	:	:	:	:	1	:	3	3	12	17	20	43	35	:	:	:	:	2	12	48	:	:	1	1	5	21
84	Ice/Sea Segment 20b	:	:	:	:	:	:	:	:	1	2	3	8	8	22	27	57	38	14	:	:	:	1	6	26	43	:	:	1	4	10	32
85	ERA 6	:	:	:	:	:	:	:	:	:	:	:	2	3	6	6	9	11	32	:	:	:	:	1	7	14	:	:	:	:	3	5
86	ERA 7	:	:	:	:	:	:	:	:	:	:	:	1	1	3	3	5	6	15	:	:	:	:	1	2	7	:	:	:	:	1	4
87	ERA 8	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	2	2	2	:	:	:	:	:	2	2	:	:	:	:	1	1
88	Ice Sea Segment 24b	:	:	:	:	:	:	:	:	:	:	:	1	1	3	3	6	3	1	:	:	:	:	1	2	5	:	:	:	:	1	5

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-24 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
—	Land	63	77	64	78	62	75	60	72	60	71	61	75	65	69	76	76	83	91	68	71	63	65	68	71	82	81	71	73	74	76	83
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	30	44	19	19	12	10	6	5	4	4	4	3	3	2	1	:	:	:	33	15	6	5	1	1	:	18	4	3	3	1	:
3	Thetis and Jones Islands	1	2	3	2	4	3	8	9	17	26	21	18	15	6	6	3	2	1	2	6	11	22	20	6	2	3	5	33	22	14	4
4	Cottle & Return Islands, West Dock	:	:	1	1	2	1	2	3	8	13	12	16	11	4	5	1	2	:	:	3	4	10	15	4	1	1	2	9	26	11	4
5	Midway Islands	:	:	:	:	:	:	1	1	2	5	2	7	3	2	2	:	1	:	:	:	1	3	4	2	1	:	:	3	6	7	1
6	Cross and No Name Islands	:	:	:	:	:	:	1	1	2	4	2	10	4	2	4	1	1	:	:	:	2	2	6	3	1	:	:	3	5	11	1
7	Endicott Causeway	:	:	:	:	:	:	:	1	2	2	2	4	1	:	1	:	:	:	:	:	:	2	2	:	:	:	:	1	6	7	:
8	McClure Islands	:	:	:	:	:	:	:	1	1	2	1	8	3	2	3	1	1	:	:	:	:	1	2	2	1	:	:	1	2	18	1
9	Stockton Islands	:	:	:	:	:	:	:	1	:	1	1	6	2	1	3	:	1	:	:	:	:	1	3	1	1	:	:	1	2	9	2
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11	Maguire Islands	:	:	:	:	:	:	:	:	:	1	1	4	2	1	3	:	1	:	:	:	:	:	3	2	1	:	:	:	1	5	5
12	Flaxman Island	:	:	:	:	:	:	:	:	:	1	:	4	2	2	4	:	1	:	:	:	:	:	2	4	1	:	:	1	1	5	10
13	Barrier Islands	:	:	:	:	:	:	:	:	:	1	:	2	1	1	3	1	5	1	:	:	:	:	1	2	2	:	:	:	:	1	3
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	1	3	:	:	:	:	:	:	1	1	:	:	:	:	:	1
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	:	1	1	5	7	7	16	5	:	:	:	:	1	7	15	:	:	:	:	1	9
16	Jago and Tapkaurak Spits	:	:	1	:	:	:	:	1	1	1	1	2	4	11	11	13	14	13	:	:	:	:	2	10	19	:	:	1	1	2	11
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	1	1	4	5	6	5	14	:	:	:	:	:	5	4	:	:	:	1	1	6
18	Icy Reef	:	:	:	:	:	:	:	:	:	1	:	2	2	4	5	8	9	17	:	:	:	:	1	7	9	:	:	:	:	4	6
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
24	Beaufort Spring Lead 6	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
25	Beaufort Spring Lead 7	1	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
26	Beaufort Spring Lead 8	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
27	Beaufort Spring Lead 9	1	:	:	:	:	:	:	:	1	1	1	1	1	1	:	:	:	:	:	:	1	1	1	1	:	:	:	1	1	:	:
28	Beaufort Spring Lead 10	1	1	1	:	1	:	1	1	2	2	2	2	3	2	1	:	:	:	:	1	1	4	3	1	:	1	1	2	2	1	1
29	Ice/Sea Segment 1	23	33	18	16	12	9	5	4	3	2	2	1	1	:	:	:	:	:	28	13	4	3	1	:	:	13	4	2	1	:	:
30	Ice/Sea Segment 2	9	12	20	30	23	26	15	9	11	7	7	4	5	1	1	:	:	:	15	29	13	8	6	1	1	22	7	7	6	2	:
31	Ice/Sea Segment 3	6	5	10	8	14	22	25	35	19	21	14	9	8	4	4	2	2	:	7	16	26	21	12	4	1	5	28	22	15	6	2
32	Ice/Sea Segment 4	5	2	5	2	5	5	12	12	25	37	28	25	21	8	7	2	2	1	3	4	18	46	36	7	2	2	7	28	36	18	5
33	Ice/Sea Segment 5	:	:	1	1	1	2	3	3	7	10	13	31	21	10	15	2	3	:	:	1	3	8	35	12	2	1	3	7	15	28	7
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	1	1	2	2	10	8	9	36	5	23	2	:	:	:	1	5	15	9	:	1	2	3	12	27
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	1	1	5	5	11	13	18	26	11	:	:	:	:	3	13	33	:	:	1	1	6	14
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	1	:	4	4	12	12	18	16	19	:	:	:	:	1	12	18	:	:	1	1	6	11
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	1	1	3	4	9	9	15	14	18	:	:	:	:	2	9	16	:	:	:	1	5	8
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	3	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	1	:	:	:	:	:
41	Barrow Subsistence Area 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
42	Barrow Subsistence Area 2	49	75	37	44	26	21	13	9	8	5	4	2	2	1	1	:	:	:	57	30	12	7	3	:	:	58	10	4	4	1	1
43	Nuiqsut Subsistence Area	:	:	1	1	1	1	2	3	5	10	9	41	14	7	9	1	1	:	:	1	3	7	20	9	1	1	2	8	14	32	5
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	1	:	3	3	11	16	17	34	26	:	:	:	:	2	11	39	:	:	1	1	4	18

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-24 (continued) Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Resource	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	2	1	1	:	:	:	:	1	:	1	:	:	:	:	:	1
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	3	3	3	2	3	1	1	:	:	:	1	1	1	:	:	:	:	:	4	2	:	:	1	:	:	1	:	:	:	1	:
49	Hanna's Shoal Polynya	5	3	5	2	3	1	2	1	3	1	2	1	1	:	:	:	:	:	5	3	2	2	2	1	:	1	:	1	1	1	:
50	Ice/Sea Segment 12	3	2	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	1	:	:	:	:	:
51	Ice/Sea Segment 13	6	4	3	2	1	:	:	:	:	:	:	:	:	:	:	:	:	:	6	1	:	:	:	:	:	3	:	:	:	:	:
52	Ice/Sea Segment 14	18	9	11	5	6	2	1	1	1	1	2	1	2	1	1	:	:	:	12	4	1	1	2	1	:	5	1	1	:	2	:
53	Ice/Sea Segment 15	16	16	40	53	49	49	21	14	14	11	11	7	8	4	3	2	1	:	24	80	17	12	11	3	1	26	18	11	10	4	2
54	Ice/Sea Segment 16a	9	7	16	11	24	32	68	50	52	38	29	19	15	9	8	5	4	1	10	23	79	45	26	10	3	8	53	40	25	11	5
55	Ice/Sea Segment 17	5	3	5	4	7	7	18	17	55	57	63	39	36	15	12	4	3	1	3	6	25	**	67	13	2	3	12	40	57	23	6
56	Ice/Sea Segment 18a	:	:	1	1	1	2	4	4	8	12	15	59	51	24	28	5	5	:	:	:	3	9	57	47	3	:	3	8	19	58	11
57	Ice/Sea Segment 19	:	:	:	:	:	:	1	1	2	3	5	12	10	20	68	27	59	6	:	:	:	2	9	32	64	:	1	2	5	14	79
58	Ice/Sea Segment 20a	2	:	3	2	4	2	7	5	8	8	11	15	17	32	35	63	42	16	1	4	7	7	14	34	45	:	3	6	9	15	38
59	Ice/Sea Segment 21	2	1	3	1	4	2	6	5	7	7	8	12	15	25	27	38	30	20	1	4	7	6	10	31	31	:	3	4	6	12	27
60	Ice/Sea Segment 22	2	1	3	1	3	2	7	5	8	7	11	11	13	18	16	24	19	16	1	4	7	7	12	17	22	:	3	4	7	9	16
61	Ice/Sea Segment 22	2	1	1	1	1	1	2	2	4	4	6	6	7	9	7	11	8	4	1	1	2	3	6	7	10	:	2	2	7	7	9
62	Ice/Sea Segment 24a	1	:	1	1	1	1	1	1	2	3	3	4	4	6	5	7	4	1	1	1	1	3	3	4	5	:	2	1	4	4	6
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	5	3	3	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	4	1	:	:	:	:	:	2	:	:	:	:	:
65	ERA 1	14	24	23	54	18	18	8	7	4	3	2	1	2	1	1	:	:	:	37	26	7	3	1	:	:	58	9	3	1	1	:
66	ERA 2	7	6	12	12	17	46	21	26	14	11	10	6	6	5	3	2	1	:	8	23	24	12	8	4	1	8	33	11	8	3	2
67	Ice/Sea Segment 16b	8	6	15	10	24	31	68	50	50	37	27	17	13	6	6	3	3	1	9	23	79	44	23	8	2	7	53	39	24	10	4
68	Harrison Bay	1	1	2	3	4	10	9	24	6	7	4	3	3	1	2	2	1	:	1	5	10	5	5	2	1	1	39	8	5	1	1
69	Harrison Bay/Colville Delta	3	3	5	4	7	9	14	25	15	19	12	10	9	5	4	2	2	:	4	8	16	19	10	6	2	3	15	24	14	9	2
70	ERA 3	4	2	6	4	9	8	24	27	41	55	27	19	15	6	6	2	2	1	3	8	39	52	25	7	2	2	15	65	32	14	4
71	Simpson Lagoon	1	1	2	1	4	3	6	7	12	20	17	17	14	6	6	2	2	1	1	4	8	16	17	6	2	2	4	32	21	12	5
72	Gwyder Bay	:	:	:	:	:	:	:	1	1	3	3	4	3	1	1	:	:	:	:	:	1	2	3	1	:	:	:	3	5	3	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	1	1	1	2	1	:	:	:	:	:	:	1	:	1	1	1	:	:	1	1	2	1	:
74	Cross Island ERA	:	:	1	1	1	1	2	3	6	11	10	54	17	8	10	2	2	:	:	1	3	7	24	11	1	1	2	8	17	44	6
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	1	2	4	3	13	4	2	3	1	1	:	:	:	:	4	3	2	1	:	:	2	7	18	2
76	Water over Boulder Patch 2	:	:	:	:	:	:	1	1	2	4	2	12	3	1	3	:	1	:	:	:	:	3	3	2	1	:	:	1	6	22	2
77	Foggy Island Bay	:	:	:	:	:	:	:	:	1	2	1	6	1	:	1	:	:	:	:	:	:	2	1	1	:	:	:	1	4	23	:
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	3	:	:	1	:	:	:	:	:	:	:	1	:	:	:	:	:	:	2	1
79	ERA 4	:	:	:	:	:	:	1	1	2	5	6	35	11	6	12	2	2	:	:	:	:	4	14	9	1	:	:	4	9	38	6
80	Ice/Sea Segment 18b	:	:	1	1	1	1	4	4	8	12	15	59	50	23	27	3	4	:	:	:	3	9	57	46	2	:	3	8	19	58	10
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	2	:	:	:	:	:	:	1	1	:	:	:	:	:	2
82	ERA 5	:	:	:	:	:	:	:	:	:	1	:	4	4	8	16	5	43	4	:	:	:	:	1	12	12	:	:	1	1	6	16
83	Kaktovik ERA	:	:	:	:	:	:	:	:	:	1	1	5	6	18	22	27	46	36	:	1	:	1	3	19	52	:	:	1	2	7	26
84	Ice/Sea Segment 20b	1	:	2	1	2	2	5	4	7	6	7	10	11	25	29	60	40	15	:	3	6	5	9	29	45	:	3	4	6	11	35
85	ERA 6	:	:	:	:	:	:	:	:	:	1	1	4	5	11	11	16	15	33	:	:	:	:	2	11	17	:	:	:	:	6	12
86	ERA 7	:	:	:	:	:	:	2	1	3	2	4	4	5	8	8	13	12	17	:	1	3	2	5	9	13	:	1	1	3	4	9
87	ERA 8	1	:	1	1	2	2	2	2	2	2	3	3	3	4	3	4	3	3	1	2	2	2	1	4	3	:	2	1	3	4	3
88	Ice Sea Segment 24b	:	:	:	:	:	:	:	:	:	:	:	1	1	3	3	6	3	1	:	:	:	:	1	2	5	:	:	:	:	2	5

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-25 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
25	Barrow, Elson Lagoon	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
26	Dease Inlet	:	4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
27	Kurgorak Bay	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:
28	Cape Simpson	:	4	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	11	:	:	:	:	:
29	Ikpikpuk River, Smith Bay	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	14	:	:	:	:	:
30	Drew Point, McLeod Point,	:	:	:	6	:	1	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	3	:	:	:	:	:
31	Lonely AFS Airport, Pitt Point, Pogik Bay	:	:	1	3	1	6	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	:	:	:	:
32	Cape Halkett,	:	:	:	:	:	5	:	3	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	8	:	:	:	:
33	Atigaru Point, Kogru River	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	8	:	:	:	:
34	Fish Creek	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:
35	Colville River	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:
36	Oliktok Point	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	10	:	:	:
37	Milne Point, Simpson Lagoon	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1	4	:	:
38	Kuparuk River	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	:	:
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	5	:
40	Foggy Island Bay, Kadleroshilik River,	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	8	:
41	Bullen Point, Point Gordon, Reliance Pt.	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	11
43	Brownlow Point, Canning River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1
45	Anderson Point, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Arey Island, Barter Island,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	1	:	:	:	:	:	:
47	Kaktovik	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	3	:	:	:	:	:	:	2	:	:	:	:	:	:
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:
52	Clarence Lagoon, Backhouse River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent, LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-26 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
25	Barrow, Elson Lagoon	7	9	2	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	1	:	:	:	:	:	2	:	:	:	:	:
26	Dease Inlet	3	12	2	3	:	1	:	:	:	:	:	:	:	:	:	:	:	:	7	2	:	:	:	:	:	4	:	:	:	:	:
27	Kurgorak Bay	2	8	1	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	1	:	:	:	:	:	2	:	:	:	:	:
28	Cape Simpson	2	8	2	8	1	2	:	:	:	:	:	:	:	:	:	:	:	:	4	2	:	:	:	:	:	18	:	:	:	:	:
29	Ikpikpuk River, Smith Bay	:	2	1	4	:	1	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	18	1	:	:	:	:
30	Drew Point, McLeod Point,	1	2	3	13	2	4	:	1	:	:	:	:	:	:	:	:	:	:	2	4	:	:	:	:	:	7	:	:	:	:	:
31	Lonely AFS Airport, Pitt Point, Pogik Bay	:	1	4	7	5	13	1	2	:	:	:	:	:	:	:	:	:	:	1	5	1	:	:	:	:	2	3	:	:	:	:
32	Cape Halkett,	:	:	1	1	2	11	3	10	1	2	:	:	:	:	:	:	:	:	:	3	3	1	:	:	:	1	15	3	1	:	:
33	Atigaru Point, Kogru River	:	:	:	:	1	3	1	7	:	1	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	15	1	:	:	:
34	Fish Creek	:	:	:	:	:	1	1	6	:	1	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	4	1	:	:	:
35	Colville River	:	:	:	:	:	:	1	4	:	3	:	:	:	:	:	:	:	:	:	:	1	2	:	:	:	:	1	5	1	:	:
36	Oliktok Point	:	:	:	:	:	:	1	3	1	4	:	:	:	:	:	:	:	:	:	:	2	2	:	:	:	:	:	13	2	:	:
37	Milne Point, Simpson Lagoon	:	:	:	:	:	:	:	1	1	4	1	3	1	:	:	:	:	:	:	:	:	1	2	1	:	:	:	4	8	1	1
38	Kuparuk River	:	:	:	:	:	:	:	:	:	2	:	3	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	1	6	2	:
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	:	:	:	1	:	3	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	1	3	7	:
40	Foggy Island Bay, Kadleroshilik River,	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	9	:
41	Bullen Point, Point Gordon, Reliance Pt	:	:	:	:	:	:	:	:	:	:	:	3	:	:	1	:	:	:	:	:	:	:	1	:	:	:	:	:	:	2	1
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	:	:	2	1	:	2	:	:	:	:	:	:	:	1	1	:	:	:	:	:	3	11
43	Brownlow Point, Canning River	:	:	:	:	:	:	:	:	:	:	:	1	:	:	2	:	3	:	:	:	:	:	:	1	:	:	:	:	:	1	2
44	Collinson Point, Konganevik Point,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	1	:	:	:	:	:	:	1
45	Anderson Point, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	3	:	:	:	:	:	:	1	:	:	:	:	:	:	1
46	Arey Island, Barter Island,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	6	1	:	:	:	:	:	1	3	:	:	:	:	:	1
47	Kaktovik	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	7	6	:	:	:	:	:	1	10	:	:	:	:	:	1
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	6	:	:	:	:	:	:	3	:	:	:	:	:	:
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	6	:	:	:	:	:	:	:	:	:	:	:	:	:
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	8	:	:	:	:	:	:	:	:	:	:	:	:	:
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	7	:	:	:	:	:	:	:	:	:	:	:	:	:
52	Clarence Lagoon, Backhouse River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	:	:	:	:	:	:	:	:	:	:	:	:	:
53	Komakuk Beach, Fish Creek	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent, LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-27 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
22	Skull Cliff	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Nulavik	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
24	Walakpa Bay, Walakpa River	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
25	Barrow, Elson Lagoon	15	14	5	5	3	2	1	1	:	1	:	:	:	:	:	:	:	:	11	2	1	:	:	:	:	5	1	:	:	:	:
26	Dease Inlet	10	17	6	6	4	3	1	1	1	:	:	:	:	:	:	:	:	:	13	6	1	:	:	:	:	7	1	:	:	:	:
27	Kurgorak Bay	6	10	3	4	2	1	1	:	:	:	:	:	:	:	:	:	:	:	7	2	1	1	:	:	:	3	:	:	:	:	:
28	Cape Simpson	5	10	5	12	4	4	2	1	1	1	:	:	:	:	:	:	:	:	6	7	2	1	:	:	:	21	2	1	:	:	:
29	Ikpikpuk River, Smith Bay	1	4	3	7	2	2	1	1	:	:	:	:	:	:	:	:	:	:	3	3	1	:	:	:	:	21	1	:	:	:	:
30	Drew Point, McLeod Point,	2	4	6	16	6	7	4	3	1	1	:	:	:	:	:	:	:	:	5	9	3	:	:	:	:	9	3	:	:	:	:
31	Lonely AFS Airport, Pitt Point, Pogik Bay	2	3	7	9	9	17	6	5	3	2	1	1	1	:	:	:	:	:	3	9	5	3	:	:	:	4	6	2	1	:	:
32	Cape Halkett,	1	1	3	3	6	14	7	15	4	5	3	2	2	:	:	:	:	:	1	6	9	4	4	:	:	1	19	7	3	1	:
33	Atigaru Point, Kogru River	:	1	1	2	2	4	4	10	2	3	2	1	1	:	:	:	:	:	1	2	4	2	1	:	:	1	17	3	1	:	:
34	Fish Creek	:	:	:	1	1	2	3	8	3	4	1	1	1	:	:	:	:	:	1	1	5	4	1	:	:	:	5	4	2	1	:
35	Colville River	:	:	1	1	1	2	3	5	2	5	1	1	:	:	:	:	:	:	1	2	3	5	1	:	:	:	1	6	2	1	:
36	Oliktok Point	:	:	:	:	:	:	2	4	4	6	2	3	1	:	:	:	:	:	:	:	4	5	3	:	:	:	1	15	4	2	:
37	Milne Point, Simpson Lagoon	:	:	:	:	:	:	1	1	3	7	4	6	3	1	2	:	:	:	:	:	2	4	4	1	:	:	:	5	11	3	1
38	Kuparuk River	:	:	:	:	:	:	:	:	1	2	1	4	1	1	1	:	:	:	:	:	:	1	2	:	:	:	:	1	6	3	:
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	:	:	1	2	1	4	1	:	1	:	:	:	:	:	:	1	1	:	:	:	:	1	4	8	:
40	Foggy Island Bay, Kadleroshilik River,	:	:	:	:	:	:	:	:	:	1	:	2	1	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	2	10	:
41	Bullen Point, Point Gordon, Reliance Pt	:	:	:	:	:	:	:	:	:	:	:	3	:	:	1	:	:	:	:	:	:	:	1	:	:	:	:	:	:	3	2
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	1	:	3	1	:	2	:	1	:	:	:	:	:	1	1	1	:	:	1	1	4	12
43	Brownlow Point, Canning River	:	:	:	:	:	:	:	:	:	:	:	1	1	:	3	1	5	1	:	:	:	:	1	2	1	:	:	:	:	1	3
44	Collinson Point, Konganevik Point,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	1	1	:	:	1	:	:	1
45	Anderson Point, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	4	:	:	:	:	:	:	1	1	:	:	:	:	:	1
46	Arey Island, Barter Island,	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	2	8	2	:	:	:	:	:	2	5	:	:	:	:	:	2
47	Kaktovik	:	:	:	:	:	:	:	:	:	:	:	:	:	2	4	6	12	9	:	:	:	:	:	3	16	:	:	:	:	1	6
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	3	4	9	:	:	:	:	:	2	5	:	:	:	:	:	3
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	1	8	:	:	:	:	:	1	1	:	:	:	:	:	2
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	11	:	:	:	:	:	:	1	:	:	:	:	:	1
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	10	:	:	:	:	:	:	3	:	:	:	:	:	1
52	Clarence Lagoon, Backhouse River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	8	:	:	:	:	:	:	1	:	:	:	:	:	:
53	Komakuk Beach, Fish Creek	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	7	:	:	:	:	:	:	1	:	:	:	:	:	:
54	Nunaluk Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	1	:	:	:	:	:	:
55	Herschel Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent, LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-28 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
20	Asiniak Point, Kugrua Bay, Kugrua River	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Skull Cliff	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
23	Nulavik	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	:	:	:	:	:
24	Walakpa Bay, Walakpa River	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:
25	Barrow, Elson Lagoon	17	15	6	6	4	3	2	2	1	1	:	:	:	:	:	:	:	:	12	3	2	1	:	:	:	5	2	1	:	:	:
26	Dease Inlet	11	18	7	6	5	4	2	1	2	1	1	:	:	:	:	:	:	:	14	6	2	2	:	:	:	8	1	1	1	:	:
27	Kurgorak Bay	7	11	4	4	3	2	1	1	1	:	:	:	:	:	:	:	:	:	8	3	1	1	:	:	:	4	:	:	:	:	:
28	Cape Simpson	6	11	5	12	4	5	3	1	1	1	1	:	:	:	:	:	:	:	6	7	3	1	:	:	:	21	2	1	:	:	:
29	Ikpikpuk River, Smith Bay	2	4	3	7	2	2	2	1	1	:	:	:	:	:	:	:	:	:	3	3	1	:	:	:	:	21	1	:	:	:	:
30	Drew Point, McLeod Point,	2	4	7	16	7	8	5	3	3	2	2	1	1	:	:	:	:	:	6	9	5	2	1	:	:	9	3	3	2	:	:
31	Lonely AFS Airport, Pitt Point, Pogik Bay	3	3	8	10	11	18	7	5	4	4	3	2	2	:	:	:	:	:	4	11	5	4	2	:	:	4	6	3	2	:	:
32	Cape Halkett,	1	1	3	3	6	14	8	15	5	6	3	3	3	1	1	:	:	:	1	7	10	5	6	:	:	1	19	8	4	1	:
33	Atigaru Point, Kogru River	1	1	1	2	2	5	5	10	3	4	2	1	1	:	:	:	:	:	1	3	4	3	1	:	:	1	18	4	2	:	:
34	Fish Creek	1	1	1	2	2	3	5	9	5	4	3	1	2	1	1	:	:	:	1	2	6	5	2	1	:	1	6	5	3	2	:
35	Colville River	1	1	2	1	2	2	4	6	4	6	3	2	1	1	:	1	:	:	2	3	3	6	2	1	:	:	2	7	3	1	:
36	Oliktok Point	:	:	1	1	1	1	3	4	5	7	4	4	3	1	1	:	:	:	:	1	5	6	4	1	:	1	1	15	5	3	1
37	Milne Point, Simpson Lagoon	:	:	:	:	:	:	1	2	3	7	5	7	5	2	2	:	1	:	:	:	2	5	7	1	1	:	:	6	11	4	2
38	Kuparuk River	:	:	:	:	:	:	:	:	1	3	1	4	2	1	1	:	:	:	:	:	:	2	3	:	:	:	:	2	7	3	:
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	:	:	1	2	1	4	1	1	1	:	:	:	:	:	:	2	2	1	:	:	:	2	4	8	:
40	Foggy Island Bay, Kadleroshilik River,	:	:	:	:	:	:	:	:	1	1	1	3	1	:	1	:	:	:	:	:	:	1	1	1	:	:	:	1	3	11	:
41	Bullen Point, Point Gordon, Reliance Pt	:	:	:	:	:	:	:	:	:	1	:	3	1	:	1	:	:	:	:	:	:	:	1	:	:	:	:	:	1	3	2
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	1	:	4	2	1	3	:	1	:	:	:	:	:	2	3	1	:	:	1	1	5	12
43	Brownlow Point, Canning River	:	:	:	:	:	:	:	:	:	1	:	2	1	1	3	1	5	1	:	:	:	:	1	3	2	:	:	:	1	2	3
44	Collinson Point, Konganevik Point,	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	2	:	:	:	:	:	:	1	1	:	:	1	:	:	2
45	Anderson Point, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	1	:	1	2	1	4	:	:	:	:	:	:	1	1	:	:	:	:	1	2
46	Arey Island, Barter Island,	:	:	:	:	:	:	:	:	:	:	:	1	:	2	3	3	9	2	:	:	:	:	:	2	6	:	:	:	:	:	2
47	Kaktovik	:	:	:	:	:	:	:	:	:	:	:	1	1	4	6	9	13	9	:	:	:	:	1	4	17	:	:	:	:	1	8
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	1	1	3	4	6	4	9	:	:	:	:	:	3	7	:	:	:	:	2	3
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	1	2	3	4	3	8	:	:	:	:	:	3	3	:	:	:	:	:	4
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	1	1	1	2	3	3	12	:	:	:	:	:	2	3	:	:	:	:	1	2
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	4	4	11	:	:	:	:	:	1	6	:	:	:	:	:	3
52	Clarence Lagoon, Backhouse River	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	2	9	:	:	:	:	:	1	3	:	:	:	:	:	1
53	Komakuk Beach, Fish Creek	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	8	:	:	:	:	:	:	1	:	:	:	:	:	1
54	Nunaluk Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	:	:	:	:	:	:	1	:	:	:	:	:	:
55	Herschel Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	4	:	:	:	:	:	:	2	:	:	:	:	:	1
56	Ptarmigan Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
57	Roland & Phillips Bay, Kay Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	1	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent, LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-29 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
20	Asiniak Point, Kugrua Bay, Kugrua River	1	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Skull Cliff	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
23	Nulavik	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	:	:	:	:	:
24	Walakpa Bay, Walakpa River	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:
25	Barrow, Elson Lagoon	17	15	6	6	4	3	2	2	1	1	:	:	:	:	:	:	:	:	12	3	2	1	:	:	:	5	2	1	:	:	:
26	Dease Inlet	11	18	7	6	5	4	2	1	2	1	1	:	:	:	:	:	:	:	14	6	2	2	:	:	:	8	1	1	1	:	:
27	Kurgorak Bay	7	11	5	5	3	2	1	1	1	:	:	:	:	:	:	:	:	:	8	3	1	1	:	:	:	4	1	:	:	:	:
28	Cape Simpson	6	11	6	12	4	5	3	1	1	1	1	:	:	:	:	:	:	:	6	7	3	1	:	:	:	21	2	1	:	:	:
29	Ikpikpuk River, Smith Bay	2	4	3	7	2	2	2	1	1	:	1	:	:	:	:	:	:	:	3	3	1	1	:	:	:	21	1	:	1	:	:
30	Drew Point, McLeod Point	2	4	7	16	8	8	5	3	3	2	2	1	1	:	:	:	:	:	6	9	5	2	2	:	:	9	3	3	2	:	:
31	Lonely AFS Airport, Pitt Point, Pogik Bay	3	3	9	10	11	18	7	5	4	4	3	2	2	:	:	:	:	:	4	11	5	4	2	:	:	4	6	3	3	1	:
32	Cape Halkett	1	1	3	3	6	14	8	15	5	6	3	3	3	1	1	:	:	:	1	7	10	5	6	:	:	1	19	8	4	2	:
33	Atigaru Point, Kogru River	1	1	1	2	2	5	5	10	3	4	2	1	1	:	:	:	:	:	2	3	4	3	1	:	:	1	18	4	2	:	:
34	Fish Creek	1	1	1	2	2	3	5	9	5	4	3	1	2	1	1	:	:	:	1	2	6	5	2	1	:	1	7	5	3	2	:
35	Colville River	1	1	2	1	2	2	4	6	4	6	3	2	2	1	1	1	1	:	2	3	4	6	2	2	:	:	2	7	3	1	:
36	Oliktok Point	:	:	1	1	1	1	3	5	5	7	4	5	3	1	1	:	:	:	:	2	5	6	5	1	:	1	2	16	6	4	1
37	Milne Point, Simpson Lagoon	:	:	:	:	:	:	1	2	3	8	6	7	5	2	2	:	1	:	:	:	2	5	7	1	1	:	:	6	12	4	2
38	Kuparuk River	:	:	:	:	:	:	:	:	1	3	2	4	2	1	1	:	:	:	:	:	:	2	3	1	:	:	:	2	7	3	:
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	:	1	2	3	2	5	1	1	1	:	:	:	:	:	:	3	4	1	:	:	:	3	6	8	:
40	Foggy Island Bay, Kadleroshilik River,	:	:	:	:	:	:	:	:	1	2	1	3	1	:	1	:	:	:	:	:	:	2	1	1	:	:	:	1	3	11	:
41	Bullen Point, Point Gordon, Reliance Pt	:	:	:	:	:	:	:	:	:	1	:	3	1	:	1	:	:	:	:	:	:	:	1	:	:	:	:	:	1	3	2
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	1	:	4	2	2	3	:	1	:	:	:	:	:	2	3	1	:	:	1	1	5	12
43	Brownlow Point, Canning River	:	:	:	:	:	:	:	:	:	1	:	2	1	1	3	1	5	1	:	:	:	:	1	3	2	:	:	:	1	2	3
44	Collinson Point, Konganevik Point	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	2	:	:	:	:	:	:	1	1	:	:	1	:	:	2
45	Anderson Point, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	1	:	1	2	1	4	:	:	:	:	:	:	1	1	:	:	:	:	1	2
46	Arey Island, Barter Island,	:	:	:	:	:	:	:	:	:	:	:	1	:	2	3	3	9	2	:	:	:	:	:	2	6	:	:	:	:	1	3
47	Kaktovik	:	:	:	:	:	:	:	:	:	:	:	1	1	5	7	9	13	9	:	:	:	:	1	5	17	:	:	:	:	2	8
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	1	1	4	5	6	5	9	:	:	:	:	:	3	7	:	:	:	:	2	4
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	1	1	3	4	4	3	8	:	:	:	:	:	3	4	:	:	:	:	1	4
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	1	1	2	2	4	4	12	:	:	:	:	:	3	4	:	:	:	:	1	2
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	1	1	3	3	5	5	12	:	:	:	:	1	3	7	:	:	:	:	2	3
52	Clarence Lagoon, Backhouse River	:	:	:	:	:	:	:	:	:	:	:	:	1	2	2	2	2	9	:	:	:	:	:	3	3	:	:	:	:	1	1
53	Komakuk Beach, Fish Creek	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	2	3	8	:	:	:	:	:	:	2	:	:	:	:	:	2
54	Nunaluk Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	2	3	:	:	:	:	:	1	3	:	:	:	:	:	1
55	Herschel Island	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	2	5	:	:	:	:	:	1	3	:	:	:	:	:	3
56	Ptarmigan Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	:	:	:	:	:	:	2	:	:	:	:	:	:
57	Roland & Phillips Bay, Kay Point	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	1	1	1	:	:	:	:	:	:	1	:	:	:	:	:	:
58	Sabine Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
60	Trent and Shoalwater Bays	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:
63	Outer Shallow Bay, Olivier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Middle Channel, Gary Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:
65	Kendall Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:
66	North Point, Pullen Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent, LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-30 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
20	Asiniak Point, Kugrua Bay, Kugrua River	1	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Skull Cliff	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
23	Nulavik	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	:	:	:	:	:
24	Walakpa Bay, Walakpa River	2	1	1	1	:	:	:	:	1	1	1	1	:	:	:	:	:	:	2	:	:	1	:	:	:	:	:	:	1	:	:
25	Barrow, Elson Lagoon	17	16	7	6	4	3	2	2	2	2	2	2	3	1	1	:	:	:	12	3	2	2	1	1	:	5	2	1	1	1	:
26	Dease Inlet	11	18	8	7	5	4	2	2	2	2	1	1	:	1	:	:	:	:	15	6	2	2	:	:	:	8	2	1	1	:	:
27	Kurgorak Bay	7	11	5	5	3	2	1	1	1	:	:	:	:	:	:	:	:	:	8	4	1	1	:	:	:	4	1	1	:	:	:
28	Cape Simpson	6	11	6	12	5	5	3	2	1	1	1	1	1	:	:	:	:	:	6	8	3	1	1	:	:	21	2	1	:	:	:
29	Ikpikpuk River, Smith Bay	2	4	3	7	3	3	2	1	1	1	1	:	:	:	:	:	:	:	3	3	1	1	:	:	:	21	2	:	1	:	:
30	Drew Point, McLeod Point,	3	4	8	16	8	8	6	4	4	3	2	1	1	:	:	:	:	:	6	9	5	2	3	:	:	9	3	4	3	1	:
31	Lonely AFS Airport, Pitt Point, Pogik Bay	4	3	9	10	12	18	7	5	6	4	5	3	3	2	2	1	1	:	4	11	6	6	5	2	1	4	6	3	3	1	3
32	Cape Halkett	2	2	4	3	7	15	9	16	6	7	5	4	4	2	1	1	1	:	1	7	11	6	7	2	1	2	19	9	5	2	1
33	Atigaru Point, Kogru River	1	1	2	2	2	5	5	10	3	4	2	1	1	1	1	1	:	:	2	3	4	3	2	:	:	1	18	4	2	:	:
34	Fish Creek	1	1	1	2	2	4	5	9	6	5	4	2	2	2	1	1	1	:	1	3	7	6	3	2	1	1	7	5	4	2	1
35	Colville River	2	2	3	2	3	3	5	7	5	7	4	3	3	1	1	1	1	:	2	4	4	7	3	2	:	1	2	8	3	2	:
36	Oliktok Point	:	:	1	1	2	1	3	5	5	8	5	5	4	2	1	1	:	:	1	2	5	6	5	1	:	1	2	16	6	4	1
37	Milne Point, Simpson Lagoon	:	:	:	:	1	:	1	2	4	8	7	8	7	3	3	1	1	:	:	:	2	6	9	2	1	:	1	6	12	5	2
38	Kuparuk River	:	:	:	:	:	:	:	:	1	3	2	5	3	1	1	:	:	:	:	:	:	3	3	1	:	:	:	2	7	3	1
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	1	1	3	3	3	5	2	1	1	:	:	:	:	1	1	3	4	1	:	:	1	3	6	8	:
40	Foggy Island Bay, Kadleroshilik River,	:	:	:	:	:	:	:	:	1	2	1	3	1	:	1	:	:	:	:	:	:	2	1	1	:	:	:	1	3	11	:
41	Bullen Point, Point Gordon, Reliance Pt	:	:	:	:	:	:	:	:	:	1	:	3	1	:	1	:	:	:	:	:	:	:	1	:	:	:	:	:	1	3	2
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	1	1	4	2	2	3	:	1	:	:	:	:	:	2	3	1	:	:	1	1	6	12
43	Brownlow Point, Canning River	:	:	:	:	:	:	:	:	:	1	:	2	2	2	3	1	5	1	:	:	:	:	1	3	2	:	:	:	1	2	3
44	Collinson Point, Konganevik Point	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	2	:	:	:	:	:	:	1	1	:	:	1	:	:	2
45	Anderson Point, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	1	:	1	2	1	4	:	:	:	:	:	:	1	1	:	:	:	:	1	2
46	Arey Island, Barter Island,	:	:	:	:	:	:	:	:	:	:	:	1	:	2	3	3	9	2	:	:	:	:	:	2	6	:	:	:	:	1	3
47	Kaktovik	:	:	:	:	:	:	:	:	:	1	1	2	3	7	8	10	13	9	:	:	:	:	1	6	17	:	:	1	1	2	10
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	1	1	5	5	7	5	9	:	:	:	:	:	5	7	:	:	:	:	3	5
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	1	1	3	4	5	3	8	:	:	:	:	:	3	4	:	:	:	:	1	5
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	1	1	3	3	5	5	12	:	:	:	:	1	4	4	:	:	:	1	1	3
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	2	2	3	4	6	7	12	:	:	:	:	1	4	8	:	:	:	:	3	4
52	Clarence Lagoon, Backhouse River	:	:	:	:	:	:	:	:	:	:	:	1	2	4	3	3	3	9	:	:	:	:	:	4	4	:	:	:	:	1	3
53	Komakuk Beach, Fish Creek	:	:	:	:	:	:	:	:	1	1	2	1	2	3	3	5	4	9	:	:	:	1	2	2	4	:	:	:	2	1	4
54	Nunaluk Spit	:	:	:	:	:	:	:	:	1	:	1	1	1	2	2	4	3	4	:	:	:	:	1	2	5	:	:	:	1	2	3
55	Herschel Island	:	:	:	:	:	:	1	1	2	1	2	2	3	5	5	9	6	7	:	:	3	1	3	6	8	:	1	:	:	2	7
56	Ptarmigan Bay	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	2	1	2	:	:	:	:	:	1	2	:	:	:	:	1	1
57	Roland & Phillips Bay, Kay Point	1	:	1	:	:	:	:	:	:	:	1	:	1	1	1	2	1	1	:	:	:	:	:	1	1	:	:	:	:	:	:
58	Sabine Point	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	1	:	1	:	:	:	:	:	1	:	:	:	:	:	:	1
59	Shingle Point	1	:	2	1	3	1	3	2	3	4	4	3	4	3	2	1	1	:	1	2	3	4	4	1	:	:	1	3	3	1	1
60	Trent and Shoalwater Bays	:	:	:	:	:	:	:	:	:	:	:	1	:	1	1	:	1	:	:	:	:	:	:	:	1	:	:	:	:	1	1
62	Shallow Bay, West Channel	:	:	1	:	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:
63	Outer Shallow Bay, Olivier Islands	:	:	:	:	:	:	:	:	1	1	1	1	1	1	1	2	1	1	:	:	:	1	:	:	1	:	:	1	2	1	1
64	Middle Channel, Gary Island	:	:	:	:	1	1	1	1	1	1	1	1	1	1	1	1	1	:	:	1	1	1	1	1	1	:	1	:	1	1	:
65	Kendall Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:
66	North Point, Pullen Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent, LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-31 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13

Notes: All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A2-32 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13

Notes: All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A2-33 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
24	Beaufort Sea	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
25	Beaufort Sea	1	:	1	1	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	1	1	:	:	:	:
26	Beaufort Sea	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:
27	Beaufort Sea	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	1	1	:	:
28	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-34 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
22	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:
23	Beaufort Sea	2	1	1	1	1	1	1	1	1	1	:	:	:	:	:	:	:	:	1	:	1	1	:	:	:	1	1	1	:	:	:
24	Beaufort Sea	1	:	1	1	1	1	:	1	:	:	:	:	:	:	:	:	:	:	1	1	1	:	1	:	:	:	1	:	1	:	:
25	Beaufort Sea	3	2	2	1	2	1	1	1	1	:	1	:	:	:	:	:	:	:	3	1	2	1	:	1	:	2	2	1	:	:	:
26	Beaufort Sea	:	:	:	:	2	1	3	1	2	2	3	2	2	1	1	:	:	:	:	:	2	2	3	1	:	:	1	1	2	1	1
27	Beaufort Sea	1	:	1	1	1	:	2	2	3	3	3	2	2	1	1	:	:	:	:	1	1	4	3	2	:	1	:	4	3	2	:
28	Beaufort Sea	:	:	1	:	1	1	2	1	1	:	2	1	1	1	1	:	:	:	:	:	2	:	1	:	:	:	1	:	:	1	:
29	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1	:
35	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-35 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
4	Chukchi Sea	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:
17	Chukchi Sea	1	1	1	1	1	:	:	:	1	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	:	:	:	:	1	:
18	Chukchi Sea	3	2	3	2	2	1	2	1	2	1	1	1	1	:	:	:	:	:	3	1	1	1	1	:	:	1	:	:	1	:	:
19	Chukchi Sea	2	1	2	1	2	:	1	:	1	:	:	:	:	:	:	:	:	1	3	1	:	:	:	:	1	1	:	:	:	:	:
20	Chukchi Sea	1	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Sea	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	:	:	:	:	:
22	Beaufort Sea	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:
23	Beaufort Sea	2	1	2	1	2	1	2	2	2	1	1	1	:	:	1	1	1	:	2	1	2	2	1	:	:	2	2	2	1	:	1
24	Beaufort Sea	2	1	1	1	1	1	1	1	1	:	:	1	1	:	:	:	:	:	1	1	1	:	1	:	:	:	1	:	1	1	:
25	Beaufort Sea	4	3	2	1	2	1	1	1	1	:	1	:	1	1	:	:	:	:	4	2	2	1	:	1	:	2	3	1	:	:	:
26	Beaufort Sea	1	1	1	1	2	1	3	2	3	3	3	2	3	3	3	2	2	1	2	1	2	3	4	3	1	1	2	2	3	2	2
27	Beaufort Sea	2	1	2	2	2	2	3	3	5	4	5	3	4	4	3	2	1	:	1	2	2	6	5	5	2	3	2	5	4	3	1
28	Beaufort Sea	2	2	4	2	5	3	5	2	3	1	4	1	3	3	1	1	:	:	2	4	4	1	2	1	:	2	3	1	1	1	:
29	Beaufort Sea	1	:	2	1	2	2	3	2	2	1	1	1	2	1	:	1	:	:	1	1	3	1	1	1	:	1	3	1	1	1	:
30	Beaufort Sea	:	:	:	:	1	:	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	1	:	:
31	Beaufort Sea	:	:	:	:	:	:	1	:	1	1	1	1	1	:	:	:	:	:	:	:	:	1	1	1	:	:	:	1	2	:	:
35	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:
36	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
37	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	:	:	:	:	:	:	1	1	:	:	:	:	1	:	1
38	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-36 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
4	Chukchi Sea	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:
17	Chukchi Sea	1	1	1	1	1	:	:	:	1	:	1	:	:	:	:	:	:	:	1	1	:	1	1	:	:	:	:	:	:	1	:
18	Chukchi Sea	3	2	3	2	2	1	2	1	2	1	1	1	1	:	:	:	:	:	3	1	2	1	1	:	:	1	1	1	1	:	:
19	Chukchi Sea	2	1	2	1	2	:	1	:	1	:	:	:	:	:	:	:	:	1	3	1	:	:	:	:	1	1	:	:	:	:	:
20	Chukchi Sea	1	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Sea	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	1	:	:	:	:	:
22	Beaufort Sea	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:
23	Beaufort Sea	2	1	2	1	2	1	2	2	2	1	1	1	:	:	1	1	1	:	2	1	2	2	1	:	:	2	2	2	1	:	1
24	Beaufort Sea	2	1	1	1	1	1	1	1	1	:	:	1	1	:	:	:	:	:	1	1	1	:	1	:	:	:	1	:	1	1	:
25	Beaufort Sea	4	3	2	1	2	1	1	1	1	:	1	:	1	1	1	:	:	:	4	2	2	1	:	1	:	2	3	1	:	1	:
26	Beaufort Sea	1	1	1	1	2	1	3	2	3	3	4	3	4	3	3	2	2	1	2	1	3	3	4	3	1	1	2	2	3	2	2
27	Beaufort Sea	2	1	2	2	2	2	3	4	6	5	5	4	4	4	3	2	1	:	1	3	2	7	5	5	2	3	2	6	4	3	1
28	Beaufort Sea	2	2	4	3	6	4	6	3	4	3	5	3	5	4	2	1	1	:	3	5	6	2	4	2	1	2	4	2	3	4	1
29	Beaufort Sea	1	:	2	1	2	2	3	2	2	1	2	1	2	1	1	1	1	:	1	1	3	1	1	1	1	1	3	1	1	1	:
30	Beaufort Sea	1	1	1	:	1	:	1	1	1	1	1	:	1	1	1	:	:	:	:	:	1	1	1	:	:	:	1	1	1	:	:
31	Beaufort Sea	:	:	:	:	:	:	1	:	1	1	1	1	1	:	:	:	:	:	:	:	:	1	1	1	:	:	:	1	2	:	:
35	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:
36	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	1	1	2	3	2	2	1	:	:	:	:	1	1	2	1	:	:	:	1	2	1
37	Beaufort Sea	:	:	1	:	1	1	1	:	1	:	1	1	1	2	1	1	:	:	:	1	:	:	1	1	:	:	:	:	1	:	1
38	Beaufort Sea	:	:	:	:	:	:	:	:	1	1	1	1	1	1	1	1	1	:	:	:	:	1	1	:	1	:	:	:	:	1	1

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-37 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
—	Land	:	2	:	2	:	2	:	2	:	:	:	1	:	:	:	:	1	3	:	:	:	:	:	:	:	7	5	6	4	3	4
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
3	Thetis and Jones Islands	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	1	:	:
4	Cottle & Return Islands, West Dock	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:
5	Midway Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
6	Cross and No Name Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:
7	Endicott Causeway	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
8	McClure Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:
9	Stockton Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11	Maguire Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1
12	Flaxman Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2
13	Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
16	Jago and Tapkaurak Spits	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
24	Beaufort Spring Lead 6	18	7	3	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	13	1	:	:	:	:	:	1	:	:	:	:	:
25	Beaufort Spring Lead 7	9	15	2	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	26	1	:	:	:	:	:	2	:	:	:	:	:
26	Beaufort Spring Lead 8	1	:	16	2	11	1	:	:	:	:	:	:	:	:	:	:	:	:	2	5	:	:	:	:	:	1	:	:	:	:	:
27	Beaufort Spring Lead 9	1	1	14	5	11	4	:	:	:	:	:	:	:	:	:	:	:	:	4	12	:	:	:	:	:	4	:	:	:	:	:
28	Beaufort Spring Lead 10	:	:	:	:	7	2	16	1	5	:	:	:	:	:	:	:	:	:	:	3	9	:	:	:	:	:	3	:	:	:	:
29	Ice/Sea Segment 1	2	7	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	:	:	:	:	:	:	2	:	:	:	:	:
30	Ice/Sea Segment 2	:	1	1	6	1	5	:	:	:	:	:	:	:	:	:	:	:	:	1	2	:	:	:	:	:	4	:	:	:	:	:
31	Ice/Sea Segment 3	:	:	:	:	:	3	2	6	:	1	:	:	:	:	:	:	:	:	:	1	2	:	:	:	:	:	5	1	:	:	:
32	Ice/Sea Segment 4	:	:	:	:	:	:	:	1	2	6	2	1	:	:	:	:	:	:	:	:	2	9	4	:	:	:	:	4	5	:	:
33	Ice/Sea Segment 5	:	:	:	:	:	:	:	:	:	:	1	5	3	:	1	:	:	:	:	:	:	:	6	1	:	:	:	:	:	4	:
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	:	:	:	:	:	:	1	7	:	4	:	:	:	:	:	:	2	1	:	:	:	:	:	6
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	2	:	:	:	:	:	:	6	:	:	:	:	:	:
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
41	Barrow Subsistence Area 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
42	Barrow Subsistence Area 2	1	8	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	:	:	:	:	:	:	6	:	:	:	:	:
43	Nuiqsut Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	4	1	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	4	:
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	3	:	:	:	:	:	:	3	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-37 (continued) Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
49	Hanna's Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
50	Ice/Sea Segment 12	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
51	Ice/Sea Segment 13	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
52	Ice/Sea Segment 14	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
53	Ice/Sea Segment 15	:	2	13	43	22	38	3	1	:	:	:	:	:	:	:	:	:	:	3	69	3	:	:	:	:	13	5	:	:	:	:
54	Ice/Sea Segment 16a	:	:	:	:	2	14	50	21	20	3	:	:	:	:	:	:	:	:	:	6	59	5	:	:	:	:	34	3	:	:	:
55	Ice/Sea Segment 17	:	:	:	:	:	:	2	1	32	32	41	10	5	:	:	:	:	:	:	:	9	**	41	:	:	:	:	17	27	1	:
56	Ice/Sea Segment 18a	:	:	:	:	:	:	:	:	:	1	2	40	37	15	14	:	:	:	:	:	:	:	44	43	:	:	:	:	2	37	2
57	Ice/Sea Segment 19	:	:	:	:	:	:	:	:	:	:	:	:	:	2	51	14	46	1	:	:	:	:	:	18	59	:	:	:	:	:	69
58	Ice/Sea Segment 20a	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	26	4	2	:	:	:	:	:	1	8	:	:	:	:	:	1
59	Ice/Sea Segment 21	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
60	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
61	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
62	Ice/Sea Segment 24a	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
65	ERA 1	:	3	1	13	:	1	:	:	:	:	:	:	:	:	:	:	:	:	8	3	:	:	:	:	:	16	:	:	:	:	:
66	ERA 2	:	:	:	:	1	11	1	3	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	5	:	:	:	:
67	Ice/Sea Segment 16b	:	:	:	:	1	4	16	7	7	1	:	:	:	:	:	:	:	:	:	2	20	2	:	:	:	:	11	1	:	:	:
68	Harrison Bay	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	7	:	:	:	:
69	Harrison Bay/Colville Delta	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:
70	ERA 3	:	:	:	:	:	:	1	2	4	9	:	:	:	:	:	:	:	:	:	:	7	7	:	:	:	:	:	16	1	:	:
71	Simpson Lagoon	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	1	:	:
72	Gwyder Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
74	Cross Island ERA	:	:	:	:	:	:	:	:	:	:	:	14	1	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	1	10	:
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:
76	Water over Boulder Patch 2	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:
77	Foggy Island Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	:
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
79	ERA 4	:	:	:	:	:	:	:	:	:	:	:	7	:	:	2	:	:	:	:	:	:	:	:	1	:	:	:	:	:	5	:
80	Ice/Sea Segment 18b	:	:	:	:	:	:	:	:	:	:	:	14	12	5	5	:	:	:	:	:	:	:	14	13	:	:	:	:	1	12	1
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
82	ERA 5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	9	:	:	:	:	:	:	:	1	:	:	:	:	:	1
83	Kaktovik ERA	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	10	:	:	:	:	:	:	8	:	:	:	:	:	:
84	Ice/Sea Segment 20b	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	9	2	1	:	:	:	:	:	:	4	:	:	:	:	:	:
85	ERA 6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	:	:	:	:	:	:	:	:	:	:	:	:	:
86	ERA 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
87	ERA 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
88	Ice Sea Segment 24b	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-38 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
—	Land	2	6	2	6	2	5	2	6	1	3	:	3	:	:	1	:	4	8	3	2	1	1	:	:	3	10	8	9	6	5	5
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	1	5	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	1	:	:	:	:	:	1	:	:	:	:	:
3	Thetis and Jones Islands	:	:	:	:	:	:	:	1	1	3	1	1	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	5	2	1	:
4	Cottle & Return Islands, West Dock	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	1	5	1	:
5	Midway Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:
6	Cross and No Name Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	:
7	Endicott Causeway	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:
8	McClure Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	:
9	Stockton Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11	Maguire Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1
12	Flaxman Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3
13	Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	:	1	:	:	:	:	:	:
16	Jago and Tapkaurak Spits	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	:	:	:	:	:	:	1	:	:	:	:	:	:
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
24	Beaufort Spring Lead 6	21	13	7	4	2	1	:	:	:	:	:	:	:	:	:	:	:	:	20	5	:	:	:	:	:	4	:	:	:	:	:
25	Beaufort Spring Lead 7	13	20	6	6	2	1	:	:	:	:	:	:	:	:	:	:	:	:	28	6	:	:	:	:	:	6	:	:	:	:	:
26	Beaufort Spring Lead 8	3	3	19	7	14	6	2	1	:	:	:	:	:	:	:	:	:	:	6	11	2	:	:	:	:	5	1	:	:	:	:
27	Beaufort Spring Lead 9	2	3	16	10	14	8	3	1	1	:	:	:	:	:	:	:	:	:	7	17	2	:	:	:	:	7	2	:	:	:	:
28	Beaufort Spring Lead 10	:	:	1	1	9	6	21	7	9	4	2	:	:	:	:	:	:	:	:	6	16	4	1	:	:	:	8	4	2	:	:
29	Ice/Sea Segment 1	2	7	1	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	4	1	:	:	:	:	:	3	:	:	:	:	:
30	Ice/Sea Segment 2	:	1	2	6	2	5	1	1	:	:	:	:	:	:	:	:	:	:	1	3	1	:	:	:	:	5	1	:	:	:	:
31	Ice/Sea Segment 3	:	:	:	1	1	4	3	7	2	2	1	:	:	:	:	:	:	:	:	1	3	2	:	:	:	:	6	2	1	:	:
32	Ice/Sea Segment 4	:	:	:	:	:	:	1	1	3	7	3	2	1	:	:	:	:	:	:	:	2	9	5	:	:	:	:	5	5	1	:
33	Ice/Sea Segment 5	:	:	:	:	:	:	:	:	:	:	1	6	3	1	2	:	:	:	:	:	:	:	6	2	:	:	:	:	1	5	1
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	:	:	:	:	1	:	1	7	1	5	:	:	:	:	:	:	3	2	:	:	:	:	1	7
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	4	2	:	:	:	:	:	:	6	:	:	:	:	:	1
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	1	:	:	:	:	:	:
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
41	Barrow Subsistence Area 1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
42	Barrow Subsistence Area 2	2	9	2	3	1	1	:	:	:	:	:	:	:	:	:	:	:	:	4	2	:	:	:	:	:	6	:	:	:	:	:
43	Nuiqsut Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	5	1	:	1	:	:	:	:	:	:	:	2	1	:	:	:	:	1	4	1
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	3	:	:	:	:	:	:	4	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-38 (continued) Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
49	Hanna's Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
50	Ice/Sea Segment 12	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
51	Ice/Sea Segment 13	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
52	Ice/Sea Segment 14	11	4	2	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	:	:	:	:	:	:	1	:	:	:	:	:
53	Ice/Sea Segment 15	3	6	20	51	31	48	9	7	2	1	:	:	:	:	:	:	:	:	8	72	10	1	:	:	:	20	12	1	:	:	:
54	Ice/Sea Segment 16a	:	:	2	3	8	22	59	36	31	15	6	2	1	:	:	:	:	:	:	11	66	18	4	:	:	:	43	17	7	1	:
55	Ice/Sea Segment 17	:	:	:	:	:	1	7	6	41	46	51	25	17	2	3	:	:	:	:	1	14	**	52	5	:	:	2	26	44	12	1
56	Ice/Sea Segment 18a	:	:	:	:	:	:	:	:	1	2	4	50	41	20	32	2	2	:	:	:	:	2	46	48	1	:	:	:	5	46	11
57	Ice/Sea Segment 19	:	:	:	:	:	:	:	:	:	:	:	2	1	5	58	19	56	5	:	:	:	:	1	22	63	:	:	:	:	2	75
58	Ice/Sea Segment 20a	:	:	:	:	:	:	:	:	:	:	:	:	:	4	5	37	16	9	:	:	:	:	:	7	25	:	:	:	:	:	7
59	Ice/Sea Segment 21	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	5	:	:	:	:	:	:	2	:	:	:	:	:	:
60	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
61	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
62	Ice/Sea Segment 24a	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
65	ERA 1	1	5	3	16	3	4	1	1	:	:	:	:	:	:	:	:	:	:	10	6	:	:	:	:	:	17	1	:	:	:	:
66	ERA 2	:	:	1	2	2	13	4	7	1	1	:	:	:	:	:	:	:	:	:	3	4	1	:	:	:	:	9	2	:	:	:
67	Ice/Sea Segment 16b	:	:	1	1	2	7	19	13	11	6	2	1	:	:	:	:	:	:	:	3	23	8	2	:	:	:	14	8	4	:	:
68	Harrison Bay	:	:	:	:	:	1	1	3	:	1	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	7	1	:	:	:
69	Harrison Bay/Colville Delta	:	:	:	:	:	:	1	3	1	1	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	1	3	1	:	:
70	ERA 3	:	:	:	:	:	:	3	4	7	15	2	2	1	:	:	:	:	:	:	:	9	14	2	:	:	:	2	20	6	1	:
71	Simpson Lagoon	:	:	:	:	:	:	:	:	:	2	:	1	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	6	3	1	:
72	Gwyder Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
74	Cross Island ERA	:	:	:	:	:	:	:	:	:	1	1	15	2	:	2	:	:	:	:	:	:	1	3	2	:	:	:	:	2	12	1
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	:	:	:	:	4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:
76	Water over Boulder Patch 2	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	1
77	Foggy Island Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	6	:
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
79	ERA 4	:	:	:	:	:	:	:	:	:	:	:	8	1	1	3	:	:	:	:	:	:	:	1	1	:	:	:	:	:	7	1
80	Ice/Sea Segment 18b	:	:	:	:	:	:	:	:	:	1	1	17	13	6	11	:	1	:	:	:	:	1	15	15	:	:	:	:	2	15	4
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
82	ERA 5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	11	1	:	:	:	:	:	1	3	:	:	:	:	:	3
83	Kaktovik ERA	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	7	11	:	:	:	:	:	:	11	:	:	:	:	:	1
84	Ice/Sea Segment 20b	:	:	:	:	:	:	:	:	:	:	:	:	:	2	2	13	7	4	:	:	:	:	:	3	10	:	:	:	:	:	3
85	ERA 6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	6	:	:	:	:	:	:	:	:	:	:	:	:	:
86	ERA 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
87	ERA 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
88	Ice Sea Segment 24b	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-39 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
—	Land	8	13	6	11	5	10	5	11	4	7	2	6	2	1	3	3	7	14	9	7	5	5	3	2	6	15	13	13	10	8	9
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	4	8	2	3	2	1	1	:	:	:	:	:	:	:	:	:	:	:	6	2	:	:	:	:	:	2	1	:	:	:	:
3	Thetis and Jones Islands	:	:	:	:	:	:	1	1	1	3	1	2	1	:	:	:	:	:	:	:	1	2	2	:	:	:	1	7	3	1	:
4	Cottle & Return Islands, West Dock	:	:	:	:	:	:	:	:	1	2	1	2	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	2	6	2	:
5	Midway Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:
6	Cross and No Name Islands	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	1	3	:
7	Endicott Causeway	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:
8	McClure Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	6	:
9	Stockton Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11	Maguire Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2
12	Flaxman Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3
13	Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	1	:	:	:	:	:	:	2	:	:	:	:	:	1
16	Jago and Tapkaurak Spits	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	:	:	:	:	:	:	2	:	:	:	:	:	:
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
24	Beaufort Spring Lead 6	23	15	10	7	6	3	2	1	1	1	1	:	:	:	:	:	:	:	22	8	2	1	:	:	:	7	1	:	:	:	:
25	Beaufort Spring Lead 7	15	21	9	8	5	4	2	1	1	1	1	:	:	:	:	:	:	:	28	9	2	1	:	:	:	8	1	1	:	:	:
26	Beaufort Spring Lead 8	4	5	20	9	16	8	5	3	3	2	1	1	1	:	:	:	:	:	8	14	4	2	1	:	:	7	3	2	1	:	:
27	Beaufort Spring Lead 9	3	5	17	12	16	11	6	3	3	2	2	1	1	:	:	:	:	:	8	20	5	2	1	:	:	9	4	2	1	:	:
28	Beaufort Spring Lead 10	:	:	2	3	11	9	24	10	13	8	6	3	4	1	2	:	:	:	:	8	20	9	5	2	:	2	11	6	6	2	1
29	Ice/Sea Segment 1	3	7	2	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	4	1	:	:	:	:	:	3	:	:	:	:	:
30	Ice/Sea Segment 2	1	2	2	6	2	5	1	1	:	:	:	:	:	:	:	:	:	:	2	3	1	:	:	:	:	5	1	:	:	:	:
31	Ice/Sea Segment 3	:	:	1	1	1	4	3	7	2	2	1	1	:	:	:	:	:	:	:	1	3	3	1	:	:	:	6	3	1	:	:
32	Ice/Sea Segment 4	:	:	:	:	:	:	1	1	3	7	4	2	2	1	1	:	:	:	:	:	2	9	5	1	:	:	:	5	5	1	:
33	Ice/Sea Segment 5	:	:	:	:	:	:	:	:	:	1	1	6	4	1	2	:	:	:	:	:	:	:	6	2	:	:	:	:	1	5	1
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	:	:	:	:	1	1	1	8	1	5	:	:	:	:	:	:	3	2	:	:	:	:	1	7
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	4	2	:	:	:	:	:	1	6	:	:	:	:	:	1
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	1	:	:	:	:	:	:
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
41	Barrow Subsistence Area 1	4	3	2	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	1	:	:	:	:	:	1	:	:	:	:	:
42	Barrow Subsistence Area 2	3	9	2	3	1	1	:	:	:	:	:	:	:	:	:	:	:	:	4	2	:	:	:	:	:	6	1	:	:	:	:
43	Nuiqsut Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	5	2	1	1	:	:	:	:	:	:	:	2	1	:	:	:	:	1	4	1
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	4	:	:	:	:	:	:	4	:	:	:	:	:	1

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-39 (continued) Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
49	Hanna’s Shoal Polynya	3	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:
50	Ice/Sea Segment 12	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
51	Ice/Sea Segment 13	2	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	1	:	:	:	:	:
52	Ice/Sea Segment 14	19	11	8	5	3	2	1	:	1	:	:	:	:	:	:	:	:	:	13	4	1	:	:	:	:	4	:	:	:	:	:
53	Ice/Sea Segment 15	6	9	24	53	35	52	14	12	8	6	4	2	2	:	:	:	:	:	12	73	15	7	3	1	:	23	18	7	4	1	:
54	Ice/Sea Segment 16a	2	1	6	5	13	26	62	43	40	27	17	9	8	3	3	:	:	:	2	15	69	31	15	3	:	2	47	27	18	6	1
55	Ice/Sea Segment 17	:	:	1	1	3	4	13	11	45	51	56	33	27	11	12	2	2	:	1	2	20	**	58	14	2	:	5	30	48	20	6
56	Ice/Sea Segment 18a	:	:	:	:	:	:	1	:	2	4	6	52	43	23	37	4	5	:	:	:	1	3	47	51	3	:	:	1	7	48	16
57	Ice/Sea Segment 19	:	:	:	:	:	:	:	:	:	:	1	3	2	7	60	23	58	7	:	:	:	:	2	24	65	:	:	:	:	4	76
58	Ice/Sea Segment 20a	:	:	:	:	:	:	:	:	:	:	:	2	3	9	12	44	25	15	:	:	:	:	1	14	34	:	:	:	:	2	15
59	Ice/Sea Segment 21	:	:	:	:	:	:	:	:	:	:	:	:	:	2	2	7	5	10	:	:	:	:	:	2	7	:	:	:	:	:	3
60	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	:	:	:	:	:	:	2	:	:	:	:	:	:
61	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
62	Ice/Sea Segment 24a	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
65	ERA 1	2	6	4	17	4	6	3	2	1	1	1	:	:	:	:	:	:	:	11	8	3	1	1	:	:	18	3	1	1	:	:
66	ERA 2	:	:	2	3	3	14	6	9	3	4	1	1	1	:	:	:	:	:	1	4	6	4	1	:	:	1	11	5	3	1	:
67	Ice/Sea Segment 16b	:	:	1	2	4	8	21	16	15	11	6	4	3	1	2	:	:	:	:	4	25	12	6	2	:	1	16	12	9	2	1
68	Harrison Bay	:	:	:	:	:	1	1	4	1	1	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	8	2	1	:	:
69	Harrison Bay/Colville Delta	:	:	:	:	:	1	1	4	1	2	1	1	:	:	:	:	:	:	:	:	2	2	1	:	:	:	2	4	1	:	:
70	ERA 3	:	:	:	:	1	2	5	6	10	17	5	5	3	1	2	:	:	:	:	1	10	16	6	2	:	:	3	22	10	3	1
71	Simpson Lagoon	:	:	:	:	:	:	1	1	1	3	1	2	1	:	:	:	:	:	:	:	1	1	1	:	:	:	1	6	4	1	:
72	Gwyder Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
74	Cross Island ERA	:	:	:	:	:	:	:	:	1	1	1	15	3	1	2	:	:	:	:	:	:	1	4	2	:	:	:	:	3	14	2
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	:	:	:	:	4	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	5	:
76	Water over Boulder Patch 2	:	:	:	:	:	:	:	:	:	:	:	4	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	7	1
77	Foggy Island Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	6	:
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
79	ERA 4	:	:	:	:	:	:	:	:	:	:	:	8	1	1	4	:	:	:	:	:	:	:	1	2	:	:	:	:	1	8	2
80	Ice/Sea Segment 18b	:	:	:	:	:	:	:	:	1	1	2	18	14	7	12	1	2	:	:	:	:	1	15	15	1	:	:	1	3	16	5
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
82	ERA 5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	12	1	:	:	:	:	:	1	3	:	:	:	:	:	4
83	Kaktovik ERA	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	3	9	12	:	:	:	:	:	1	13	:	:	:	:	1	3
84	Ice/Sea Segment 20b	:	:	:	:	:	:	:	:	:	:	:	1	1	3	4	15	10	7	:	:	:	:	:	4	13	:	:	:	:	2	5
85	ERA 6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	7	:	:	:	:	:	:	1	:	:	:	:	:	:
86	ERA 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
87	ERA 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
88	Ice Sea Segment 24b	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-40 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
—	Land	13	20	11	18	9	16	9	17	7	12	6	11	6	4	7	6	11	21	16	12	9	9	8	5	9	21	19	18	16	13	12
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	6	12	5	6	3	3	2	1	1	1	1	1	1	:	:	:	:	:	9	4	1	1	1	:	:	3	1	1	:	:	:
3	Thetis and Jones Islands	:	:	:	:	:	1	1	2	2	5	2	2	1	1	1	:	:	:	:	:	1	3	2	1	:	:	2	9	5	2	:
4	Cottle & Return Islands, West Dock	:	:	:	:	:	:	1	:	1	2	1	3	1	:	:	:	:	:	:	:	1	2	1	:	:	:	:	2	8	2	:
5	Midway Islands	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	:
6	Cross and No Name Islands	:	:	:	:	:	:	:	:	:	:	:	2	1	:	1	:	:	:	:	:	:	:	1	1	:	:	:	:	1	4	:
7	Endicott Causeway	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:
8	McClure Islands	:	:	:	:	:	:	:	:	:	:	:	2	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	7	:
9	Stockton Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11	Maguire Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3
12	Flaxman Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	4
13	Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	1	:	:	:	:	:	:	3	:	:	:	:	:	1
16	Jago and Tapkaurak Spits	:	:	:	:	:	:	:	:	:	:	:	1	1	:	1	1	2	4	:	:	:	:	1	:	3	:	:	:	:	:	1
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	:	:	:	:	:	:	:	:	:	:	:	:	:
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	:	:	:	:	:	:	:	:	:	:	:	:	:
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	2	1	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	1	:	:	:	:	:
24	Beaufort Spring Lead 6	23	17	11	9	7	5	3	2	2	1	2	1	1	1	:	:	:	:	23	10	4	1	1	1	:	9	2	1	1	:	:
25	Beaufort Spring Lead 7	15	22	10	10	7	5	4	2	2	1	2	1	1	1	1	:	:	:	29	10	3	2	1	1	:	9	2	1	1	:	:
26	Beaufort Spring Lead 8	5	5	21	10	18	9	7	4	5	3	3	2	2	2	1	1	1	:	9	14	7	5	2	2	1	7	5	3	2	1	1
27	Beaufort Spring Lead 9	3	5	18	13	17	12	8	5	5	4	3	2	2	2	1	1	1	:	9	20	7	4	2	2	:	11	5	4	3	1	1
28	Beaufort Spring Lead 10	:	1	3	3	11	10	25	12	15	9	8	5	6	3	3	2	1	:	:	9	21	10	7	3	2	2	13	8	7	3	3
29	Ice/Sea Segment 1	3	7	2	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	4	1	:	:	:	:	:	3	:	:	:	:	:
30	Ice/Sea Segment 2	1	2	2	6	2	5	1	1	:	:	:	:	:	:	:	:	:	:	2	3	1	:	:	:	:	5	1	:	:	:	:
31	Ice/Sea Segment 3	:	:	1	1	1	4	3	7	2	2	1	1	:	:	:	:	:	:	:	1	3	3	1	:	:	:	6	3	1	:	:
32	Ice/Sea Segment 4	:	:	:	:	:	:	1	1	3	7	4	2	2	1	1	:	:	:	:	:	2	9	5	1	:	:	:	5	5	1	:
33	Ice/Sea Segment 5	:	:	:	:	:	:	:	:	:	1	1	6	4	1	2	:	:	:	:	:	:	:	6	2	:	:	:	:	1	5	1
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	:	:	:	:	1	1	1	8	1	5	:	:	:	:	:	:	3	2	:	:	:	:	1	7
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	4	2	:	:	:	:	:	1	6	:	:	:	:	:	1
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	1	:	:	:	:	:	:
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
41	Barrow Subsistence Area 1	4	3	2	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	4	1	:	:	:	:	:	2	:	:	:	:	:
42	Barrow Subsistence Area 2	3	9	3	4	2	2	1	1	1	:	:	:	:	:	:	:	:	:	4	3	1	:	:	:	:	7	1	1	:	:	:
43	Nuiqsut Subsistence Area	:	:	:	:	:	:	:	:	:	:	1	5	2	1	1	:	:	:	:	:	:	:	2	1	:	:	:	:	1	4	1
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	4	:	:	:	:	:	:	4	:	:	:	:	:	1

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-40 (continued) Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	3	1	1	1	1	:	1	:	1	:	:	:	:	:	:	:	:	:	2	1	1	1	:	:	:	1	:	:	:	:	:
49	Hanna's Shoal Polynya	9	5	5	3	3	2	1	1	1	1	1	:	:	:	:	:	:	:	8	3	1	1	:	:	:	2	1	1	:	:	:
50	Ice/Sea Segment 12	3	3	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	1	:	:	:	:	:
51	Ice/Sea Segment 13	4	3	2	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	3	1	1	:	:	:	:	2	:	:	:	:	:
52	Ice/Sea Segment 14	21	14	11	8	6	4	2	1	1	1	1	:	:	:	:	:	:	:	16	8	2	1	1	:	:	7	2	:	1	:	:
53	Ice/Sea Segment 15	7	11	25	55	36	53	17	14	11	8	8	5	5	3	3	1	1	:	13	73	18	10	8	3	1	25	20	10	7	3	2
54	Ice/Sea Segment 16a	3	3	7	7	15	28	64	45	44	30	22	14	14	7	7	3	2	:	3	16	70	35	19	8	3	4	49	30	21	10	4
55	Ice/Sea Segment 17	1	1	3	2	5	5	17	13	48	52	58	36	31	14	15	5	4	1	1	4	23	**	60	16	3	1	7	33	49	22	9
56	Ice/Sea Segment 18a	:	:	:	:	1	1	2	1	3	5	8	53	43	24	38	5	6	1	:	1	2	4	48	51	4	:	1	2	8	49	16
57	Ice/Sea Segment 19	:	:	:	:	:	:	:	:	:	1	1	4	3	8	60	25	59	8	:	:	:	1	3	25	65	:	:	:	1	5	76
58	Ice/Sea Segment 20a	:	:	:	:	:	:	:	:	:	:	1	2	4	12	15	47	28	18	:	:	:	:	2	17	37	:	:	:	:	3	19
59	Ice/Sea Segment 21	:	:	:	:	:	:	:	:	:	:	:	1	1	4	5	12	9	12	:	:	:	:	:	5	11	:	:	:	:	1	6
60	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	4	3	5	:	:	:	:	:	2	4	:	:	:	:	:	2
61	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	2	1	1	:	:	:	:	:	1	2	:	:	:	:	:	1
62	Ice/Sea Segment 24a	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	:	:	:	:	:	:	1	:	:	:	:	:	1
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	:	:	:	:	:	:
65	ERA 1	2	6	5	18	5	7	4	3	3	2	2	1	2	1	1	:	:	:	11	9	4	3	2	:	:	20	4	2	2	1	:
66	ERA 2	:	1	2	3	4	15	7	12	5	6	3	3	2	1	2	1	1	:	1	5	7	6	3	1	1	2	14	7	4	1	2
67	Ice/Sea Segment 16b	:	1	2	3	5	9	22	17	16	13	8	6	5	3	3	1	2	:	1	6	26	14	8	3	2	2	18	13	10	4	2
68	Harrison Bay	:	:	:	:	:	2	1	5	1	2	1	1	1	:	:	:	:	:	:	:	1	2	1	:	:	:	10	2	2	1	:
69	Harrison Bay/Colville Delta	:	:	:	:	1	1	2	6	2	3	1	1	1	:	:	:	:	:	:	1	2	2	1	:	:	:	3	7	2	1	:
70	ERA 3	:	:	1	1	2	3	6	8	10	18	6	7	5	3	3	1	1	:	:	2	12	16	8	4	1	1	4	24	12	6	2
71	Simpson Lagoon	:	:	:	:	:	:	1	2	1	4	1	2	1	:	1	:	:	:	:	:	1	2	2	:	:	:	2	8	6	1	:
72	Gwyder Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	1	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
74	Cross Island ERA	:	:	:	:	:	:	1	:	1	2	1	16	3	1	3	:	1	:	:	:	1	1	4	2	:	:	:	1	3	17	2
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	:	:	1	:	5	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	6	1
76	Water over Boulder Patch 2	:	:	:	:	:	:	:	:	:	1	:	4	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	10	1
77	Foggy Island Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	8	:
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1
79	ERA 4	:	:	:	:	:	:	:	:	:	:	:	9	1	1	4	:	1	:	:	:	:	1	1	2	:	:	:	:	1	10	2
80	Ice/Sea Segment 18b	:	:	:	:	:	:	1	:	1	2	2	19	14	7	12	1	2	:	:	:	1	1	15	15	1	:	:	1	3	18	6
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
82	ERA 5	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	13	1	:	:	:	:	:	1	4	:	:	:	:	1	4
83	Kaktovik ERA	:	:	:	:	:	:	:	:	:	:	:	1	:	1	2	3	10	13	:	:	:	:	1	1	13	:	:	:	:	1	3
84	Ice/Sea Segment 20b	:	:	:	:	:	:	:	:	:	:	:	1	1	3	5	15	11	8	:	:	:	:	1	5	14	:	:	:	:	2	5
85	ERA 6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	9	:	:	:	:	:	1	2	:	:	:	:	:	1
86	ERA 7	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	4	:	:	:	:	:	1	1	:	:	:	:	:	:
87	ERA 8	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
88	Ice Sea Segment 24b	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	:	:	:	:	:	:	1	:	:	:	:	:	1

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-41 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
—	Land	28	41	28	41	28	39	29	43	27	34	24	35	25	27	31	33	40	57	33	32	28	30	28	30	38	47	43	40	39	39	37
1	Kasegaluk Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Point Barrow, Plover Islands	13	25	11	13	9	7	5	4	3	2	3	2	2	2	2	2	1	:	17	10	4	3	2	2	1	8	4	2	1	1	1
3	Thetis and Jones Islands	:	:	1	1	2	3	5	8	8	15	7	8	5	2	3	:	1	:	:	2	6	11	9	4	:	:	6	21	13	5	1
4	Cottle & Return Islands, West Dock	:	:	:	:	1	1	2	2	3	6	3	8	2	1	2	:	:	:	:	1	2	4	4	1	:	:	1	4	19	4	1
5	Midway Islands	:	:	:	:	:	:	:	:	1	1	1	4	1	:	1	:	:	:	:	:	:	1	1	1	:	:	:	:	2	3	1
6	Cross and No Name Islands	:	:	:	:	:	:	:	:	1	1	1	5	1	1	2	1	1	:	:	:	:	1	2	1	:	:	:	1	2	8	2
7	Endicott Causeway	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1	7	:
8	McClure Islands	:	:	:	:	:	:	:	:	:	:	1	3	1	1	2	:	:	:	:	:	:	:	1	1	:	:	:	:	1	16	1
9	Stockton Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	2	:	1	:	:	:	:	:	:	1	:	:	:	:	:	3	2
10	Tigvariak Island	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
11	Maguire Islands	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	1	6
12	Flaxman Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	:	:	:	:	:	:	:	1	:	:	:	:	1	6
13	Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	4	:	:	:	:	:	:	1	2	:	:	:	:	:	1
14	Anderson Point Barrier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	1	:	:	:	:	:	:
15	Arey and Barter Islands, Bernard Spit	:	:	:	:	:	:	:	:	:	:	1	1	1	1	3	3	8	4	:	:	:	:	1	2	7	:	:	:	:	2	3
16	Jago and Tapkaurak Spits	:	:	:	:	:	:	:	:	1	1	1	1	1	2	2	3	5	9	:	:	:	:	1	1	6	:	:	:	1	1	2
17	Angun and Beaufort Lagoons	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	8	:	:	:	:	:	:	1	:	:	:	:	:	:
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	1	11	:	:	:	:	:	1	2	:	:	:	:	:	1
19	Chukchi Spring Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spring Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spring Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spring Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spring Lead 5	3	2	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	1	:	:	:	:	:
24	Beaufort Spring Lead 6	25	20	13	11	9	6	5	3	4	2	3	2	3	3	2	2	1	:	25	12	6	3	3	3	1	11	3	2	2	1	1
25	Beaufort Spring Lead 7	18	27	12	12	8	7	5	3	4	3	3	2	3	2	2	2	1	:	32	12	5	3	3	2	1	12	3	2	2	1	1
26	Beaufort Spring Lead 8	6	7	22	13	19	11	8	5	7	5	5	3	4	4	2	3	2	:	10	16	8	6	4	3	2	10	6	6	3	2	3
27	Beaufort Spring Lead 9	5	8	20	17	18	15	9	6	7	5	5	3	4	4	3	3	2	:	11	22	9	6	4	3	2	16	7	7	4	2	3
28	Beaufort Spring Lead 10	1	1	4	5	13	12	27	16	17	12	11	7	8	5	5	4	3	:	1	11	23	12	8	6	4	3	20	10	11	6	5
29	Ice/Sea Segment 1	4	8	2	3	1	1	1	:	:	:	:	:	:	:	:	:	:	:	5	2	1	:	:	:	:	4	1	:	:	:	:
30	Ice/Sea Segment 2	1	2	2	7	2	6	2	2	1	1	:	:	:	:	:	:	:	:	2	3	2	1	:	:	:	5	2	1	:	:	:
31	Ice/Sea Segment 3	:	:	1	1	1	4	3	7	2	3	1	1	1	:	:	:	:	:	:	1	3	3	1	:	1	:	6	3	1	:	:
32	Ice/Sea Segment 4	:	:	:	:	:	:	1	1	4	7	5	3	2	1	1	:	:	:	:	:	2	10	5	1	:	:	1	5	6	1	:
33	Ice/Sea Segment 5	:	:	:	:	:	:	:	:	:	1	1	6	4	1	2	:	:	:	:	:	:	:	6	2	:	:	:	:	1	5	1
34	Ice/Sea Segment 6	:	:	:	:	:	:	:	:	:	:	:	1	1	1	8	1	5	:	:	:	:	:	:	3	2	:	:	:	:	1	7
35	Ice/Sea Segment 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	4	3	:	:	:	:	:	1	6	:	:	:	:	:	1
36	Ice/Sea Segment 8	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	1	:	3	:	:	:	:	:	:	1	:	:	:	:	:	:
37	Ice/Sea Segment 9	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	1	2	:	:	:	:	1	1	1	:	:	:	:	1	:
38	Point Hope Subsistence Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Point Lay Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wainwright Subsistence Area	2	1	1	1	1	:	:	:	:	:	1	:	:	1	:	1	1	:	2	1	:	:	:	1	:	1	:	:	:	:	:
41	Barrow Subsistence Area 1	4	3	2	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	4	2	:	:	:	:	:	2	:	:	:	:	:
42	Barrow Subsistence Area 2	5	10	4	5	4	3	3	2	3	1	2	1	2	2	2	2	2	:	6	4	3	1	1	3	1	8	3	4	1	1	1
43	Nuiqsut Subsistence Area	:	:	:	:	:	:	:	:	:	1	1	5	2	1	1	:	:	:	:	:	:	:	2	1	:	:	:	:	1	4	1
44	Kaktovik Subsistence Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	4	:	:	:	:	:	:	4	:	:	:	:	:	1

Note Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-41 (continued) Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	:	:	:	:	:	1	1	:	:	:	:	:	1
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	7	4	4	2	3	1	2	1	2	1	1	1	1	1	1	:	:	:	6	2	2	2	1	:	:	3	1	2	1	1	:
49	Hanna's Shoal Polynya	16	10	10	7	6	5	3	2	2	1	1	1	2	1	1	:	:	:	14	7	3	2	2	1	:	6	2	1	1	1	1
50	Ice/Sea Segment 12	6	4	3	2	2	1	1	1	2	1	2	1	1	1	1	1	:	:	5	2	1	2	1	1	:	4	:	1	1	:	:
51	Ice/Sea Segment 13	6	4	4	3	3	1	2	1	1	1	1	:	1	1	1	2	1	:	5	2	1	1	1	1	1	4	1	1	1	:	1
52	Ice/Sea Segment 14	25	17	15	10	10	6	5	3	4	2	3	1	2	2	1	3	1	1	19	11	5	3	3	1	3	10	4	4	2	1	2
53	Ice/Sea Segment 15	9	13	27	59	38	57	21	18	16	13	12	8	9	7	7	6	5	1	14	74	22	14	12	6	4	31	25	15	9	4	6
54	Ice/Sea Segment 16a	4	4	9	11	17	31	65	51	49	38	29	21	20	11	12	6	5	1	4	18	73	42	27	12	5	7	56	39	28	16	7
55	Ice/Sea Segment 17	2	2	4	4	7	8	20	19	50	58	60	41	34	17	18	7	5	1	2	6	27	**	63	18	4	2	9	40	56	27	11
56	Ice/Sea Segment 18a	:	:	:	1	1	1	3	2	5	7	10	57	44	25	40	6	6	1	:	1	3	7	50	52	4	:	2	4	10	55	18
57	Ice/Sea Segment 19	:	:	1	:	1	:	1	:	1	1	2	6	3	8	62	26	64	9	:	1	1	2	3	25	66	1	1	1	2	10	79
58	Ice/Sea Segment 20a	2	1	2	:	2	:	1	:	1	1	2	5	6	15	19	50	34	23	1	1	1	1	3	20	42	1	:	:	1	7	25
59	Ice/Sea Segment 21	2	1	2	:	1	:	1	:	1	:	1	2	3	8	9	18	14	17	2	1	:	1	1	9	17	:	:	:	:	2	10
60	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	:	1	2	3	6	8	11	8	8	:	:	:	:	2	8	9	:	:	:	:	3	7
61	Ice/Sea Segment 22	:	:	:	:	:	:	:	:	:	1	1	3	3	8	7	9	7	4	:	:	1	1	2	7	7	:	:	1	1	4	8
62	Ice/Sea Segment 24a	:	:	:	:	:	:	:	:	:	1	1	2	2	4	4	5	5	4	:	:	:	1	1	4	5	:	:	:	1	3	4
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	2	1	1	1	1	:	1	:	:	:	1	:	:	1	1	2	1	:	2	1	1	:	:	1	1	1	:	:	:	:	:
65	ERA 1	3	10	8	25	8	10	6	5	4	3	3	2	3	3	3	2	2	:	13	11	7	4	3	2	1	28	7	3	3	1	2
66	ERA 2	1	1	4	6	6	22	13	23	13	15	9	8	6	5	5	4	3	1	1	8	14	14	9	5	3	4	24	15	10	4	5
67	Ice/Sea Segment 16b	1	2	3	6	7	14	26	25	22	22	14	12	10	5	7	4	3	1	1	8	31	21	14	6	4	5	27	23	19	11	5
68	Harrison Bay	:	:	:	:	1	3	2	10	3	4	2	3	2	1	2	1	1	:	:	1	3	3	3	2	1	:	19	4	3	4	1
69	Harrison Bay/Colville Delta	:	:	1	1	2	3	5	14	6	11	6	4	4	2	2	1	:	:	:	3	6	8	5	2	:	1	6	18	7	2	1
70	ERA 3	1	1	1	2	3	6	11	16	18	30	14	15	10	6	8	2	3	:	1	4	18	26	16	7	2	1	8	39	20	14	5
71	Simpson Lagoon	:	:	1	1	2	3	5	7	6	12	6	8	4	2	3	:	:	:	:	2	5	9	8	3	:	1	6	19	19	4	1
72	Gwyder Bay	:	:	:	:	:	:	1	:	1	1	:	2	:	:	:	:	:	:	:	:	1	1	1	:	:	:	:	1	7	1	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
74	Cross Island ERA	:	:	:	:	:	1	1	1	2	4	3	23	5	3	6	1	1	:	:	:	2	4	7	4	1	:	1	2	6	27	5
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	:	:	1	1	7	1	1	2	:	:	:	:	:	:	:	2	1	:	:	:	:	2	13	2
76	Water over Boulder Patch 2	:	:	:	:	:	:	:	:	:	1	1	7	1	1	2	:	:	:	:	:	:	:	1	1	:	:	:	:	1	23	2
77	Foggy Island Bay	:	:	:	:	:	:	:	:	:	1	1	3	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1	16	1
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1
79	ERA 4	:	:	:	:	:	1	1	:	1	1	1	13	2	2	6	1	1	:	:	:	1	2	3	3	:	:	1	1	2	17	3
80	Ice/Sea Segment 18b	:	:	:	:	:	1	1	1	3	4	4	25	16	8	15	2	3	:	:	:	2	4	19	17	1	:	1	2	6	25	8
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	1	:
82	ERA 5	:	:	:	:	:	:	:	:	:	:	:	1	:	1	4	3	23	3	:	:	:	:	1	2	7	:	:	:	:	2	6
83	Kaktovik ERA	:	:	:	:	:	:	:	:	1	1	1	3	2	3	6	9	23	24	:	:	:	1	2	4	26	:	:	:	1	4	8
84	Ice/Sea Segment 20b	:	:	:	:	:	:	:	:	1	:	1	3	2	5	7	18	17	14	:	:	:	1	2	6	19	:	:	:	1	6	10
85	ERA 6	:	:	:	:	:	:	:	:	:	:	:	1	1	2	3	5	5	22	:	:	:	:	1	3	4	:	:	:	:	:	2
86	ERA 7	:	:	:	:	:	:	:	:	:	:	:	1	1	2	3	4	3	7	:	:	:	:	1	3	4	:	:	:	:	1	2
87	ERA 8	:	:	:	:	:	:	:	:	:	:	:	1	1	4	5	5	5	5	:	:	:	:	1	4	5	:	:	:	:	2	5
88	Ice Sea Segment 24b	:	:	:	:	:	:	:	:	:	:	1	1	2	4	3	5	5	3	:	:	:	:	1	3	5	:	:	:	:	2	4

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-42 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
?	La:d	39	54	42	54	43	54	45	60	45	52	43	55	46	51	55	61	67	81	44	47	44	49	47	52	66	61	60	57	57	61	62
1	Kasegaluk Lagoo:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2	Poi:t Barrow, Plover Isla:ds	16	29	14	16	12	10	8	5	6	3	5	3	5	4	3	3	2	:	20	13	7	5	4	4	1	12	6	3	2	2	2
3	Thetis a:d Jo:es Isla:ds	1	1	2	1	4	4	7	11	11	20	12	12	9	4	5	2	1	:	1	4	8	15	15	5	1	:	8	27	20	8	2
4	Cottle & Retur: Isla:ds, West Dock	:	:	:	:	1	1	2	3	4	8	5	11	4	2	3	1	1	:	:	1	2	6	7	1	1	:	1	5	24	8	1
5	Midway Isla:ds	:	:	:	:	:	:	:	:	1	2	1	5	1	1	1	:	:	:	:	:	:	1	1	1	:	:	:	1	2	4	1
6	Cross a:d :o :ame Isla:ds	:	:	:	:	:	:	:	:	1	2	1	6	2	2	3	1	1	:	:	:	:	2	3	2	:	:	:	1	2	9	2
7	E:dicott Causeway	:	:	:	:	:	:	:	:	:	1	1	3	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	1	9	:
8	McClure Isla:ds	:	:	:	:	:	:	:	:	:	:	1	4	1	1	3	1	1	:	:	:	:	:	1	1	:	:	:	:	1	17	2
9	Stockto: Isla:ds	:	:	:	:	:	:	:	:	:	:	:	2	1	1	3	1	1	:	:	:	:	:	:	1	1	:	:	:	:	3	4
10	Tigvariak Isla:d	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1
11	Maguire Isla:ds	:	:	:	:	:	:	:	:	:	:	:	1	1	:	2	:	1	:	:	:	:	:	:	1	:	:	:	:	:	1	8
12	Flaxma: Isla:d	:	:	:	:	:	:	:	:	:	:	:	1	:	1	2	1	2	:	:	:	:	:	:	1	1	:	:	:	:	1	8
13	Barrier Isla:ds	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	5	1	:	:	:	:	:	1	3	:	:	:	:	:	1
14	A:derso: Poi:t Barrier Isla:ds	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	1	:	:	:	:	:	:
15	Arey a:d Barter Isla:ds, Ber:ard Spit	:	:	:	:	:	:	:	:	:	:	1	1	1	2	4	4	10	5	:	:	:	:	1	3	9	:	:	:	:	2	5
16	Jago a:d Tapkaurak Spits	:	:	:	:	:	:	:	1	1	1	1	2	2	3	3	5	8	12	:	:	:	:	1	3	10	:	:	:	1	1	3
17	A:gu: a:d Beaufort Lagoo:s	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	10	:	:	:	:	:	1	2	:	:	:	:	:	1
18	Icy Reef	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	3	16	:	:	:	:	:	2	4	:	:	:	:	:	1
19	Chukchi Spri:g Lead 1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
20	Chukchi Spri:g Lead 2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
21	Chukchi Spri:g Lead 3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Chukchi Spri:g Lead 4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Chukchi Spri:g Lead 5	3	3	2	1	1	1	1	:	1	:	:	:	:	:	:	:	:	:	3	1	:	1	:	:	:	1	:	:	:	:	:
24	Beaufort Spri:g Lead 6	25	22	14	11	9	6	6	3	4	3	4	2	3	3	2	2	1	:	25	12	6	4	4	3	1	11	3	2	2	1	1
25	Beaufort Spri:g Lead 7	18	29	13	13	9	8	6	4	5	3	4	2	3	2	2	2	1	:	33	13	6	4	3	2	1	12	4	3	2	1	1
26	Beaufort Spri:g Lead 8	6	8	23	14	19	12	9	5	7	5	5	3	4	4	2	4	2	:	11	16	9	7	4	3	2	11	7	7	4	2	3
27	Beaufort Spri:g Lead 9	6	10	21	19	19	16	11	7	8	6	6	4	4	4	3	3	2	:	12	23	11	7	4	4	2	18	8	7	4	2	3
28	Beaufort Spri:g Lead 10	1	1	4	6	14	14	29	18	19	14	13	8	10	5	5	5	3	:	1	12	25	15	10	6	4	4	21	12	12	6	5
29	Ice/Sea Segme:t 1	4	8	3	3	2	2	1	1	1	:	1	:	:	:	:	:	:	:	6	2	1	:	:	:	:	4	1	:	:	:	:
30	Ice/Sea Segme:t 2	2	2	2	7	3	6	2	2	2	1	1	:	1	1	1	1	1	1	2	4	2	1	1	1	1	5	2	2	:	:	1
31	Ice/Sea Segme:t 3	:	:	1	1	1	4	3	7	2	3	1	1	1	:	:	1	1	1	:	1	3	3	1	1	2	:	6	3	1	:	:
32	Ice/Sea Segme:t 4	:	:	:	:	:	1	1	1	4	7	5	3	2	1	1	:	:	:	:	:	3	10	5	1	:	:	1	5	6	1	1
33	Ice/Sea Segme:t 5	:	:	:	:	:	:	:	:	:	1	1	6	4	1	2	:	:	:	:	:	:	:	6	2	:	:	:	:	1	5	1
34	Ice/Sea Segme:t 6	:	:	:	:	:	:	:	:	:	:	:	1	1	1	8	1	5	:	:	:	:	:	:	3	2	:	:	:	:	1	7
35	Ice/Sea Segme:t 7	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	4	3	:	:	:	:	:	1	7	:	:	:	:	:	1
36	Ice/Sea Segme:t 8	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	1	1	3	:	:	:	:	:	:	1	:	:	:	:	:	1
37	Ice/Sea Segme:t 9	:	:	:	:	:	:	:	:	:	:	1	1	1	1	2	2	2	3	:	:	:	:	1	1	2	:	:	:	:	1	1
38	Poi:t Hope Subsiste:ce Are	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
39	Poi:t Lay Subsiste:ce Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
40	Wai:wright Subsiste:ce Area	2	2	1	1	1	:	1	:	1	1	1	:	1	2	1	2	1	:	2	1	1	1	1	1	1	2	1	:	1	1	1
41	Barrow Subsiste:ce Area 1	4	3	2	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	4	2	:	:	:	:	:	2	:	:	:	:	:
42	Barrow Subsiste:ce Area 2	6	11	5	6	5	4	4	3	4	2	4	2	4	4	4	4	3	1	6	5	4	3	2	5	2	9	3	6	1	1	3
43	:uiqsut Subsiste:ce Area	:	:	:	:	:	:	:	:	:	1	1	5	2	1	1	:	:	:	:	:	:	1	2	1	:	:	:	:	1	5	1
44	Kaktovik Subsiste:ce Area	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	3	4	:	:	:	:	:	:	4	:	:	:	:	:	1

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-42 (continued) Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
45	Whale Concentration Area	:	:	:	:	:	:	1	:	:	:	:	1	1	1	1	2	1	1	:	:	:	:	1	1	2	:	1	:	:	:	1
46	Herald Shoal Polynya	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
47	Ice/Sea Segment 10	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Ice/Sea Segment 11	7	5	4	3	3	1	2	1	2	1	2	1	1	1	1	:	:	:	6	3	2	2	2	1	:	3	1	3	1	1	:
49	Hanna's Shoal Polynya	17	11	11	8	7	5	3	3	3	3	2	2	2	1	1	1	:	:	14	8	4	3	2	1	:	7	2	3	1	1	1
50	Ice/Sea Segment 12	6	5	3	3	2	1	2	1	2	1	2	1	1	2	1	1	:	:	6	2	1	2	1	1	1	5	:	1	1	:	1
51	Ice/Sea Segment 13	7	5	4	3	3	1	2	1	1	1	1	1	1	2	1	2	1	:	5	3	2	1	1	2	1	5	1	1	1	:	1
52	Ice/Sea Segment 14	26	18	16	11	11	7	6	4	5	3	4	2	3	3	2	4	2	1	20	12	6	4	4	2	3	11	5	5	3	1	3
53	Ice/Sea Segment 15	9	15	28	61	39	59	22	20	17	15	14	9	11	9	9	7	7	1	15	74	24	16	14	8	6	33	26	17	10	6	8
54	Ice/Sea Segment 16a	5	6	10	13	18	33	66	55	51	42	32	24	22	12	13	7	6	2	6	20	75	45	30	13	7	10	59	43	32	18	8
55	Ice/Sea Segment 17	3	2	4	5	8	9	21	22	51	61	60	44	35	18	20	7	6	1	3	7	28	**	65	20	5	3	11	43	58	30	12
56	Ice/Sea Segment 18a	:	:	1	1	1	2	3	2	6	8	10	59	44	25	41	6	7	1	1	1	3	8	50	52	4	1	2	4	11	58	19
57	Ice/Sea Segment 19	1	1	1	1	2	1	2	1	2	2	3	8	5	9	63	26	67	10	1	1	1	2	4	26	66	1	1	1	2	12	80
58	Ice/Sea Segment 20a	3	2	3	2	4	2	3	1	3	2	4	7	8	17	23	51	38	27	3	3	2	2	5	22	46	2	2	1	2	10	28
59	Ice/Sea Segment 21	2	2	2	:	2	:	1	1	1	1	2	3	4	9	11	21	18	22	3	1	1	1	3	10	20	:	:	1	1	4	12
60	Ice/Sea Segment 22	1	1	2	1	2	1	2	2	2	2	2	5	5	9	12	15	14	11	1	2	2	1	3	11	14	1	1	2	2	8	11
61	Ice/Sea Segment 22	1	1	2	1	3	2	3	3	4	4	5	7	7	12	12	12	11	5	1	3	4	4	5	10	11	1	2	4	3	8	13
62	Ice/Sea Segment 24a	1	1	1	1	1	1	2	1	3	3	4	5	6	8	7	7	9	6	1	1	2	3	4	7	8	1	2	3	3	6	7
63	Ledyard Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
64	Peard Bay	3	2	1	1	1	:	1	:	:	:	1	:	:	1	1	2	1	:	2	1	1	:	:	1	1	1	:	:	:	:	1
65	ERA 1	5	12	9	28	10	13	8	7	7	5	5	3	5	5	5	3	3	:	15	14	10	6	5	4	2	30	9	5	3	2	3
66	ERA 2	1	2	5	8	8	25	16	27	16	19	13	11	10	7	7	6	4	1	2	10	17	19	13	7	5	4	28	20	14	7	7
67	Ice/Sea Segment 16b	2	3	4	8	8	16	29	30	26	27	19	16	13	7	9	5	5	1	2	9	34	26	18	8	5	7	30	28	22	13	6
68	Harrison Bay	:	:	1	:	1	4	3	12	4	6	3	5	3	3	3	2	1	1	:	1	4	4	4	3	2	:	24	7	5	5	2
69	Harrison Bay/Colville Delta	:	:	2	2	3	5	8	18	9	15	9	6	6	3	2	1	:	:	:	4	9	13	8	3	1	1	9	23	11	4	1
70	ERA 3	1	1	2	3	4	7	13	20	21	36	18	20	14	8	10	4	4	1	1	5	20	31	21	9	3	3	11	45	26	16	6
71	Simpson Lagoon	1	1	2	1	4	4	7	10	9	17	10	12	8	4	4	1	1	:	1	3	7	13	13	4	1	1	8	23	26	7	2
72	Gwyder Bay	:	:	:	:	:	:	1	1	1	1	1	3	1	:	:	:	:	:	:	:	1	1	1	:	:	:	:	1	8	2	:
73	Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:
74	Cross Island ERA	:	:	:	1	:	1	1	1	3	5	4	26	7	4	8	2	2	:	:	:	2	5	8	6	1	:	1	2	7	31	6
75	Water over Boulder Patch 1	:	:	:	:	:	:	:	:	1	1	1	8	1	1	3	1	1	:	:	:	:	1	2	1	1	:	:	:	2	16	3
76	Water over Boulder Patch 2	:	:	:	:	:	:	:	:	1	1	1	8	1	1	3	1	1	:	:	:	:	:	2	1	:	:	:	:	2	27	3
77	Foggy Island Bay	:	:	:	:	:	:	:	:	:	1	1	4	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1	20	1
78	Mikkelsen Bay	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2
79	ERA 4	:	:	:	1	:	1	1	1	1	2	2	14	3	2	8	1	2	:	:	:	1	2	3	4	1	:	1	1	3	19	5
80	Ice/Sea Segment 18b	:	:	:	1	1	1	2	1	3	5	5	28	17	9	17	2	3	:	:	:	2	4	20	18	1	:	1	2	6	28	9
81	Simpson Cove	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	1	:
82	ERA 5	:	:	:	:	:	:	:	:	:	:	:	1	1	2	6	5	28	4	:	:	:	:	1	4	9	:	:	:	:	2	9
83	Kaktovik ERA	:	:	:	:	:	:	:	:	1	1	2	4	3	6	10	15	31	30	:	:	:	1	3	8	36	:	1	1	1	5	13
84	Ice/Sea Segment 20b	:	:	:	:	1	:	:	:	1	1	1	4	3	6	10	20	22	18	:	:	:	1	2	8	23	:	:	:	1	8	14
85	ERA 6	1	:	:	:	:	:	:	:	:	:	1	1	2	5	5	10	9	30	1	:	:	1	1	5	11	:	:	:	:	1	5
86	ERA 7	:	:	1	:	1	:	:	:	:	:	1	2	2	4	5	7	6	11	:	1	:	:	1	4	8	:	:	:	:	1	4
87	ERA 8	1	1	1	1	2	1	1	:	:	:	1	2	3	8	8	9	10	9	1	1	1	:	2	6	9	1	1	:	1	3	10
88	Ice Sea Segment 24b	:	:	1	1	1	1	1	1	1	1	2	3	5	7	6	7	8	6	1	1	1	1	3	6	8	1	1	1	1	5	6

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline.

Table A2-43 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
26	Dease Inlet	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
28	Cape Simpson	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:
29	Ikpikpuk River, Smith Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:
30	Drew Point, McLeod Point,	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
31	Lonely, Pitt Point, Pogik Bay	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
32	Cape Halkett	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:
33	Atigaru Point, Kogru River	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:
36	Oliktok Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	:	:	:
37	Milne Point, Simpson Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:
38	Kuparuk River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:
40	Foggy Island Bay, Kadleroshilik River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4
47	Kaktovik	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-44 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
25	Barrow, Elson Lagoon	1	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
26	Dease Inlet	1	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
27	Kurgorak Bay	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
28	Cape Simpson	:	1	:	2	:	1	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	4	:	:	:	:	:
29	Ikpikpuk River, Smith Bay	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	:	:	:	:	:
30	Drew Point, McLeod Point,	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:
31	Lonely, Pitt Point, Pogik Bay	:	:	:	1	1	2	:	1	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:
32	Cape Halkett,	:	:	:	:	:	1	1	2	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	3	1	:	:	:
33	Atigaru Point, Kogru River	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	1	:	:	:
34	Fish Creek	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:
35	Colville River	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:
36	Oliktok Point	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	6	:	:	:
37	Milne Point, Simpson Lagoon	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	1	:
38	Kuparuk River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:
40	Foggy Island Bay, Kadleroshilik River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4
43	Brownlow Point, Canning River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
45	Anderson Point, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Arey Island, Barter Island,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	1	:	:	:	:	:	:
47	Kaktovik	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	:	2	:	:	:	:	:	:
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
52	Clarence Lagoon, Backhouse River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-45 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
24	Walakpa Bay, Walakpa River	2	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
25	Barrow, Elson Lagoon	3	4	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	3	1	:	:	:	:	:	1	:	:	:	:	:
26	Dease Inlet	1	3	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	1	:	:	:	:	:
27	Kurgorak Bay	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	1	:	:	:	:	:
28	Cape Simpson	:	2	1	3	1	1	1	1	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	5	1	:	:	:	:
29	Ikpikpuk River, Smith Bay	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	:	:	:	:	:
30	Drew Point, McLeod Point	:	:	:	2	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:
31	Lonely, Pitt Point, Pogik Bay	:	:	1	1	1	3	1	1	1	1	:	:	:	:	:	:	:	:	:	1	1	1	:	:	:	1	1	1	:	:	:
32	Cape Halkett	:	:	:	:	:	2	1	3	1	1	:	:	:	:	:	:	:	:	:	1	2	1	1	:	:	:	4	1	1	:	:
33	Atigaru Point, Kogru River	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	1	:	:	:
34	Fish Creek	:	:	:	:	:	:	1	2	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1	:	:	:	:
35	Colville River	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	2	:	:	:
36	Oliktok Point	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	6	:	:	:
37	Milne Point, Simpson Lagoon	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	1	:
38	Kuparuk River	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:
40	Foggy Island Bay, Kadleroshilik River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:
41	Bullen Point, Point Gordon, Reliance Pt.	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	4
43	Brownlow Point, Canning River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1
45	Anderson Point, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Arey Island, Barter Island,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	1	:	:	:	:	:	:
47	Kaktovik	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	2	:	:	:	:	:	:	3	:	:	:	:	:	:
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	1	:	:	:	:	:	:
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
52	Clarence Lagoon, Backhouse River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
53	Komakuk Beach, Fish Creek	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-46 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
23	Nulavik	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
24	Walakpa Bay, Walakpa River	2	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	1	:	:	:	:	:
25	Barrow, Elson Lagoon	6	7	3	3	2	2	1	1	1	:	1	:	:	:	:	:	:	:	5	3	1	:	1	:	:	1	:	:	:	:	:
26	Dease Inlet	2	5	2	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	4	1	:	:	:	:	:	1	:	:	:	:	:
27	Kurgorak Bay	1	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	1	:	:	:	:	:
28	Cape Simpson	:	2	1	4	1	2	1	1	1	:	:	:	:	:	:	:	:	:	2	1	1	1	:	:	:	8	1	:	:	:	:
29	Ikpikpuk River, Smith Bay	:	:	1	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	5	:	:	:	:	:
30	Drew Point, McLeod Point,	:	:	1	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	2	1	:	:	:	:
31	Lonely, Pitt Point, Pogik Bay	:	:	1	2	1	4	2	2	1	1	1	1	1	:	:	:	:	:	:	1	2	1	1	:	:	1	2	1	1	:	1
32	Cape Halkett	:	:	1	1	1	3	1	4	1	2	1	1	1	:	1	:	:	:	:	1	2	2	1	1	:	:	6	3	2	1	:
33	Atigaru Point, Kogru River	:	:	:	:	:	1	:	2	:	1	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	4	1	1	:	:
34	Fish Creek	:	:	:	:	:	:	1	2	:	1	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1	:	:	:	:
35	Colville River	:	:	:	:	:	:	:	2	:	1	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	3	1	:	:
36	Oliktok Point	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	1	7	:	:	:
37	Milne Point, Simpson Lagoon	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1	5	1	:
38	Kuparuk River	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	:	:
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	:
40	Foggy Island Bay, Kadleroshilik River,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	:
41	Bullen Point, Point Gordon, Reliance Pt.	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	5
43	Brownlow Point, Canning River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	2	:	:	:	:	:	:	:	1	:	:	:	:	:	1
44	Collinson Point, Konganevik Point,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
45	Anderson Point, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Arey Island, Barter Island,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	:	:	:	:	:	:	:	1	:	:	:	:	:	1
47	Kaktovik	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	3	:	:	:	:	1	:	3	:	:	:	:	:	:
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	:	:	:	:	:	:	1	:	:	:	:	:	:
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	:	:	:	:	:	:	:	:	:	:	:	:	:
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:
52	Clarence Lagoon, Backhouse River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	:	:	:	:	:	:	1	:	:	:	:	:	:
53	Komakuk Beach, Fish Creek	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	:	:	:	:	:	:	:	:	:	:	:	:	:
54	Nunaluk Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
55	Herschel Island	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-47 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
19	Wainwright, Wainwright Inlet	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
22	Skull Cliff	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	Nulavik	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
24	Walakpa Bay, Walakpa River	3	3	1	2	1	1	1	:	1	:	:	:	1	1	:	:	:	:	3	1	1	:	1	:	1	1	:	:	:	:	1
25	Barrow, Elson Lagoon	12	14	8	7	6	4	4	2	2	2	2	2	2	2	2	2	1	:	11	8	3	2	2	2	1	5	2	1	1	1	1
26	Dease Inlet	4	9	4	4	3	2	1	1	1	1	1	:	:	1	:	:	:	:	7	3	1	1	1	1	:	2	1	1	:	:	:
27	Kurgorak Bay	2	4	2	3	1	1	1	1	1	:	:	:	:	:	:	:	:	:	2	2	1	:	:	:	:	2	1	:	:	:	:
28	Cape Simpson	1	5	3	11	3	4	2	2	1	1	1	:	1	1	:	:	:	:	3	4	2	1	1	:	:	21	3	1	:	:	:
29	Ikpikpuk River, Smith Bay	:	1	1	3	2	2	1	1	1	1	:	:	:	:	:	:	:	:	1	2	:	1	1	:	1	8	1	:	:	:	:
30	Drew Point, McLeod Point,	1	1	1	4	2	2	2	1	1	1	1	1	1	1	1	:	:	:	1	1	2	1	1	1	:	4	1	1	1	:	1
31	Lonely, Pitt Point, Pogik Bay	1	2	3	5	5	11	5	6	4	6	4	3	3	3	3	2	1	:	2	5	4	5	4	2	2	2	5	5	4	1	3
32	Cape Halkett	:	:	1	1	1	5	4	10	4	6	3	3	2	1	2	1	1	:	:	2	5	5	3	2	1	:	12	6	4	5	1
33	Atigaru Point, Kogru River	:	:	:	:	:	1	1	4	1	1	1	1	1	:	1	:	:	:	:	:	1	1	1	1	:	:	6	1	1	1	:
34	Fish Creek	:	:	:	:	1	1	1	4	1	1	1	1	1	:	:	:	:	:	:	1	1	2	1	:	:	:	2	1	1	:	:
35	Colville River	:	:	:	:	1	1	2	5	2	4	2	2	2	1	1	:	:	:	:	1	2	3	2	1	:	:	1	7	3	1	:
36	Oliktok Point	:	:	:	:	1	1	2	3	2	3	2	1	1	1	1	:	:	:	:	1	3	3	2	1	:	:	3	10	2	1	:
37	Milne Point, Simpson Lagoon	:	:	:	:	1	1	1	2	2	5	2	4	2	1	1	:	:	:	:	1	1	3	3	:	:	:	2	3	13	1	:
38	Kuparuk River	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	1	:
39	Point Brower, Prudhoe Bay	:	:	:	:	:	:	:	:	:	1	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	11	:
40	Foggy Island Bay, Kadleroshilik River	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1	5	:
41	Bullen Point, Point Gordon, Reliance Pt.	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3
42	Point Hopson, & Sweeney, Staines River	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	1	:	:	:	:	:	:	1	1	:	:	:	:	1	7
43	Brownlow Point, Canning River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	4	1	:	:	:	:	:	1	2	:	:	:	:	:	1
44	Collinson Point, Konganevik Point,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	1	:
45	Anderson Point, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:	:
46	Arey Island, Barter Island,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	4	1	:	:	:	:	:	1	3	:	:	:	:	1	2
47	Kaktovik	:	:	:	:	:	:	:	:	:	:	1	1	1	1	2	3	5	6	:	:	:	1	1	2	6	:	:	:	1	1	2
48	Griffin Point, Oruktalik Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	2	6	:	:	:	:	:	:	2	:	:	:	:	:	1
49	Angun Point, Beaufort Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	5	:	:	:	:	:	:	:	:	:	:	:	:	:
50	Icy Reef, Kongakut River, Siku Lagoon	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	8	:	:	:	:	:	:	1	:	:	:	:	:	:
51	Demarcation Bay, Demarcation Point	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	7	:	:	:	:	:	1	1	:	:	:	:	:	1
52	Clarence Lagoon, Backhouse River	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	2	8	:	:	:	:	:	1	2	:	:	:	:	:	1
53	Komakuk Beach, Fish Creek	:	:	:	:	:	:	:	:	:	:	:	1	1	1	2	2	2	5	:	:	:	:	:	2	2	:	:	:	:	:	1
54	Nunaluk Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	:	:	:	:	:	1	:	:	:	:	:	:	:
55	Herschel Island	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	1	2	:	:	:	:	:	1	1	:	:	:	:	:	1
56	Ptarmigan Bay	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	1
57	Roland & Phillips Bay, Kay Point	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	1	1	:	:	:	:	:	:	1	1	:	:	:	:	2	:
59	Shingle Point	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:
60	Trent and Shoalwater Bays	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
63	Outer Shallow Bay, Olivier Islands	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	:	:	:	:	:	:	1	:	:	:	:	:	1
64	Middle Channel, Gary Island	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	:	:	:	:	:	1	1	:	:	:	:	:	1
65	Kendall Island	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	:	:	:	:	:	1	1	:	:	:	:	:	1
66	North Point, Pullen Island	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	:	:	:	:	:	:	1	:	:	:	:	1	1

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-48 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
19	Wai:wright, Wai:wright I:let	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
21	Peard Bay, Poi:t Fra:kli:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:
22	Skull Cliff	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
23	:ulavik	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
24	Walakpa Bay, Walakpa River	3	4	2	2	1	1	1	:	1	1	1	1	1	1	1	1	1	:	3	1	1	1	1	1	1	2	:	:	1	:	1
25	Barrow, Elso: Lagoo:	14	17	10	9	8	6	5	3	4	2	4	3	3	3	3	2	1	:	13	10	5	3	3	3	1	7	4	2	2	2	2
26	Dease I:let	5	11	4	5	3	3	2	1	1	1	1	1	1	1	1	1	1	:	8	3	2	1	1	2	:	4	2	1	1	:	:
27	Kurgorak Bay	2	5	2	3	2	2	1	1	1	:	1	:	1	1	:	1	:	:	3	2	1	1	:	1	:	3	1	1	:	:	:
28	Cape Simpso:	2	6	4	13	5	5	3	2	2	2	2	1	2	1	1	:	1	:	4	6	3	3	1	1	:	23	4	1	1	:	1
29	Ikpikpuk River, Smith Bay	1	1	2	3	2	3	2	1	1	1	1	1	1	1	1	:	1	:	1	2	1	1	1	1	1	10	2	1	1	:	1
30	Drew Poi:t, McLeod Poi:t,	1	2	3	6	3	4	3	2	2	2	2	2	2	2	2	1	1	:	2	3	3	2	2	2	:	5	2	2	1	1	1
31	Lo:ely, Pitt Poi:t, Pogik Bay	2	2	5	6	6	14	8	9	7	8	6	5	6	5	4	4	3	:	3	7	6	7	6	4	3	2	8	8	6	3	5
32	Cape Halkett	:	:	2	1	2	7	6	13	6	9	5	6	5	3	4	3	2	1	1	3	8	8	6	5	3	:	15	10	7	6	2
33	Atigaru Poi:t, Kogru River	:	:	1	:	1	2	2	5	2	2	1	2	1	1	2	:	1	:	:	:	2	2	1	1	:	:	8	1	1	1	1
34	Fish Creek	:	:	1	1	1	1	2	6	2	2	1	1	1	1	1	1	:	:	:	1	2	2	2	1	:	:	3	2	1	1	:
35	Colville River	:	:	1	:	1	1	2	6	3	6	3	3	3	1	1	:	:	:	:	1	2	4	3	1	:	:	3	10	5	2	:
36	Oliktok Poi:t	:	:	1	1	1	2	3	4	3	5	3	2	2	1	1	:	:	:	:	2	3	4	3	1	:	1	4	11	3	1	:
37	Mil:e Poi:t, Simpso: Lagoo:	:	:	:	:	1	1	2	3	3	6	3	6	3	2	2	:	:	:	:	1	2	4	5	1	:	:	2	4	16	3	1
38	Kuparuk River	:	:	:	:	:	:	:	:	1	1	1	2	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	:	6	2	:
39	Poi:t Brower, Prudhoe Bay	:	:	:	:	:	:	:	1	1	1	1	4	:	:	:	:	:	:	:	:	:	1	1	:	:	:	:	1	1	13	1
40	Foggy Isla:d Bay, Kadleroshilik River,	:	:	:	:	:	:	:	:	:	1	1	1	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	1	7	:
41	Bulle: Poi:t, Poi:t Gordo:, Relia:ce Pt.	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	4
42	Poi:t Hopso:, & Swee:ey, Stai:es River	:	:	:	:	:	:	:	:	:	:	:	1	1	1	2	1	1	:	:	:	:	:	:	1	1	:	:	:	:	1	8
43	Brow:low Poi:t, Ca::i:g River	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	2	6	1	:	:	:	:	:	1	3	:	:	:	:	:	2
44	Colli:so: Poi:t, Ko:ga:evik Poi:t,	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	1	:
45	A:derso: Poi:t, Sadlerochit River	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	1	:	:	:	:	:	:
46	Arey Isla:d, Barter Isla:d,	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	5	1	:	:	:	:	:	1	3	:	:	:	:	1	2
47	Kaktovik	:	:	:	:	:	:	:	:	1	1	1	2	1	2	3	5	8	7	:	:	:	1	2	3	9	:	:	:	1	2	4
48	Griffi: Poi:t, Oruktalik Lagoo:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	2	2	8	:	:	:	:	:	1	3	:	:	:	:	:	2
49	A:gu: Poi:t, Beaufort Lagoo:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	6	:	:	:	:	:	:	1	:	:	:	:	:	1
50	Icy Reef, Ko:gakut River, Siku Lagoo:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	2	11	:	:	:	:	:	1	3	:	:	:	:	:	1
51	Demarcatio: Bay, Demarcatio: Poi:t	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	3	3	9	:	:	:	:	:	2	3	:	:	:	:	:	2
52	Clare:ce Lagoo:, Backhouse River	:	:	:	:	:	:	:	:	:	:	:	1	1	2	2	4	5	11	1	:	:	:	1	2	6	:	:	:	:	:	2
53	Komakuk Beach, Fish Creek	:	:	:	:	:	:	:	:	:	:	:	1	1	2	2	4	3	6	:	:	:	:	1	3	4	:	:	:	:	1	2
54	:u:aluk Spit	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	2	:	:	:	:	:	1	1	:	:	:	:	:	1
55	Herschel Isla:d	:	:	:	:	:	:	1	1	1	1	1	1	1	2	2	2	1	2	:	1	1	1	1	2	1	:	1	1	:	1	2
56	Ptarmiga: Bay	:	:	:	:	:	:	:	:	1	:	1	1	1	1	1	1	1	1	:	:	:	:	1	1	1	:	:	:	:	1	1
57	Rola:d & Phillips Bay, Kay Poi:t	:	:	:	:	:	:	:	:	:	:	:	2	1	1	1	1	1	1	:	:	:	:	1	1	1	:	:	:	:	5	1
58	Sabi:e Poi:t	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:
59	Shi:gle Poi:t	1	:	1	:	1	:	:	:	:	:	:	:	:	1	1	1	:	:	:	:	:	:	:	1	1	:	:	:	:	:	:
60	Tre:t a:d Shoalwater Bays	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	1	1	:	:	:	:	:	1	1	:	:	:	:	:	1
62	Shallow Bay, West Cha::el	:	:	1	:	1	:	:	:	:	:	:	:	:	1	1	1	2	1	:	:	:	:	:	:	:	:	:	:	:	:	1
63	Outer Shallow Bay, Olivier Isla:ds	:	:	:	:	:	:	:	:	:	:	:	:	:	2	2	2	2	2	:	:	:	:	:	1	1	:	:	:	:	:	2
64	Middle Cha::el, Gary Isla:d	:	:	:	:	:	:	:	:	:	:	:	1	1	2	1	1	3	1	:	:	:	:	:	1	3	:	:	:	:	1	2
65	Ke:dall Isla:d	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	2	2	3	:	:	:	:	:	1	1	:	:	:	:	1	1
66	:orth Poi:t, Pulle: Isla:d	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	:	:	:	:	:	1	2	:	:	:	:	1	2

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-49 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13

Notes: All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A2-50 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13

Notes: All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A2-51 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
21	Chukchi Sea	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
22	Beaufort Sea	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
23	Beaufort Sea	2	1	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	1	1	:	:	:	:
24	Beaufort Sea	2	1	1	1	1	1	1	:	:	:	:	:	:	:	:	:	:	:	1	1	1	:	:	:	:	1	:	:	:	:	:
25	Beaufort Sea	1	1	2	1	2	2	2	1	1	:	1	:	:	:	:	:	:	:	1	2	1	:	:	:	:	1	1	:	:	:	:
26	Beaufort Sea	1	1	1	1	2	1	2	1	1	1	1	:	:	:	:	:	:	:	1	1	2	1	1	:	:	:	1	:	:	:	:
27	Beaufort Sea	1	:	1	1	1	1	1	:	1	:	1	:	:	:	:	:	:	:	1	1	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-52 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
18	Chukchi Sea	2	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:
19	Chukchi Sea	3	1	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	1	:	:	:	:	:
20	Chukchi Sea	3	2	2	1	1	1	:	:	:	:	:	:	:	:	:	:	:	:	2	1	:	:	:	:	:	1	:	:	:	:	:
21	Chukchi Sea	1	1	1	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	1	:	:	:	:	:
22	Beaufort Sea	2	1	2	1	1	1	1	:	1	:	:	:	:	:	:	:	:	:	1	1	1	:	1	:	:	:	1	:	1	:	:
23	Beaufort Sea	3	2	3	2	2	2	1	1	1	:	1	1	1	:	:	:	:	:	3	2	1	:	1	:	:	2	1	:	:	:	:
24	Beaufort Sea	4	2	3	2	2	1	1	1	1	:	1	:	1	:	:	:	:	:	3	2	1	:	:	:	:	2	1	:	:	:	:
25	Beaufort Sea	2	2	4	2	4	3	3	2	2	1	2	1	2	2	1	1	1	:	2	4	2	1	1	2	1	2	2	1	1	1	1
26	Beaufort Sea	2	2	3	2	4	2	4	2	4	3	3	2	3	3	1	2	1	:	2	3	4	3	2	2	1	1	2	1	2	1	1
27	Beaufort Sea	1	1	3	2	4	2	3	2	3	2	3	1	2	2	1	1	:	:	2	2	3	2	1	2	:	1	2	1	1	1	1
28	Beaufort Sea	1	1	1	1	1	1	1	:	1	1	2	1	1	1	1	1	:	:	1	1	1	1	1	:	1	:	1	:	1	:	1
29	Beaufort Sea	:	:	:	:	1	:	1	:	:	:	1	:	1	1	1	1	:	:	:	:	:	:	1	1	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-53 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
18	Chukchi Sea	4	3	3	2	2	2	1	:	:	:	:	:	:	:	:	:	:	:	3	2	1	:	:	:	:	1	1	:	:	:	:
19	Chukchi Sea	6	4	4	2	2	2	1	1	1	1	1	:	1	1	:	:	:	:	5	2	1	1	1	:	:	2	1	:	:	:	:
20	Chukchi Sea	6	4	4	3	2	1	1	1	:	:	:	:	:	:	:	:	:	:	5	3	1	:	:	:	:	2	1	1	:	:	:
21	Chukchi Sea	2	2	2	1	1	1	1	:	1	:	:	:	:	:	:	:	:	:	2	1	1	1	:	:	:	1	:	:	:	:	:
22	Beaufort Sea	2	1	2	1	2	1	1	1	1	1	1	1	1	:	:	:	:	:	2	1	1	:	1	:	:	1	1	:	1	1	:
23	Beaufort Sea	4	2	3	2	3	2	2	1	1	1	2	1	1	1	1	:	:	:	3	2	2	1	2	1	:	2	2	1	1	1	:
24	Beaufort Sea	4	3	3	2	3	2	2	2	2	1	1	1	1	1	1	:	:	:	4	2	3	1	1	1	:	2	2	1	1	1	:
25	Beaufort Sea	3	2	4	3	5	4	5	3	4	3	4	2	3	3	2	1	1	:	3	4	4	3	3	4	1	2	3	2	3	2	1
26	Beaufort Sea	3	2	4	3	5	4	6	4	6	4	6	4	5	5	4	4	3	1	3	5	6	5	5	4	4	2	4	3	3	3	4
27	Beaufort Sea	2	2	4	4	7	5	8	6	8	6	8	5	8	7	6	4	2	1	3	5	8	7	6	6	1	2	7	5	5	4	5
28	Beaufort Sea	3	2	3	3	4	4	4	3	4	3	5	3	4	4	3	4	3	2	3	4	4	5	4	3	4	2	3	1	2	1	3
29	Beaufort Sea	2	1	1	1	1	1	2	1	2	2	3	3	3	3	3	4	2	1	2	1	2	2	4	3	3	1	1	1	2	1	2
30	Beaufort Sea	:	:	:	:	:	:	1	:	1	1	1	1	1	:	1	1	1	:	:	:	1	1	1	1	:	:	:	1	1	1	1
31	Beaufort Sea	:	:	:	:	1	1	1	1	1	1	2	1	2	:	:	:	:	:	:	1	1	1	1	:	:	:	:	:	:	:	:
34	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	1	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
35	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	1	1	:	:	:	:	:	1	1	1	:	:	:	1	:	:
36	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	2	1	1	:	:	:	1	:	2	2	:	:	:	:	1	2
37	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	1	1	1	2	1	3	2	1	:	:	:	:	1	1	2	:	:	:	1	:	2
38	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	1	1	:	:	:	:	:	1	2	:	:	:	:	:	1

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-54 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
17	Chukchi Sea	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:
18	Chukchi Sea	4	3	3	2	2	2	1	1	1	:	:	:	:	:	:	:	:	:	3	3	1	:	:	:	:	3	1	:	:	:	:
19	Chukchi Sea	6	4	4	3	3	2	1	2	1	1	1	1	1	1	:	:	:	:	5	3	1	1	1	:	:	2	2	1	1	:	:
20	Chukchi Sea	6	4	4	3	2	1	1	1	1	1	:	:	:	:	:	:	:	:	5	3	1	:	:	:	:	2	1	1	:	:	:
21	Chukchi Sea	3	2	2	1	1	1	1	:	1	:	:	:	:	:	:	:	:	:	2	1	1	1	:	:	:	1	:	:	:	:	:
22	Beaufort Sea	3	2	3	2	2	1	1	1	1	1	1	1	1	:	:	:	:	:	2	2	2	:	1	:	:	1	1	:	1	1	:
23	Beaufort Sea	4	2	3	2	3	2	2	1	1	1	2	1	1	1	1	:	:	:	3	2	2	1	2	1	:	2	2	1	1	1	:
24	Beaufort Sea	4	3	3	2	3	2	2	2	2	1	1	1	1	1	1	:	:	:	4	2	3	1	1	1	:	2	2	1	1	1	:
25	Beaufort Sea	4	3	5	3	5	4	5	3	4	3	4	2	4	3	2	1	1	:	3	5	4	3	3	4	1	2	3	2	3	2	1
26	Beaufort Sea	3	2	5	3	5	5	7	4	6	4	6	4	5	5	4	4	3	1	3	5	7	5	5	4	4	2	4	3	3	3	5
27	Beaufort Sea	2	3	5	5	8	7	9	8	9	8	10	7	9	8	7	4	3	1	3	6	9	8	8	7	2	3	9	7	8	6	5
28	Beaufort Sea	3	3	4	3	5	5	5	3	5	4	5	4	5	5	4	4	4	2	3	4	5	5	5	3	5	2	3	2	4	2	3
29	Beaufort Sea	2	1	1	1	2	1	2	2	2	2	3	3	3	4	3	4	3	1	2	1	2	3	4	4	3	1	1	1	3	2	2
30	Beaufort Sea	:	:	:	:	:	:	1	:	2	1	1	1	1	:	1	1	1	:	:	:	1	2	1	1	:	:	:	1	1	1	1
31	Beaufort Sea	:	:	:	:	1	1	1	1	1	1	2	1	2	1	:	:	:	:	:	1	1	1	1	1	:	:	:	:	:	:	:
33	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:
34	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	1	:	:	1	1	1	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:
35	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	1	1	1	1	1	1	1	:	:	:	:	:	1	1	2	:	:	:	1	1	:
36	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	1	1	2	2	2	2	2	1	:	:	:	1	1	2	2	:	:	:	1	1	2
37	Beaufort Sea	:	:	:	:	:	:	:	:	:	:	1	1	2	3	2	3	3	1	:	:	:	:	1	2	3	:	:	:	1	1	3
38	Beaufort Sea	:	:	1	:	1	:	1	:	:	:	1	1	1	2	2	3	2	1	:	1	1	:	:	2	3	:	1	:	:	:	2

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A2-55 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the assumed Production Life of the Lease Area Within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	
?	Land	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
1	Kasegaluk Lagoon	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
2	Point Barrow, Plover Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
3	Thetis and Jones Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
4	Cottle & Return Islands, West Dock	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
5	Midway Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
6	Cross and No Name Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
7	Endicott Causeway	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
8	McClure Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
9	Stockton Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
10	Tigvariak Island	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
11	Maguire Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
12	Flaxman Island	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
13	Barrier Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
14	Anderson Point Barrier Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
15	Arey and Barter Islands, Bernard Spit	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
16	Jago and Tapkaurak Spits	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
17	Angun and Beaufort Lagoons	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
18	Icy Reef	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
19	Chukchi Spring Lead 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
20	Chukchi Spring Lead 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
21	Chukchi Spring Lead 3	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
22	Chukchi Spring Lead 4	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
23	Chukchi Spring Lead 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
24	Beaufort Spring Lead 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
25	Beaufort Spring Lead 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
26	Beaufort Spring Lead 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
27	Beaufort Spring Lead 9	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
28	Beaufort Spring Lead 10	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
29	Ice/Sea Segment 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
30	Ice/Sea Segment 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
31	Ice/Sea Segment 3	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
32	Ice/Sea Segment 4	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
33	Ice/Sea Segment 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
34	Ice/Sea Segment 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
35	Ice/Sea Segment 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
36	Ice/Sea Segment 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
37	Ice/Sea Segment 9	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
38	Point Hope Subsistence Are	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
39	Point Lay Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
40	Wainwright Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
41	Barrow Subsistence Area 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
42	Barrow Subsistence Area 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
43	Nuiqsut Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
44	Kaktovik Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent

Table A2-55 (continued) Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the Assumed Production Life of the Lease Area Within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	
45	Whale Concentration Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
46	Herald Shoal Polynya	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
47	Ice/Sea Segment 10	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
48	Ice/Sea Segment 11	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
49	Hanna's Shoal Polynya	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
50	Ice/Sea Segment 12	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
51	Ice/Sea Segment 13	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
52	Ice/Sea Segment 14	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
53	Ice/Sea Segment 15	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
54	Ice/Sea Segment 16a	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
55	Ice/Sea Segment 17	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
56	Ice/Sea Segment 18a	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
57	Ice/Sea Segment 19	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
58	Ice/Sea Segment 20a	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
59	Ice/Sea Segment 21	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
60	Ice/Sea Segment 22	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
61	Ice/Sea Segment 22	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
62	Ice/Sea Segment 24a	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
63	Ledyard Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
64	Peard Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
65	ERA 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
66	ERA 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
67	Ice/Sea Segment 16b	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
68	Harrison Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
69	Harrison Bay/Colville Delta	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
70	ERA 3	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
71	Simpson Lagoon	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
72	Gwyder Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
73	Prudhoe Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
74	Cross Island ERA	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
75	Water over Boulder Patch 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
76	Water over Boulder Patch 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
77	Foggy Island Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
78	Mikkelsen Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
79	ERA 4	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
80	Ice/Sea Segment 18b	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
81	Simpson Cove	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
82	ERA 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
83	Kaktovik ERA	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
84	Ice/Sea Segment 20b	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
85	ERA 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
86	ERA 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
87	ERA 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
88	Ice Sea Segment 24b	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent

Table A2-56 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the assumed Production Life of the Lease Area Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	
?	Land	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
1	Kasegaluk Lagoon	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
2	Point Barrow, Plover Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
3	Thetis and Jones Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
4	Cottle & Return Islands, West Dock	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
5	Midway Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
6	Cross and No Name Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
7	Endicott Causeway	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
8	McClure Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
9	Stockton Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
10	Tigvariak Island	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
11	Maguire Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
12	Flaxman Island	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
13	Barrier Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
14	Anderson Point Barrier Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
15	Arey and Barter Islands, Bernard Spit	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
16	Jago and Tapkaurak Spits	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
17	Angun and Beaufort Lagoons	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
18	Icy Reef	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
19	Chukchi Spring Lead 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
20	Chukchi Spring Lead 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
21	Chukchi Spring Lead 3	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
22	Chukchi Spring Lead 4	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
23	Chukchi Spring Lead 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
24	Beaufort Spring Lead 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
25	Beaufort Spring Lead 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
26	Beaufort Spring Lead 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
27	Beaufort Spring Lead 9	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
28	Beaufort Spring Lead 10	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
29	Ice/Sea Segment 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
30	Ice/Sea Segment 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
31	Ice/Sea Segment 3	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
32	Ice/Sea Segment 4	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
33	Ice/Sea Segment 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
34	Ice/Sea Segment 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
35	Ice/Sea Segment 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
36	Ice/Sea Segment 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
37	Ice/Sea Segment 9	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
38	Point Hope Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
39	Point Lay Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
40	Wainwright Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
41	Barrow Subsistence Area 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
42	Barrow Subsistence Area 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
43	Nuiqsut Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
44	Kaktovik Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent

Table A2-56 (continued). Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the Assumed Production Life of the Lease Area Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	
45	Whale Concentration Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
46	Herald Shoal Polynya	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
47	Ice/Sea Segment 10	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
48	Ice/Sea Segment 11	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
49	Hanna's Shoal Polynya	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
50	Ice/Sea Segment 12	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
51	Ice/Sea Segment 13	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
52	Ice/Sea Segment 14	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
53	Ice/Sea Segment 15	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
54	Ice/Sea Segment 16a	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
55	Ice/Sea Segment 17	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
56	Ice/Sea Segment 18a	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
57	Ice/Sea Segment 19	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
58	Ice/Sea Segment 20a	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
59	Ice/Sea Segment 21	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
60	Ice/Sea Segment 22	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
61	Ice/Sea Segment 22	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
62	Ice/Sea Segment 24a	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
63	Ledyard Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
64	Peard Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
65	ERA 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
66	ERA 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
67	Ice/Sea Segment 16b	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
68	Harrison Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
69	Harrison Bay/Colville Delta	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
70	ERA 3	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
71	Simpson Lagoon	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
72	Gwyder Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
73	Prudhoe Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
74	Cross Island ERA	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
75	Water over Boulder Patch 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
76	Water over Boulder Patch 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
77	Foggy Island Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
78	Mikkelsen Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
79	ERA 4	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
80	Ice/Sea Segment 18b	1	0.0	1	0.0	:	0.0	1	0.0	1	0.0
81	Simpson Cove	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
82	ERA 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
83	Kaktovik ERA	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
84	Ice/Sea Segment 20b	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
85	ERA 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
86	ERA 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
87	ERA 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
88	Ice Sea Segment 24b	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent

Table A2-57 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the assumed Production Life of the Lease Area Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	
?	Land	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
1	Kasegaluk Lagoon	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
2	Point Barrow, Plover Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
3	Thetis and Jones Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
4	Cottle & Return Islands, West Dock	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
5	Midway Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
6	Cross and No Name Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
7	Endicott Causeway	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
8	McClure Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
9	Stockton Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
10	Tigvariak Island	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
11	Maguire Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
12	Flaxman Island	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
13	Barrier Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
14	Anderson Point Barrier Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
15	Arey and Barter Islands, Bernard Spit	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
16	Jago and Tapkaurak Spits	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
17	Angun and Beaufort Lagoons	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
18	Icy Reef	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
19	Chukchi Spring Lead 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
20	Chukchi Spring Lead 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
21	Chukchi Spring Lead 3	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
22	Chukchi Spring Lead 4	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
23	Chukchi Spring Lead 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
24	Beaufort Spring Lead 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
25	Beaufort Spring Lead 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
26	Beaufort Spring Lead 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
27	Beaufort Spring Lead 9	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
28	Beaufort Spring Lead 10	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
29	Ice/Sea Segment 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
30	Ice/Sea Segment 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
31	Ice/Sea Segment 3	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
32	Ice/Sea Segment 4	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
33	Ice/Sea Segment 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
34	Ice/Sea Segment 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
35	Ice/Sea Segment 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
36	Ice/Sea Segment 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
37	Ice/Sea Segment 9	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
38	Point Hope Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
39	Point Lay Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
40	Wainwright Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
41	Barrow Subsistence Area 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
42	Barrow Subsistence Area 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
43	Nuiqsut Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
44	Kaktovik Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent

Table A2-57 (continued). Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the Assumed Production Life of the Lease Area Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	
45	Whale Concentration Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
46	Herald Shoal Polynya	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
47	Ice/Sea Segment 10	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
48	Ice/Sea Segment 11	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
49	Hanna's Shoal Polynya	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
50	Ice/Sea Segment 12	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
51	Ice/Sea Segment 13	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
52	Ice/Sea Segment 14	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
53	Ice/Sea Segment 15	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
54	Ice/Sea Segment 16a	2	0.0	2	0.0	1	0.0	2	0.0	2	0.0
55	Ice/Sea Segment 17	2	0.0	2	0.0	1	0.0	2	0.0	2	0.0
56	Ice/Sea Segment 18a	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
57	Ice/Sea Segment 19	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
58	Ice/Sea Segment 20a	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
59	Ice/Sea Segment 21	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
60	Ice/Sea Segment 22	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
61	Ice/Sea Segment 22	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
62	Ice/Sea Segment 24a	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
63	Ledyard Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
64	Peard Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
65	ERA 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
66	ERA 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
67	Ice/Sea Segment 16b	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
68	Harrison Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
69	Harrison Bay/Colville Delta	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
70	ERA 3	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
71	Simpson Lagoon	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
72	Gwyder Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
73	Prudhoe Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
74	Cross Island ERA	1	0.0	1	0.0	:	0.0	1	0.0	1	0.0
75	Water over Boulder Patch 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
76	Water over Boulder Patch 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
77	Foggy Island Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
78	Mikkelsen Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
79	ERA 4	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
80	Ice/Sea Segment 18b	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
81	Simpson Cove	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
82	ERA 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
83	Kaktovik ERA	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
84	Ice/Sea Segment 20b	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
85	ERA 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
86	ERA 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
87	ERA 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
88	Ice Sea Segment 24b	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent

Table A2-58 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the assumed Production Life of the Lease Area Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	
?	Land	3	0.0	3	0.0	2	0.0	2	0.0	2	0.0
1	Kasegaluk Lagoon	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
2	Point Barrow, Plover Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
3	Thetis and Jones Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
4	Cottle & Return Islands, West Dock	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
5	Midway Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
6	Cross and No Name Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
7	Endicott Causeway	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
8	McClure Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
9	Stockton Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
10	Tigvariak Island	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
11	Maguire Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
12	Flaxman Island	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
13	Barrier Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
14	Anderson Point Barrier Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
15	Arey and Barter Islands, Bernard Spit	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
16	Jago and Tapkaurak Spits	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
17	Angun and Beaufort Lagoons	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
18	Icy Reef	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
19	Chukchi Spring Lead 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
20	Chukchi Spring Lead 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
21	Chukchi Spring Lead 3	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
22	Chukchi Spring Lead 4	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
23	Chukchi Spring Lead 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
24	Beaufort Spring Lead 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
25	Beaufort Spring Lead 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
26	Beaufort Spring Lead 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
27	Beaufort Spring Lead 9	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
28	Beaufort Spring Lead 10	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
29	Ice/Sea Segment 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
30	Ice/Sea Segment 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
31	Ice/Sea Segment 3	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
32	Ice/Sea Segment 4	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
33	Ice/Sea Segment 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
34	Ice/Sea Segment 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
35	Ice/Sea Segment 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
36	Ice/Sea Segment 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
37	Ice/Sea Segment 9	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
38	Point Hope Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
39	Point Lay Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
40	Wainwright Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
41	Barrow Subsistence Area 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
42	Barrow Subsistence Area 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
43	Nuiqsut Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
44	Kaktovik Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent

Table A2-58 (continued). Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the Assumed Production Life of the Lease Area Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	
45	Whale Concentration Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
46	Herald Shoal Polynya	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
47	Ice/Sea Segment 10	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
48	Ice/Sea Segment 11	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
49	Hanna's Shoal Polynya	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
50	Ice/Sea Segment 12	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
51	Ice/Sea Segment 13	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
52	Ice/Sea Segment 14	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
53	Ice/Sea Segment 15	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
54	Ice/Sea Segment 16a	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
55	Ice/Sea Segment 17	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
56	Ice/Sea Segment 18a	2	0.0	2	0.0	1	0.0	1	0.0	1	0.0
57	Ice/Sea Segment 19	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
58	Ice/Sea Segment 20a	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
59	Ice/Sea Segment 21	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
60	Ice/Sea Segment 22	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
61	Ice/Sea Segment 22	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
62	Ice/Sea Segment 24a	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
63	Ledyard Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
64	Peard Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
65	ERA 1	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
66	ERA 2	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
67	Ice/Sea Segment 16b	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
68	Harrison Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
69	Harrison Bay/Colville Delta	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
70	ERA 3	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
71	Simpson Lagoon	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
72	Gwyder Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
73	Prudhoe Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
74	Cross Island ERA	1	0.0	1	0.0	:	0.0	1	0.0	1	0.0
75	Water over Boulder Patch 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
76	Water over Boulder Patch 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
77	Foggy Island Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
78	Mikkelsen Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
79	ERA 4	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
80	Ice/Sea Segment 18b	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
81	Simpson Cove	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
82	ERA 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
83	Kaktovik ERA	1	0.0	1	0.0	1	0.0	:	0.0	1	0.0
84	Ice/Sea Segment 20b	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
85	ERA 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
86	ERA 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
87	ERA 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
88	Ice Sea Segment 24b	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent

Table A2-59 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the assumed Production Life of the Lease Area Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	
?	Land	5	0.1	5	0.1	4	0.0	4	0.0	4	0.0
1	Kasegaluk Lagoon	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
2	Point Barrow, Plover Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
3	Thetis and Jones Islands	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
4	Cottle & Return Islands, West Dock	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
5	Midway Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
6	Cross and No Name Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
7	Endicott Causeway	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
8	McClure Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
9	Stockton Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
10	Tigvariak Island	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
11	Maguire Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
12	Flaxman Island	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
13	Barrier Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
14	Anderson Point Barrier Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
15	Arey and Barter Islands, Bernard Spit	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
16	Jago and Tapkaurak Spits	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
17	Angun and Beaufort Lagoons	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
18	Icy Reef	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
19	Chukchi Spring Lead 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
20	Chukchi Spring Lead 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
21	Chukchi Spring Lead 3	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
22	Chukchi Spring Lead 4	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
23	Chukchi Spring Lead 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
24	Beaufort Spring Lead 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
25	Beaufort Spring Lead 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
26	Beaufort Spring Lead 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
27	Beaufort Spring Lead 9	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
28	Beaufort Spring Lead 10	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
29	Ice/Sea Segment 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
30	Ice/Sea Segment 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
31	Ice/Sea Segment 3	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
32	Ice/Sea Segment 4	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
33	Ice/Sea Segment 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
34	Ice/Sea Segment 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
35	Ice/Sea Segment 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
36	Ice/Sea Segment 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
37	Ice/Sea Segment 9	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
38	Point Hope Subsistence Are	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
39	Point Lay Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
40	Wainwright Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
41	Barrow Subsistence Area 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
42	Barrow Subsistence Area 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
43	Nuiqsut Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
44	Kaktovik Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent

Table A2-59 (continued). Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the Assumed Production Life of the Lease Area Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	
45	Whale Concentration Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
46	Herald Shoal Polynya	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
47	Ice/Sea Segment 10	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
48	Ice/Sea Segment 11	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
49	Hanna's Shoal Polynya	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
50	Ice/Sea Segment 12	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
51	Ice/Sea Segment 13	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
52	Ice/Sea Segment 14	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
53	Ice/Sea Segment 15	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
54	Ice/Sea Segment 16a	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
55	Ice/Sea Segment 17	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
56	Ice/Sea Segment 18a	2	0.0	2	0.0	1	0.0	2	0.0	2	0.0
57	Ice/Sea Segment 19	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
58	Ice/Sea Segment 20a	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
59	Ice/Sea Segment 21	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
60	Ice/Sea Segment 22	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
61	Ice/Sea Segment 22	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
62	Ice/Sea Segment 24a	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
63	Ledyard Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
64	Peard Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
65	ERA 1	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
66	ERA 2	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
67	Ice/Sea Segment 16b	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
68	Harrison Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
69	Harrison Bay/Colville Delta	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
70	ERA 3	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
71	Simpson Lagoon	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
72	Gwyder Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
73	Prudhoe Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
74	Cross Island ERA	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
75	Water over Boulder Patch 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
76	Water over Boulder Patch 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
77	Foggy Island Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
78	Mikkelsen Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
79	ERA 4	1	0.0	1	0.0	:	0.0	1	0.0	1	0.0
80	Ice/Sea Segment 18b	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
81	Simpson Cove	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
82	ERA 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
83	Kaktovik ERA	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
84	Ice/Sea Segment 20b	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
85	ERA 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
86	ERA 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
87	ERA 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
88	Ice Sea Segment 24b	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent

Table A2-60 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the assumed Production Life of the Lease Area Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	
?	Land	7	0.1	6	0.1	6	0.1	6	0.1	6	0.1
1	Kasegaluk Lagoon	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
2	Point Barrow, Plover Islands	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
3	Thetis and Jones Islands	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
4	Cottle & Return Islands, West Dock	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
5	Midway Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
6	Cross and No Name Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
7	Endicott Causeway	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
8	McClure Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
9	Stockton Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
10	Tigvariak Island	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
11	Maguire Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
12	Flaxman Island	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
13	Barrier Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
14	Anderson Point Barrier Islands	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
15	Arey and Barter Islands, Bernard Spit	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
16	Jago and Tapkaurak Spits	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
17	Angun and Beaufort Lagoons	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
18	Icy Reef	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
19	Chukchi Spring Lead 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
20	Chukchi Spring Lead 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
21	Chukchi Spring Lead 3	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
22	Chukchi Spring Lead 4	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
23	Chukchi Spring Lead 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
24	Beaufort Spring Lead 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
25	Beaufort Spring Lead 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
26	Beaufort Spring Lead 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
27	Beaufort Spring Lead 9	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
28	Beaufort Spring Lead 10	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
29	Ice/Sea Segment 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
30	Ice/Sea Segment 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
31	Ice/Sea Segment 3	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
32	Ice/Sea Segment 4	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
33	Ice/Sea Segment 5	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
34	Ice/Sea Segment 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
35	Ice/Sea Segment 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
36	Ice/Sea Segment 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
37	Ice/Sea Segment 9	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
38	Point Hope Subsistence Are	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
39	Point Lay Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
40	Wainwright Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
41	Barrow Subsistence Area 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
42	Barrow Subsistence Area 2	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
43	Nuiqsut Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
44	Kaktovik Subsistence Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent

Table A2-60 (continued) Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the Assumed Production Life of the Lease Area Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Environmental Resource Area Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	
45	Whale Concentration Area	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
46	Herald Shoal Polynya	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
47	Ice/Sea Segment 10	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
48	Ice/Sea Segment 11	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
49	Hanna's Shoal Polynya	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
50	Ice/Sea Segment 12	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
51	Ice/Sea Segment 13	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
52	Ice/Sea Segment 14	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
53	Ice/Sea Segment 15	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
54	Ice/Sea Segment 16a	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
55	Ice/Sea Segment 17	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
56	Ice/Sea Segment 18a	2	0.0	2	0.0	1	0.0	2	0.0	2	0.0
57	Ice/Sea Segment 19	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
58	Ice/Sea Segment 20a	2	0.0	2	0.0	2	0.0	1	0.0	2	0.0
59	Ice/Sea Segment 21	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
60	Ice/Sea Segment 22	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
61	Ice/Sea Segment 22	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
62	Ice/Sea Segment 24a	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
63	Ledyard Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
64	Peard Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
65	ERA 1	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
66	ERA 2	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
67	Ice/Sea Segment 16b	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
68	Harrison Bay	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
69	Harrison Bay/Colville Delta	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
70	ERA 3	2	0.0	2	0.0	2	0.0	2	0.0	2	0.0
71	Simpson Lagoon	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
72	Gwyder Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
73	Prudhoe Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
74	Cross Island ERA	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
75	Water over Boulder Patch 1	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
76	Water over Boulder Patch 2	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
77	Foggy Island Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
78	Mikkelsen Bay	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
79	ERA 4	1	0.0	1	0.0	:	0.0	1	0.0	1	0.0
80	Ice/Sea Segment 18b	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
81	Simpson Cove	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
82	ERA 5	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
83	Kaktovik ERA	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
84	Ice/Sea Segment 20b	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
85	ERA 6	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
86	ERA 7	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
87	ERA 8	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0
88	Ice Sea Segment 24b	:	0.0	:	0.0	:	0.0	:	0.0	:	0.0

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent

Table A2-61 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Land Segment over the Assumed Production Life of the Lease Area Within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	

Notes: All land segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A2-62 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Land Segment over the Assumed Production Life of the Lease Area Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	

Notes: All land segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A2-63 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Land Segment over the Assumed Production Life of the Lease Area Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	

Notes: All land segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A2-64 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Land Segment over the Assumed Production Life of the Lease Area Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	

Notes: All land segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A2-65 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Land Segment over the Assumed Production Life of the Lease Area Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	

Notes: All land segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A2-66 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Land Segment over the Assumed Production Life of the Lease Area Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	
31	Lonely AFS Airport, Pitt Point, Pogik Bay	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0
32	Cape Halkett	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A2-67 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Boundary Segment over the Assumed Production Life of the Lease Area Within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	

Notes: All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A2-68 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Boundary Segment over the Assumed Production Life of the Lease Area Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	

Notes: All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A2-69 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Boundary Segment over the assumed Production Life of the Lease Area Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	

Notes: All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A2-70 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Boundary Segment over the Assumed Production Life of the Lease Area Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	

Notes: All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A2-71 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Boundary Segment over the Assumed Production Life of the Lease Area Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Resource Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	

Notes: All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A2-72 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Boundary Segment over the Assumed Production Life of the Lease Area Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Boundary Segment Name	Proposal (Alternative I)		Barrow Subsistence Whale Deferral		Nuiqsut Subsistence Whale Deferral		Kaktovik Subsistence Whale Deferral		Eastern Deferral	
27	Beaufort Sea	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown

Table A2-73. Annual Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 3 Days, Beaufort Sea Multiple-Sale

ID	Land Segments Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,4748,49,50,51	Arctic National Wildlife Refuge	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	6	:	:	:	:	:	:	1	:	:	:	:	:	:
52,53,54,56,57	Ivvavik National Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
63,64	Kendall Island Bird Sanctuary	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29,30,31,32,33	Teshekpuk Lake Special Use Area	:	:	1	3	1	5	:	2	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	7	8	:	:	:	:
55	Hershel Island Territorial Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown

Table A2-74. Annual Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segments Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	1	9	14	:	:	:	:	:	1	7	:	:	:	:	:	2
52,53,54,56,57	Ivvavik National Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:
63,64	Kendall Island Bird Sanctuary	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29,30,31,32,33	Teshekpuk Lake Special Use Area	:	2	3	9	4	11	2	8	1	1	:	:	:	:	:	:	:	:	2	5	2	1	:	:	:	11	14	2	:	:	:
55	Hershel Island Territorial Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown

Table A2-75. Annual Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	:	:	:	:	:	:	:	:	:	:	:	1	1	2	5	6	15	21	:	:	:	:	:	4	13	:	:	:	:	1	7
52,53,54,56,57	Ivvavik National Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	6	:	:	:	:	:	:	1	:	:	:	:	:	:
63,64	Kendall Island Bird Sanctuary	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29,30,31,32,33	Teshekpuk Lake Special Use Area	2	4	6	12	8	16	8	13	4	5	2	1	1	:	:	:	:	:	4	9	8	4	2	:	:	14	19	6	3	1	1
55	Hershel Island Territorial Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown

Table A2-76. Annual Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	:	:	:	:	:	:	:	:	:	:	:	2	2	5	8	10	18	25	:	:	:	:	1	6	17	:	:	:	1	3	10
52,53,54,56,57	Ivvavik National Park	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	2	9	:	:	:	:	:	1	3	:	:	:	:	:	1
63,64	Kendall Island Bird Sanctuary	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29,30,31,32,33	Teshekpuk Lake Special Use Area	3	4	8	14	10	19	10	16	6	8	5	4	3	1	1	:	:	:	5	11	10	7	5	1	:	15	22	9	5	2	1
55	Hershel Island Territorial Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	1	:	:	:	:	:	1	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown

Table A2-77. Annual Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	:	:	:	:	:	:	:	:	1	1	1	4	4	8	12	15	28	38	:	:	:	1	2	9	24	:	:	1	1	6	13
52,53,54,56,57	Ivvavik National Park	:	:	:	:	:	:	:	:	:	:	1	2	2	4	4	7	6	17	:	:	:	:	1	4	7	:	:	:	:	2	4
63,64	Kendall Island Bird Sanctuary	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	2	2	2	:	:	:	:	:	1	2	:	:	:	:	:	2
29,30,31,32,33	Teshekpuk Lake Special Use Area	4	6	11	19	14	28	16	25	12	14	9	9	8	5	5	3	3	1	7	16	15	13	10	5	3	19	30	15	10	6	4
55	Hershel Island Territorial Park	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	1	3	:	:	:	:	:	1	2	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown

Table A2-78. Annual Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	1	:	:	:	:	:	:	1	1	1	2	6	5	12	17	22	36	47	1	1	:	1	4	15	33	:	:	1	2	7	19
52,53,54,56,57	Ivvavik National Park	1	:	1	:	1	1	1	:	1	1	2	4	5	9	8	13	11	22	1	1	1	1	3	8	13	:	:	1	2	6	8
63,64	Kendall Island Bird Sanctuary	:	:	1	:	1	:	:	:	1	:	1	1	1	3	3	3	3	3	:	1	:	1	1	2	3	:	:	:	1	1	4
29,30,31,32,33	Teshekpuk Lake Special Use Area	4	6	11	19	14	28	16	25	13	15	10	9	8	5	6	4	4	1	7	16	16	14	10	6	4	19	30	15	11	6	5
55	Hershel Island Territorial Park	:	:	:	:	:	:	1	1	1	1	1	1	1	2	3	4	3	4	:	1	1	1	1	3	3	:	1	1	:	1	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A2-79. Winter Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	3	:	:	:	:	:	:	:	:	:	:	:	:	:
52,53,54,56,57	Ivvavik National Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
63,64	Kendall Island Bird Sanctuary	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29,30,31,32,33	Teshekpuk Lake Special Use Area	:	:	:	1	:	2	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	4	5	:	:	:	:
55	Hershel Island Territorial Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A2-80. Winter Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	4	7	:	:	:	:	:	:	3	:	:	:	:	:	1
52,53,54,56,57	Ivvavik National Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
63,64	Kendall Island Bird Sanctuary	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29,30,31,32,33	Teshekpuk Lake Special Use Area	:	:	1	3	1	4	1	4	:	1	:	:	:	:	:	:	:	:	:	2	1	1	:	:	:	5	7	1	:	:	:
55	Hershel Island Territorial Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A2-81. Winter Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	2	7	11	:	:	:	:	:	1	6	:	:	:	:	:	3
52,53,54,56,57	Ivvavik National Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	3	:	:	:	:	:	:	:	:	:	:	:	:	:
63,64	Kendall Island Bird Sanctuary	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29,30,31,32,33	Teshekpuk Lake Special Use Area	:	1	2	4	2	6	3	6	2	3	1	1	:	:	:	:	:	:	1	3	3	2	1	:	:	7	9	3	2	1	:
55	Hershel Island Territorial Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A2-82. Winter Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	:	:	:	:	:	:	:	:	:	:	:	1	1	1	3	3	9	15	:	:	:	:	1	1	7	:	:	:	:	1	3
52,53,54,56,57	Ivvavik National Park	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	1	5	:	:	:	:	:	1	1	:	:	:	:	:	1
63,64	Kendall Island Bird Sanctuary	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29,30,31,32,33	Teshekpuk Lake Special Use Area	1	1	3	6	3	10	4	9	3	5	3	3	2	1	1	:	:	:	1	4	5	4	3	1	:	8	13	5	4	2	1
55	Hershel Island Territorial Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A2-83. Winter Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	:	:	:	:	:	:	:	:	1	1	2	3	3	4	7	9	20	33	:	:	:	1	2	4	16	:	:	1	1	3	8
52,53,54,56,57	Ivvavik National Park	:	:	:	:	:	:	:	:	:	:	1	2	2	4	4	7	6	15	:	:	:	:	1	5	6	:	:	:	:	3	4
63,64	Kendall Island Bird Sanctuary	:	:	:	:	:	1	:	:	:	:	:	:	:	2	2	2	2	2	:	:	:	:	:	1	2	:	:	:	:	:	2
29,30,31,32,33	Teshekpuk Lake Special Use Area	2	4	7	13	9	21	13	21	11	14	9	9	8	6	7	3	3	1	3	10	12	12	9	6	4	13	24	13	10	7	5
55	Hershel Island Territorial Park	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	2	1	2	:	:	:	:	:	1	1	:	:	:	:	:	1

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A2-84. Winter Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	1	1	:	:	:	:	:	1	1	1	2	4	4	7	11	17	30	44	1	1	:	1	3	10	27	:	1	1	2	5	13
52,53,54,56,57	Ivvavik National Park	1	:	1	:	1	1	1	:	1	1	2	5	4	8	8	12	10	21	1	1	:	q	3	7	13	:	:	1	1	7	7
63,64	Kendall Island Bird Sanctuary	:	:	1	:	1	:	:	:	:	:	:	:	1	1	3	3	4	4	:	:	:	:	:	2	4	:	:	:	:	1	4
29,30,31,32,33	Teshekpuk Lake Special Use Area	3	4	7	13	9	21	13	22	12	15	10	10	9	7	8	5	5	1	4	10	12	13	10	8	6	13	24	14	11	8	6
55	Hershel Island Territorial Park	:	:	:	:	:	:	1	1	1	1	1	1	1	2	2	2	1	2	:	1	1	1	1	2	1	:	1	1	:	1	2

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A2-85. Summer Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 3 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	8	14	:	:	:	:	:	:	3	:	:	:	:	:	1
52,53,54,56,57	Ivvavik National Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	:	:	:	:	:	:	:	:	:	:	:	:	:
63,64	Kendall Island Bird Sanctuary	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29,30,31,32,33	Teshekpuk Lake Special Use Area	:	1	2	10	2	13	:	6	:	:	:	:	:	:	:	:	:	:	1	2	:	:	:	:	:	17	17	:	:	:	:
55	Hershel Island Territorial Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A2-86. Summer Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 10 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	:	:	:	:	:	:	:	:	:	:	:	1	1	1	6	4	23	36	:	:	:	:	:	4	18	:	:	:	1	1	7
52,53,54,56,57	Ivvavik National Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	7	:	:	:	:	:	:	:	:	:	:	:	:	:
63,64	Kendall Island Bird Sanctuary	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29,30,31,32,33	Teshekpuk Lake Special Use Area	1	6	9	26	10	31	6	20	1	3	:	:	:	:	:	:	:	:	5	14	5	2	:	:	:	29	34	4	1	:	:
55	Hershel Island Territorial Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A2-87. Summer Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 30 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	:	:	:	:	:	:	:	:	:	1	:	3	1	5	15	17	38	49	:	:	:	:	1	11	34	:	:	1	1	4	20
52,53,54,56,57	Ivvavik National Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	16	:	:	:	:	:	:	2	:	:	:	:	:	1
63,64	Kendall Island Bird Sanctuary	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29,30,31,32,33	Teshekpuk Lake Special Use Area	7	12	19	36	25	45	22	34	11	11	6	3	3	:	1	:	:	:	13	29	23	8	5	:	:	35	46	13	5	1	:
55	Hershel Island Territorial Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	2	:	:	:	:	:	:	:	:	:	:	:	:	:

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A2-88. Summer Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 60 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	:	:	:	:	:	:	:	:	:	1	:	6	5	16	26	29	46	52	:	:	:	:	2	20	44	:	:	1	2	8	29
52,53,54,56,57	Ivvavik National Park	:	:	:	:	:	:	:	:	:	:	:	:	:	1	2	5	5	21	:	:	:	:	:	1	7	:	:	:	:	:	3
63,64	Kendall Island Bird Sanctuary	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
29,30,31,32,33	Teshekpuk Lake Special Use Area	9	13	23	38	28	47	26	35	16	16	11	6	6	2	1	:	:	:	16	32	26	14	11	1	:	36	47	18	11	2	:
55	Hershel Island Territorial Park	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	4	:	:	:	:	:	:	2	:	:	:	:	:	1

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A2-89. Summer Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 180 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	:	:	:	:	:	:	:	:	:	2	1	9	7	20	29	32	49	53	:	:	:	:	3	24	47	:	:	1	2	12	31
52,53,54,56,57	Ivvavik National Park	:	:	:	:	:	:	:	:	:	:	1	1	3	5	5	8	8	23	:	:	:	:	1	3	11	:	:	:	1	1	5
63,64	Kendall Island Bird Sanctuary	:	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	1	1	:	:	:	:	:	1	1	:	:	:	:	:	1
29,30,31,32,33	Teshekpuk Lake Special Use Area	10	13	24	39	29	48	26	35	17	17	11	7	7	2	1	:	:	:	16	33	26	15	12	1	:	36	47	18	12	3	:
55	Hershel Island Territorial Park	:	:	:	:	:	:	:	:	:	:	:	:	:	1	1	3	2	5	:	:	:	:	:	1	3	:	:	:	:	:	3

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A2-90. Summer Conditional Probabilities (Expressed As Percent Chance) That An Oil Spill Starting At A Particular Location Will Contact A Certain Group of Land Segments Within 360 Days, Beaufort Sea Sales 186, 195, and 202

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	LA 14	LA 15	LA 16	LA 17	LA 18	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13
43,44,45,46,47,48,49,50,51	Arctic National Wildlife Refuge	:	:	:	:	:	:	:	:	1	3	2	11	10	27	35	38	53	54	:	1	:	1	5	30	49	:	:	2	3	14	37
52,53,54,56,57	Ivvavik National Park	1	:	1	:	:	1	1	:	2	1	4	4	6	11	10	16	13	25	:	:	1	1	4	10	16	:	:	1	3	5	11
63,64	Kendall Island Bird Sanctuary	:	:	1	1	1	1	1	1	2	2	2	2	2	2	2	3	1	2	1	1	1	2	1	1	2	:	1	1	3	2	2
29,30,31,32,33	Teshekpuk Lake Special Use Area	10	13	24	39	29	48	26	35	17	17	11	7	7	2	1	:	:	:	16	33	26	15	12	1	:	36	47	18	12	3	:
55	Hershel Island Territorial Park	:	:	:	:	:	:	1	1	2	1	2	2	3	5	5	9	6	7	:	:	3	1	3	6	8	:	1	:	:	2	7

Notes: ** = Greater than 99.5 percent; : = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

APPENDIX B

OIL AND GAS RESOURCE ESTIMATES

OIL AND GAS RESOURCE ESTIMATES

Geologic assessments of undiscovered oil and gas resources are used by the MMS to identify prospective areas for leasing and as a basis for analysis of future petroleum activities. We assume that the effects of petroleum development will be proportional to oil volumes produced. It is reasonable to assume that industry will only develop discoveries that are economically viable (or commercial). Most of the oil and gas resources in arctic offshore provinces are noncommercial for geologic reasons (pools are too small) and economic reasons (oil prices do not support development costs).

Resource-assessment models evaluate the geologic and engineering characteristics of hypothetical new fields and the transportation and marketing factors associated with their production. Computer models (*GRASP* and *PRESTO*) determine the economic viability of discoveries by simulating field discovery, development, and production activities and performing a discount cash-flow analysis of the cost and income streams. Simulated projects that have positive net present value have their resources added to the total economic volume available in the province. A detailed description of MMS assessment methodology is provided in Sherwood et al., 1998.

The process of estimating undiscovered oil and gas resources has many uncertainties. Although the size, number, and location of prospects (potential traps) can be identified using seismic surveys, actual oil and gas reservoirs cannot be confirmed without drilling. In a frontier area with limited seismic data coverage, most of the modeled undiscovered resources could occur in pools that are not identified. The reservoirs, source rocks, and seals associated with the prospects are inferred from nearby wells (well logs) or by comparisons to known pools (analogs). Development cost estimates also are uncertain, because relevant projects may not have been completed under the equivalent environmental conditions.

Because of the many geologic, engineering, and economic uncertainties, resource estimates typically are presented as a range of values associated with probability levels. We report a "low case" at a 95% probability level (a 19-in-20 chance of occurrence), an "expected case" (mean or average) of the range, and a "high case" at 5% probability (1-in-20 change of occurrence). Larger volumes are associated with lower probabilities. Economic uncertainties are handled by using a range of market prices (a price of $18 and $30 per barrel). Typically, higher prices support greater levels of activity and more resources discovered and developed.

New resource assessments often differ from older assessments, because geologic concepts evolve with new data. Despite decreasing sophistication of technology, many discoveries are made inadvertently while drilling for different reservoir targets. No one can predict when and where commercial-sized fields will be found. The prospect inventory is likely to be different for each company. Increasing the area open to leasing and exploration will increase the likelihood of future discoveries. In a frontier area, area equates to opportunity.

B.1 Geologic Play Concepts

Undiscovered petroleum resources are modeled using a geologic play analysis. Each geologic play is defined by unique characteristics such as reservoirs, trap types, and similar geologic histories. Plays typically contain many prospects (untested but potential traps for oil/gas pools); some are mapped and some are unidentified. Proven plays contain oil and gas discoveries, and future exploration success rates generally are higher in the play, because all of the key elements are known to be present. Unproven plays have not been tested by drilling or lack discoveries in exploration tests. The majority of petroleum resources often is contained in unidentified prospects that either have not been mapped (lack of seismic data) or cannot be mapped using available data (require 3-dimensional seismic and well control). Consequently, estimating the oil and gas resource potential is speculative, even with the aid of complex computer models.

The regional geology and assessment methodology for the Beaufort province is discussed in detail by Sherwood et al., 1998, and the results presented here are an update of this assessment effort. Minor adjustments in play boundaries between the adjacent Beaufort and Chukchi planning areas and minor corrections to previous modeling inputs resulted in similar conclusions for the current (2002-2007) leasing-program area. The brief play descriptions that follow essentially are unchanged from the earlier 1995 assessment, because there has been very little exploration activity on the Beaufort Shelf since the 1995 assessment. The regional geologic history and stratigraphy are discussed in Section III.A.

The **Undeformed Pre-Mississippian Basement Play** consists of carbonate or sandstone reservoirs of the Franklinian sequence (Figure III.A.3). This play is unproven, because no OCS wells have reported pooled oil/gas. However, encouraging well tests were made on Flaxman Island.

The **Endicott Play** consists of sandstone reservoirs of the Mississippian Endicott Group (Figure III.A.3). This play is proven, because oil and gas fields were discovered at Endicott/Duck Island and Tern/Liberty, although two OCS wells were unsuccessful tests in this play.

The **Lisburne Play** consists of limestone and dolomite reservoirs of the Mississippian to Pennsylvanian age Lisburne Group (Figure III.A.3). This play is proven, because there is production in the Lisburne field onshore. Six OCS wells have tested the play without a commercial success.

The **Upper Ellesmerian Play** consists of Triassic and Permo-Triassic sandstone reservoirs of the Sag River Formation and Sadlerochit Group (Figure III.A.3). This play is considered proven, because most of the North Slope reserves are contained in this play, most notably the Prudhoe Bay field. The play has been tested by 13 OCS wells, resulting in the discovery of 2 offshore oil and gas fields (Northstar and Sandpiper).

The **Rift Play** consists of sandstone reservoirs of Jurassic to early Cretaceous age (Figure III.A.3). The play is proven, because there are many fields producing from these reservoirs on the North Slope (including the South Barrow, East Barrow, and Walakpa gas fields in the National Petroleum Reserve-Alaska, and Kuparuk River, Milne Point, Point McIntyre, Alpine, Niakuk, and other satellites) in addition to the undeveloped Point Thomson gas-condensate field. The play has been tested at several locations on the Beaufort shelf, raging from Aurora (east of Barter Island) to Cabot (near Barrow), without a commercial success.

The **Brookian Unstructured Western Topset Play** is an unproven play located on the inner to middle shelf in the western part of the Beaufort Sea. The play consists of deltaic sandstone reservoirs (Nanushuk Group) in early Cretaceous strata of the Brookian sequence (Figure III.A.3). Although discoveries have not been made offshore, several oil shows have been reported in the northern National Petroleum Reserve-Alaska (Simpson and Fish Creek).

The **Brookian Faulted Western Topset Play** is an unproven play located on the middle to outer shelf in the western Beaufort Sea. The play consists of Cretaceous deltaic sandstone reservoirs assigned to the Nanushuk and Colville Group (Figure III.A.3). No prospects have been drilled in this play.

The **Brookian Unstructured Western Turbidite Play** is a proven play located on the inner Beaufort shelf west of the Colville River. It includes deepwater strata of Cretaceous age) Torok Formation and Colville Group) containing turbidite sandstone reservoirs (Figure III.A.3). Two onshore fields (Tarn and Meltwater) are producing oil from equivalent reservoirs. This play has been penetrated by numerous OCS wells without encountering a commercial pool. The Phoenix well tested heavy oil from Torok turbidite sands, and oil shows were reported in the Mukluk well.

The **Brookian Faulted Western Turbidite Play** is an unproven play located on the middle to outer shelf in the western Beaufort Sea. The play consists of deepwater strata of early Cretaceous (Torok Formation) to late Cretaceous (Colville Group) age assigned to the Brookian sequence (Figure III.A.3). Potential reservoirs include turbidite sands in submarine fan environments. No prospects have been tested in the play.

The **Brookian Unstructured Eastern Topset Play** is a proven play located on the inner to middle shelf in the central part of the Beaufort Sea. The play consists of late Cretaceous to Tertiary age deltaic sandstone reservoirs assigned to the Brookian sequence (Figure III.A.3). Oil was discovered in the OCS at Hammerhead and Kuvlum and is being produced onshore from reservoirs in the West Sak (Kuparuk River Unit) and Schader Bluff (Milne Point Unit). In Harrison Bay, the Phoenix well tested oil in Colville Group strata. The results of the Warthog well and Stinson nearshore wells remain confidential, because their bottomhole location was on State submerged lands.

The **Brookian Faulted Eastern Topset Play** is a proven play located on the middle to outer Beaufort shelf in the central part of the Beaufort Sea. The play consists of Cretaceous and Tertiary deltaic sandstone reservoirs assigned to the Brookian sequence (Figure III.A.3). One OCS well (Galahad) recovered gas and condensate; however, the well was not flow tested or certified as capable of producing in paying quantities. We are confident that oil and gas are pooled in the Galahad prospect, but current economics do not support very high appraisal and development costs.

The **Brookian Unstructured Eastern Turbidite Play** is a proven play on the inner to middle Beaufort shelf. It includes Late Cretaceous and Tertiary turbidite reservoirs localized in submarine fan complexes. Stratigraphic traps predominate and prospects are difficult to map without 3-dimensional seismic surveys. One nearshore OCS well (Beechy Point No. 2) flowed oil and gas out of a thin turbidite sand. Onshore, this play has produced oil in the Badami field.

The **Brookian Faulted Eastern Turbidite Play** is an unproven play on the middle to outer Beaufort shelf. It includes the late Cretaceous and Tertiary turbidite reservoirs assigned to the Brookian sequence (Figure III.A.3). Numerous prospects in the play are formed by faults related to the Hinge Line (Figure III.A.4). Stratigraphic traps probably also are present but are difficult to map using the available 2-dimensional seismic data. No wells have tested the play.

The **Brookian Foldbelt Play** is a proven play in the eastern Beaufort shelf. Potential reservoirs are primarily Tertiary strata assigned to the Brookian sequence (Figure III.A.3). The structural character of prospects is complex, because it is influenced by intersecting tectonic trends of the Brooks Range orogenic belt and Hinge Line fault system. Several OCS wells have tested this play with mixed results. Shows were reported from the Belcher well, although reservoir quality typically was poor in the Corona, Aurora, and Belcher wells. The play area extends (geologically) into Canadian waters, where a small oil pool was discovered at Adlartok. Other Canadian Beaufort wells contain good quality reservoir rocks (Natsek).

B.2 Assessment Results

The resource potential of the Beaufort shelf province was analyzed by computer models in spring 2001. Two sets of petroleum-resource estimates were generated. The updated assessment for the Beaufort Sea Planning Area reports a mean conventionally recoverable volume of 6.94 billion barrels of oil and 32.07 trillion cubic feet of gas. This estimate includes available resources (unleased and undiscovered) recoverable using current technology without regard to their economic viability.

Because most of the resource endowment occurs in pools too small or costly to develop, the economically recoverable resource estimates are lower. For the Beaufort Sea Planning Area, the mean economically recoverable resource estimate is 1.78 billion barrels of oil at $18.00 per barrel; and 3.24 billion barrels of oil is recoverable at $30.00 per barrel. The oil volumes at other probability levels are listed in Table B-1.

Resource estimates for the Beaufort Sea Planning Area are somewhat lower, because the area is smaller and opportunities for commercial discoveries are correspondingly reduced. No gas resources on the Beaufort OCS are shown as economically recoverable, because there is no gas-transportation system from arctic Alaska to outside markets.

The Beaufort Sea Planning Area contains petroleum resources in 14 geologic plays, 9 of which have been proven to contain oil or gas pools. Exploration drilling in the past has covered all parts of the Beaufort shelf out to a maximum water depth of about 50 meters (Belcher, 167 feet; Galahad, 166 feet). At $18.00 per barrel, three plays contain 95% of the total economically recoverable resources modeled in the planning area. Relative contributions are from the Rift play (38%), The Upper Ellesmerian play (37%), and the Brookian foldbelt play (20%). These areas covered by these three plays are shown in Figures B-1 and B-2. Of the three major plays, only the Brookian foldbelt play is affected by removing a large portion of the eastern Beaufort Sea Planning Area from the current program area.

At a higher price of $30.00 per barrel, the results are much the same. However, another play (Brookian unstructured eastern topset play) joins the previous plays to comprise 97% of the total available economic resources. Relative contributions are from the Rift play (39%), the Upper Ellesmerian play (29%), the

Brookian foldbelt play (20%), and the Brookian Unstructured Eastern Topset play (9%). The areas covered by these four plays are shown in Figures B-3 and B-4.

Industry activities in the Beaufort Sea generally support these conclusions. Exploration efforts (leasing, marine seismic surveys, and drilling) have focused on the nearshore of the central Beaufort. Most of the geologic plays present in this "core area" are proven by discoveries in the OCS or commercial production in adjacent coastal areas. Industry has actively leased and drilled Ellesmerian prospects, because they were expected to contain thick, highly productive reservoirs similar to the Prudhoe Bay field. Rift sequence prospects also have been of high industry interest because of the prolific nearshore fields, such as the Point McIntyre field. Prospects in the Brookian sequence generally have been overlooked in favor of more easily mapped prospects. However, with new exploration technologies (3-dimensional seismic surveys), Brookian stratigraphic prospects represent new exploration opportunities throughout the program area.

Table B-1
Summary of Resource Assessment for the Beaufort Sea Planning Area

Conventionally Recoverable	**95% Probability**	**Mean (average)**	**5% Probability**
Planning Area*	3.56	6.94	11.84
Program Area*			
$18.00 per barrel	**95% Probability**	**Mean (average)**	**5% Probability**
Planning Area*	0.00	1.78	6.64
Program Area*		1.68	
$30.00 per barrel	**95% Probability**	**Mean (average)**	**5% Probability**
Planning Area*	1.00	3.24	7.76
Program Area*		2.87	

Source: USDOI, MMS, Alaska OCS Region
*billion barrels of oil

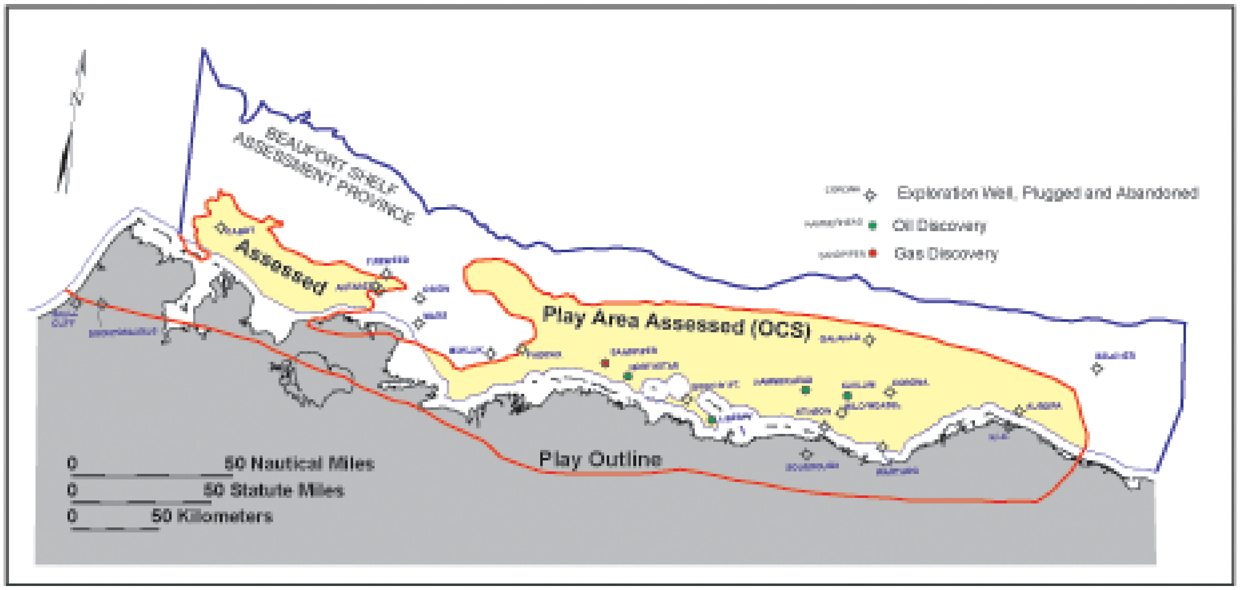


Figure B-1 Beaufort Rift Play

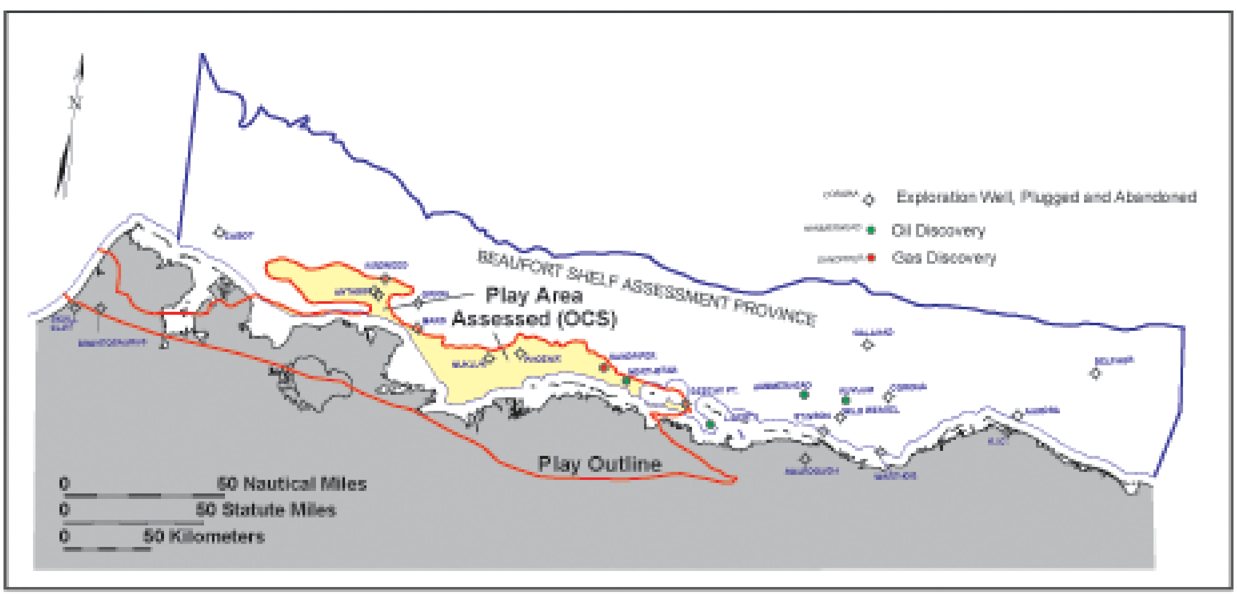


Figure B-2 Beaufort Upper Ellesmerian Play

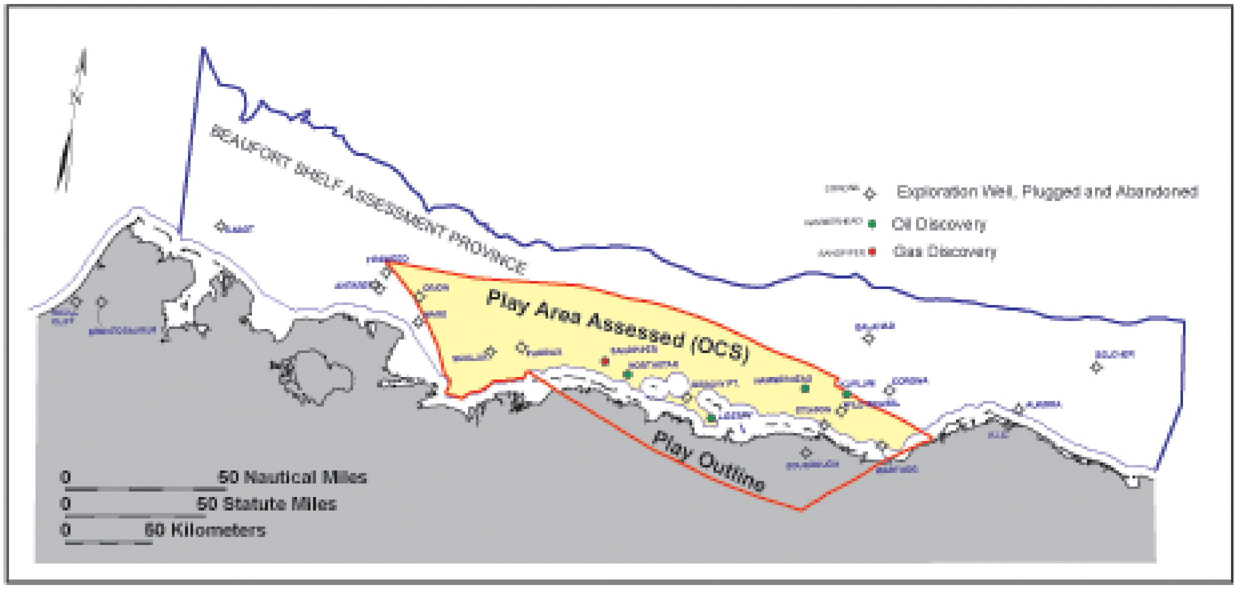


Figure B-3 Beaufort Brookian Unstructured Eastern Topset Play

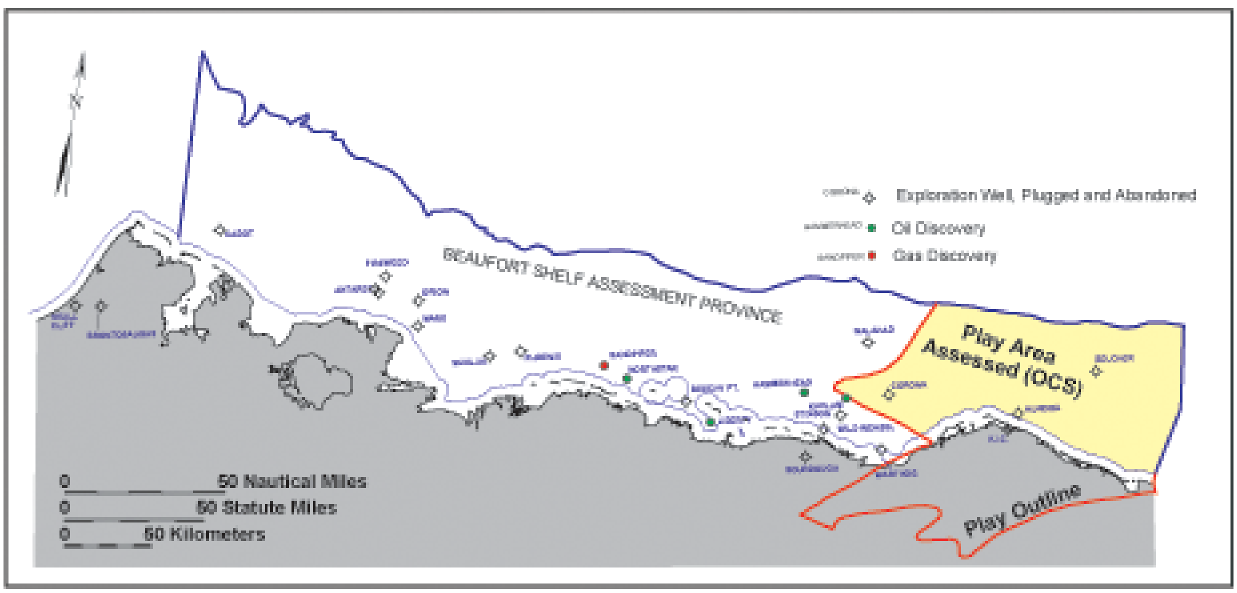


Figure B-4 Beaufort Brookian Foldbelt Play

APPENDIX C

ENDANGERED SPECIES ACT,

SECTION 7

CONSULTATION

AND

COORDINATION

List of Items in Appendix C

MMS memorandum dated January 7, 2002 sending listed species for Proposed Beaufort Sea Multiple-Sale Oil and Gas Lease Sales to USFWS.

USFWS memorandum response dated February 11, 2002.

MMS letter dated January 7, 2002 sending listed species for Proposed Beaufort Sea Multiple-Sale Oil and Gas Lease Sales to NMFS.

NMFS letter response dated February 11, 2002 indicating that they recently revised the Arctic Regional Biological Opinion in May 2001.

USFWS memorandum dated October 22, 2002 forwarding the Biological Opinion for Sale 186.

MMS memorandum dated May 9, 2002 requesting formal consultation with USFWS under the ESA, and forwarding the Draft EIS for the Proposed Beaufort Sea Multiple-Sale Oil and Gas Lease Sales.

MMS letter dated May 9, 2002 requesting formal consultation with NMFS under the ESA, forwarding the Draft EIS for the Proposed Beaufort Sea Multiple-Sale Oil and Gas Leasing Sales, and inquiring as to the status of May 2001 NMFS Biological Opinion in light of the Proposed Beaufort Sea Multiple-Sale Oil and Gas Lease Sales.

NMFS letter response dated July 23, 2002 to MMS saying that the previous May 2001 Biological Opinion was relevant to the Proposed Beaufort Sea Multiple-Sale Oil and Gas Lease Sales. This consultation is applicable to Sale 186.

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Alaska Outer Continental Shelf Region
949 East 36th Avenue, Suite 300
Anchorage, Alaska 99508-4363

JAN - 7 2002

Memorandum

To: Regional Director, U.S. Fish and Wildlife Service

From: Regional Director

Subject: Endangered Species - Proposed Beaufort Sea Multi-Sale Oil and Gas Lease Sale

The Minerals Management Service has initiated the planning process for leasing and exploration associated with the proposed Outer Continental Shelf (OCS) Beaufort Sea Multi-Sale Oil and Gas Lease Sale plan for the Beaufort Sea. The multi-sale plan provides for three sales in the Beaufort Sea Planning Area, Sale 186 in 2003, Sale 195 in 2005, and Sale 202 in 2007, as described in the Draft OCS Oil and Gas Leasing Program: 2002-2007. The planning area will be identical to the program area adopted in the 1997-2002 OCS Oil and Gas Leasing Program (see enclosure).

In accordance with the Endangered Species Act section 7 regulations governing interagency cooperation, we are providing a notification of the listed and proposed species and critical habitat that will be included in our biological evaluation.

In our biological evaluation, we will review the following listed species that may be present in the proposed sale area.

Common Name	Scientific Name	Status
Spectacled eider	*Somateria fischeri*	threatened
Steller's eider	*Polysticta stelleri*	threatened

It is our understanding there is no designated or proposed critical habitat for any listed or proposed species in OCS regions potentially affected by activities associated with the Beaufort Sea Multi-Sale plan.

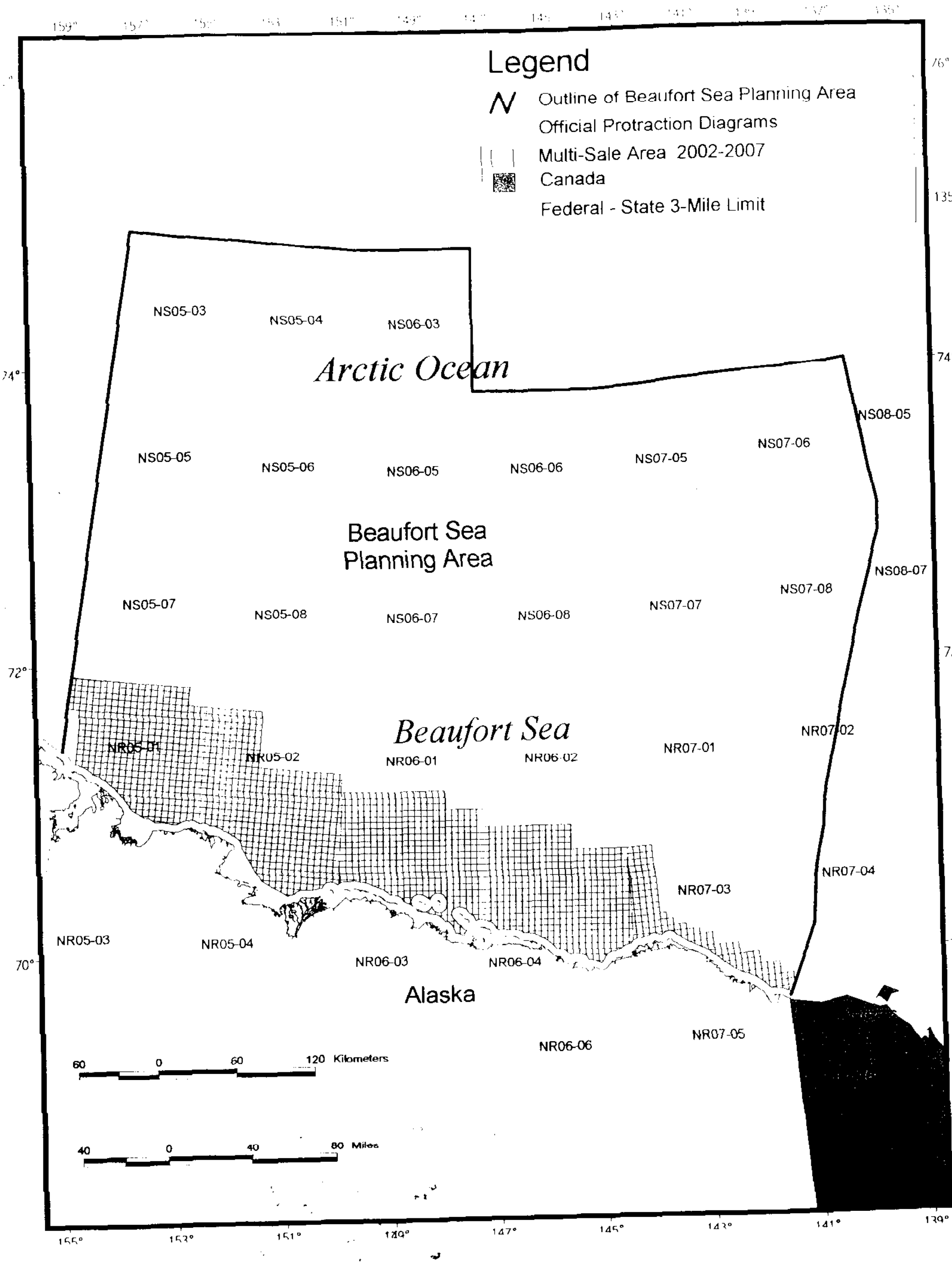
In previous consultations with the Fish and Wildlife Service (FWS) we also consulted on listed species and critical habitat along the transportation corridor from Valdez to ports along the Pacific coast and to the Far East. In the most recent section 7 consultation on the Liberty Development and Production Project, the FWS elected to address the effects of oil-tankering on listed species/critical habitat through a separate consultation with the U.S. Coast Guard in recognition of the Coast Guard's statutory authority relative to tankering activities. In addition, the National Marine Fisheries Service (NMFS) determined they would not be able to meaningfully measure, detect, or evaluate the effects associated with the transportation corridor.

NMFS therefore considered these effects as discountable and did not include them in the biological opinion for the proposed action. We understand that NMFS also may consider addressing the effects of oil-tankering on listed species/critical habitat through a separate consultation with the U.S. Coast Guard. Accordingly, we do not plan to consult on listed species and critical habitat along the transportation corridor from Valdez to ports along the Pacific coast and to the Far East.

Please review our list and notify us of your concurrence or necessary revisions and of any new information concerning these species or other species under FWS jurisdiction in relation to the proposed project. Also please advise us on the necessity to consult on the transportation corridor based on the discussion in the previous paragraph. To facilitate the review, we have provided a copy of this letter to your Northern Alaska Ecological Services Field Office. Upon receipt of your reply, we will begin preparation of the biological evaluation reviewing potential effects of the proposed action.

We look forward to working with you and your staff in protecting and conserving endangered and threatened species. If you have any questions concerning this proposed action, please contact Joel Hubbard at (907) 271-6670 or Frank Wendling at (907) 271-6510.

Attachment


Legend
Outline of Beaufort Sea Planning Area
Official Protraction Diagrams
Multi-Sale Area 2002-2007
Canada
Federal - State 3-Mile Limit
Arctic Ocean
Beaufort Sea Planning Area
Beaufort Sea
Alaska
NS05-03
NS05-04
NS06-03
NS08-05
NS05-05
NS05-06
NS06-05
NS06-06
NS07-05
NS07-06
NS08-07
NS05-07
NS05-08
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155°
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151°
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147°
145°
143°
141°
139°

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1011 E. Tudor Rd.
Anchorage, Alaska 99503-6199

IN REPLY REFER TO:
AFES

FEB 11 2002

Memorandum

To: Regional Director - Minerals Management Service

From: Regional Director - Region 7

Subject: Endangered Species - Proposed Beaufort Sea Multi-Sale Oil and Gas Lease Sale

This memorandum constitutes the U.S. Fish and Wildlife Service's response to your memorandum dated January 7, 2002, in which you requested concurrence on two issues relating to consultation of the effects of a proposed Outer Continental Shelf Multi-Sale Oil and Gas Lease Sale plan for the Beaufort Sea on threatened and endangered wildlife.

First, you asked us to review your list of threatened and endangered species that may be present in the proposed sale area. We concur that Spectacled Eiders (Somateria fischeri) and Steller's Eiders (Polysticta stelleri) may occur in the proposed sale area. We also agree that there is no designated or proposed critical habitat for listed species that would likely be affected by the proposed lease sale.

Second, you asked us to comment on the necessity to include an evaluation of the impacts of transporting oil from Valdez to ports along the Pacific coast and the Far East in your biological evaluation and the ensuing consultation. We continue to believe that it is preferable to address the effects of oil-tankering on listed species in a separate consultation with the U.S. Coast Guard, rather than consulting on the effects piecemeal during multiple consultations on lease sales and development projects. There is no need, therefore, to include an evaluation of the effects of oil-tankering in your biological evaluation or the ensuing consultation on the proposed lease sale.

Thank you for your interest in protecting threatened and endangered species. If you have any questions about our response, please contact Patrick Sousa, Field Supervisor, Northern Alaska Ecological Services Field Office, at (907) 456-0327 or Ted Swem, Endangered Species biologist, Northern Alaska Ecological Services Field Office, at (907) 456-0441.

Daryl B Allen

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Alaska Outer Continental Shelf Region
949 East 36th Avenue, Suite 300
Anchorage, Alaska 99508-4363

JAN - 7 2002

Mr. James Balsiger
Regional Administrator, Alaska Region
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

Dear Mr. Balsiger:

The Minerals Management Service has initiated the planning process for leasing and exploration associated with the proposed Outer Continental Shelf (OCS) Beaufort Sea Multi-Sale Oil and Gas Lease Sale plan for the Beaufort Sea. The multi-sale plan provides for three sales in the Beaufort Sea Planning Area, Sale 186 in 2003, Sale 195 in 2005, and Sale 202 in 2007, as described in the Draft OCS Oil and Gas Leasing Program: 2002-2007. The planning area will be identical to the program area adopted in the 1997-2002 OCS Oil and Gas Leasing Program (see enclosure).

In accordance with the Endangered Species Act section 7 regulations governing interagency cooperation, we are providing a notification of the listed and proposed species and critical habitat that will be included in our biological evaluation.

In our biological evaluation, we will review the following listed species that may be present in the proposed sale area.

Common Name	Scientific Name	Status
Bowhead whale	*Balaena mysticetus*	endangered

It is our understanding there is no proposed or designated critical habitat for any listed or proposed species in OCS regions potentially affected by activities associated with the Beaufort Sea Multi-Sale plan.

In previous consultations with the National Marine Fisheries Service (NMFS) we also consulted on listed species and critical habitat along the transportation corridor from Valdez to ports along the Pacific coast and to the Far East. In the most recent section 7 consultation on the Liberty Development and Production Project, NMFS determined they would not be able to meaningfully measure, detect, or evaluate the effects associated with the transportation corridor. NMFS therefore considered these effects as discountable and did not include them in the biological opinion for the proposed action. In addition, we understand that the Fish and Wildlife Service and NMFS have elected to address the effects of oil-tankering on listed species/critical habitat through a separate consultation with the U.S. Coast Guard in recognition of the Coast Guard's statutory authority relative to tankering activities. Accordingly, we do not plan to consult on listed species and critical habitat along the transportation corridor from Valdez to ports along the Pacific coast and to the Far East.

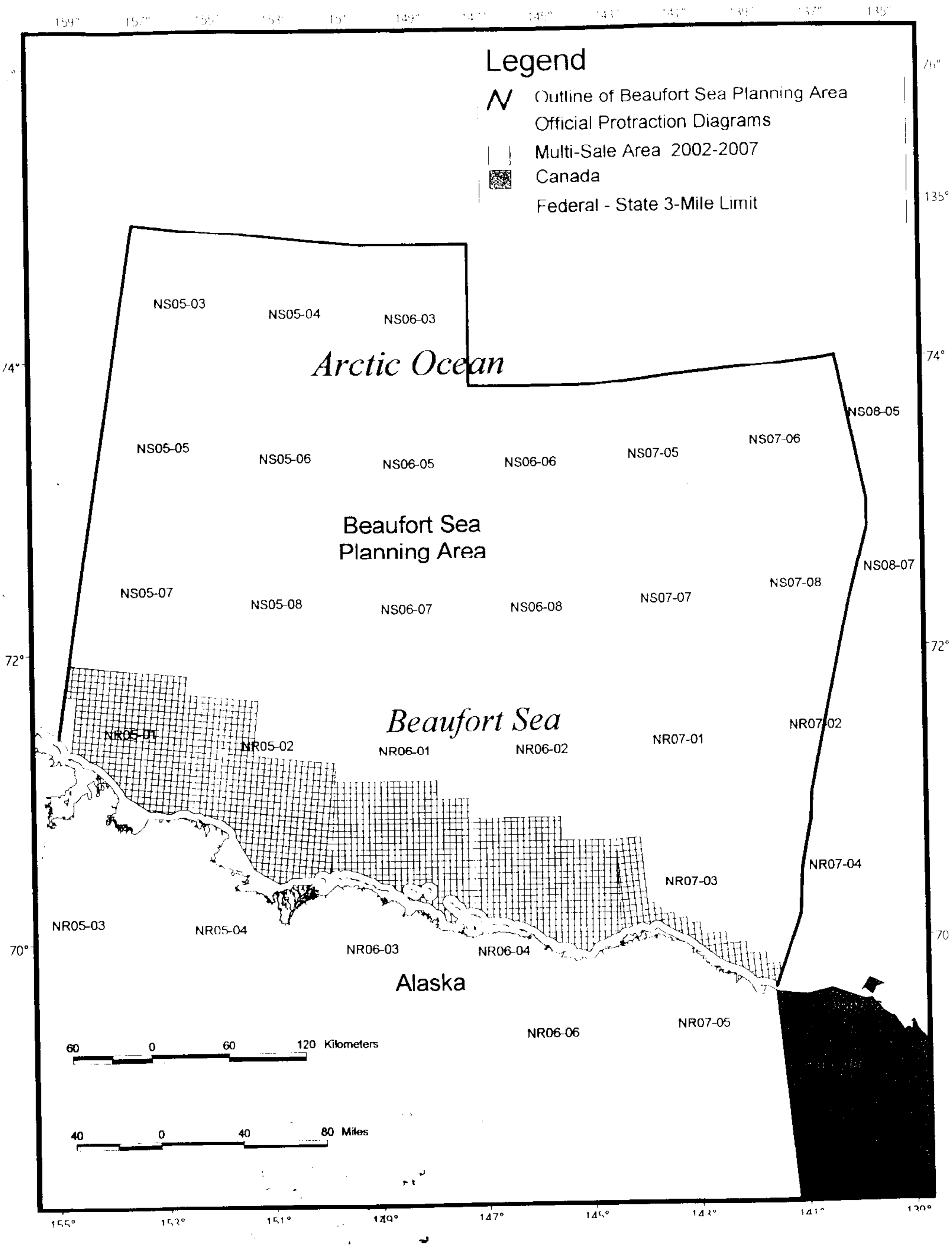
Please notify us of your concurrence or necessary revisions and of any new information concerning this species or other species under your agency's jurisdiction in relation to the proposed project. Also please advise us on the necessity to consult on the transportation corridor based on the discussion in the previous paragraph. To facilitate the review, we have provided a copy of this letter to your Anchorage field office. Upon receipt of your reply, we will begin preparation of the biological evaluation reviewing potential effects of the proposed action.

We look forward to working with you and your staff in protecting and conserving endangered and threatened species. If you have any questions concerning this proposed action, please contact Frank Wendling at (907) 271-6510 or Joel Hubbard at (907) 271-6670.

Sincerely,

John T. Goll
Regional Director

Enclosure


Legend
Outline of Beaufort Sea Planning Area
Official Protraction Diagrams
Multi-Sale Area 2002-2007
Canada
Federal - State 3-Mile Limit
Arctic Ocean
NS05-03
NS05-04
NS06-03
NS08-05
NS05-05
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Beaufort Sea
Planning Area
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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

February 11, 2002

RECEIVED
JAN ? 2002
REGIONAL DIRECTOR, ALASKA OCS
Minerals Management Service
ANCHORAGE, ALASKA

John T. Goll
Director,
Alaska Outer Continental Shelf Region
Minerals Management Service
949 East 36th Avenue, Suite 300
Anchorage, Alaska 99508-4363

Dear Mr. Goll:

Thank you for your letter regarding threatened and endangered species which might be affected by the proposed Beaufort Sea Multi-Sale Oil and Gas Lease Sale. We agree with your determination to confine the biological evaluation to one listed species; the bowhead whale. Separate consultations are underway or will be initiated regarding the effects of the Trans-Alaska Pipeline System and the marine transport of oil from the terminal at Valdez. We are therefore in agreement with the position of Minerals Management Service not to consult on listed species and critical habitat along the pipeline or out of Valdez.

The Arctic Regional Biological Opinion (ARBO) was revised in May 2001, and we expect that document will continue to represent the most current assessment of the effects of leasing actions in the Beaufort Sea on the bowhead whale. We will confirm the applicability of the ARBO after reviewing the Biological Evaluation for this multi-sale.

We appreciate this opportunity for comment. Please direct any questions to Brad Smith in our Anchorage office at (907) 271-5006.

Sincerely,

James W. Balsiger
Administrator, Alaska Region

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1011 E. Tudor Rd.
Anchorage, Alaska 99503-6199

IN REPLY REFER TO:

AFES/DES/FFWFO

OCT 22 2002

RECEIVED
OCT 23 2002
REGIONAL DIRECTOR, ALASKA OCS
Minerals Management Service
ANCHORAGE, ALASKA

Memorandum

To: Regional Director - Minerals Management Service

From: Acting Regional Director - Region 7 Gary Edwards

Subject: Section 7 Consultation for Proposed Beaufort Sea Natural Gas and Oil Lease Sale 186 - Final Biological Opinion

This memorandum transmits the U.S. Fish and Wildlife Service's final no jeopardy biological opinion based on our review of the Minerals Management Service's proposed Natural Gas and Oil Lease Sale 186 and associated exploration activities in the Beaufort Sea Planning Area in accordance with Section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

Over the last several weeks our staff worked closely together in reviewing and revising the document. We appreciated the open, and constructive dialogue that led to the finalization of the biological opinion. We look forward to working collaboratively with the Minerals Management Service staff in implementing the terms and conditions of the biological opinion. If your staff have any questions regarding the final biological opinion, please have them contact Steve Lewis, Project Leader, Fairbanks Fish and Wildlife Field Office, at (907) 456-0272, or Jonathan Priday, Endangered Species Biologist, FFWFO, at (907) 456-0499.

Attachment

Doing visual inspection for mercury/worker safety? What are your analytical costs for mercury (see low)?

While a visual inspection will be used to direct soil sampling, potential mercury hazards will be investigated by sampling up to 50 locations in and around Peavy. Again there was a miscommunication regarding this proposal and a revised budget is attached.. Our current best estimate is $6,550 for PACF analytical: 50 soil/sediment samples for cold vapor mercury analysis ($64 each) with sample preparation costs of $67 per sample. RTI contact costs were used to prepare this estimate. Actual costs may be lower, depending on which lab performs the analysis.

Biological Opinion
for Minerals Management Service's
Proposed Beaufort Sea Natural Gas and Oil Lease Sale 186

Introduction

This documents transmits the U.S. Fish and Wildlife Service's (Service) final biological opinion based on our review of the Minerals Management Service's (MMS) proposed Natural Gas and Oil Lease Sale 186 and associated exploration activities in the Beaufort Sea Planning Area in accordance with Section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). The MMS's May 9, 2002, request for formal consultation was received on May 29, 2002. The MMS requested programmatic Section 7 consultation for proposed Beaufort Sea lease sales from 2003 through 2007 identified as Lease Sales 186, 195, and 202. The May 2002 Draft Alaska Outer Continental Shelf (OCS) Environmental Impact Statement (EIS) states that it is the sole National Environmental Policy Act (NEPA) analysis for Lease Sale 186 and that MMS will prepare an Environmental Assessment (EA) or supplemental EIS for Sales 195 and 202. Based upon the information contained in any future EA or supplemental EIS, the MMS will reinitiate programmatic consultation on Lease Sales 195 and/or 202 at later dates if new information comes to light that would trigger the need for reinitiation.

The MMS requested that the following biological opinion supercede previous consultations on all prior and existing lease sale activity in the Beaufort Sea. The Service and MMS previously consulted on OCS Lease Sales 124, 144, and 170, all of which overlap with portions of the area covered in Lease Sale 186. Thus far, leases on all or parts of 60 blocks have been sold in previous actions resulting in one exploration project, McCovey, and two development/production projects, Liberty and the Northstar project. Consultations for the McCovey, Liberty, and Northstar projects have been completed. However, since the McCovey exploration project falls within the current proposed action, the final biological opinion for Lease Sale186 will supercede the prior consultations covering McCovey. This biological opinion does not affect the consultations completed on the Northstar and Liberty projects.

For actions such as OCS oil and gas lease sales that are completed in incremental steps, the Service issues biological opinions on each step being considered. The following "incremental step" consultation is appropriate for long-term, multi-staged activities such as Lease Sale 186, for which agency actions occur in discrete steps. Although this is an "incremental step" consultation on leasing and exploration, information was also provided by MMS on potential development and production scenarios so that the Service could evaluate the likelihood of the entire action proceeding without violating Section 7(a)(2) of the Act.

In the first step of an incremental consultation, the Service must evaluate not only the proposed action, but also the potential entire action in order to determine the likelihood of the entire action violating Section 7(a)(2) of the Act. In this case, leasing and exploration are the proposed actions. Subsequent actions such as development and production are actions that may occur at a later date and will require separate consultations. Based on the information provided on the proposed and potential activities, and the information currently available on listed and proposed species and designated and proposed critical habitat, the Service has determined that it is unlikely that the entire action, including development and production, will violate Section 7(a)(2) of the Act.

This final biological opinion is based on information provided in the May 2002 Draft Alaska OCS Environmental Impact Statement and other sources of supplied information to evaluate the effects of the proposed leasing and exploration actions. The following document represents the Service's biological opinion on the effects of that action on the threatened spectacled eider (*Somateria fischeri*) and Steller's eider (*Polysticta stelleri*), in accordance with Section 7 of the Act.

A chronology of the consultation actions regarding Lease Sale 186 is provided in Attachment 1. A complete administrative record of this consultation is on file at the Fairbanks Fish and Wildlife Field Office, 101 12th Ave., Box 19, Fairbanks, Alaska 99701.

Description of the Proposed Action

The activities considered in this consultation are oil and gas lease sales and subsequent exploratory drilling, testing, and surveying. Separate consultations for development and production activities will be conducted if oil is discovered and development plans are proposed. Lease Sale 186 is tentatively scheduled for September 2003. If held, Lease Sale 186 would be the eighth Federal offshore sale in the Beaufort Sea Planning Area. The proposal would offer for lease 1,877 blocks encompassing about 3.9 million hectares (9.7 million acres). The blocks that comprise the proposed action are approximately 3 to 25 nautical miles offshore in water depths that range from approximately <1 to 1,500 meters (2 to 4,900 feet).

Six exploration and 6 delineation wells are proposed to be drilled during the period 2004 through 2010. The project description indicates that a maximum of two drilling rigs would be operable in any one exploratory year, assuming one exploration rig per platform. According to MMS's estimates within the Lease Sale 186 EIS, it is likely that one exploration well will be drilled per year for 6 consecutive years starting in 2004.

Based on geologic studies, the MMS indicates that each exploratory or delineation well would require 425 short tons of drilling muds (dry weight) and produce approximately 525 short tons of dry rock cuttings. The MMS estimates 935-1,040 short tons (dry weight) of drilling muds and 5,775-6,300 short tons (dry weight) of bore cuttings would need to be disposed for the exploration and delineation activities for Lease Sale 186.

If the first commercial discovery is made in 2005, 2 years after the sale date in 2003, production from Lease Sale 186 would begin by 2010. Between 2009 and 2014, three production facilities are likely to be brought online. The MMS estimates ~70 percent of production facilities would be located between the Canning River on the east and Colville River on the west in water depths less than 10 meters (Near Zone), ~30 percent would be located between Barter Island in the east to Cape Halkett in the west in water depths between 10 and 30 meters (Midrange Zone), and 0 percent would be located in the remainder of the program area extending from Barrow on the west to the Canadian boarder on the east (Far Zone). Spectacled eiders, especially females and broods, utilize the nearshore area of all three of these zones, especially areas offshore from the Colville Delta, Harrison Bay and Smith Bay (TERA 2002, review). Aerial surveys in the central Beaufort area done in 1999 and 2000 estimated that 166-371 spectacled eiders could have utilized the area that includes the Near and western Mid Zones (Stehn and Platte 2000). Steller's eiders are rarely found in the Far Zone and even less common farther east into the Mid- and Near Zones. Drilling production and injection wells are projected to begin in 2009 and conclude in 2017, with a total of 102 wells drilled. Oil production from Lease Sale 186 would end by 2033. Offshore pipeline construction is slated to begin in 2009 and finish in 2015, with 40 miles of new offshore pipeline installed. The offshore pipeline would likely connect to existing onshore pipelines.

Ice roads are assumed to be the principal transportation mode for routine supplies and materials to be transported to ice islands and/or nearshore gravel islands. For drilling platforms farther offshore in the broken-ice zone, material and supplies would be transported by support/supply boats (with icebreaking capacity, if necessary) during the open-water season and by helicopter at other times. For both types of drilling structures, most personnel would be transported by helicopters. The number of helicopter trips flown in support of exploration- and delineation-well drilling is assumed to range from about 90-270 each year, depending on the number of wells (1-3) that are drilled. For each drilling operation, there would be 1 flight per day of drilling. The time required to drill and test a well is about 90 days.

In the formulation of this biological opinion, the Service considered activities that would be interrelated and interdependent to the proposed action as well as accidental events that may occur as a result of the proposed action. Interrelated actions are those actions that are part of a larger action and depend on the larger action for their jurisdiction. Interdependent actions are those actions that have no independent utility apart from the action being considered in the biological opinion. Interrelated and interdependent activities that may occur in conjunction with the proposed action include construction of onshore support facilities, construction of onshore and offshore pipelines, and accidental oil spills originating from platforms, pipelines, and supply vessels.

STATUS OF THE LISTED SPECIES

Spectacled eider

The spectacled eider was listed as a threatened species under the Act in May 1993. Currently, primary nesting grounds are the Yukon-Kuskokwim Delta, the North Slope (Cape Simpson to the Sagavanirktok River) of Alaska, and in the Chaun Gulf and the Kolyma, Indigirka, and Yana river deltas of Arctic Russia. Post-breeding flocks of staging and molting spectacled eiders have been observed in Mechigmenan Bay (on the eastern coast of Russia's Chukotsk Peninsula), Alaska's Ledyard Bay (southwest of Point Lay), Peard Bay, Norton Sound, and 80 km south of Saint Lawrence Island. An estimated 7,370 spectacled eiders occupied the Arctic Coastal Plain of Alaska in June 2001 (Larned et al. 2001a), about 2 percent of the estimated 375,000 world population (Larned and Tiplady 1999).

From late December to early April, the only known wintering area of spectacled eiders is among leads in the pack ice southwest of St. Lawrence Island in the Bering Sea (Petersen et al. 1999). Leads in ocean ice are important pathways for marine bird and mammal species migrating along the Beaufort Sea coast in Alaska and Canada. All species of eiders use this lead system as well, flying at altitudes that are usually less than 30 meters (Johnson and Richardson 1982). Very little is known about migratory routes east of Barrow, but the definitive lead system transforms into numerous branches varying in location and extent from year-to-year. Because few spectacled eiders are observed in marine areas along the Beaufort coast in spring, a majority may migrate to the nesting areas overland from the Chukchi Sea (TERA 2002, review). Migration of eiders (the majority of which are king and common eiders) along Alaska's northern coast has been described in several studies (Thompson and Person 1963, Johnson 1971, Woodby and Divoky 1982). Spectacled eiders are observed in mixed flocks of king, common, and sometimes Steller's eiders, but the percentage of both spectacled and Steller's eiders is quite small.

Spectacled eiders arrive on North Slope breeding grounds paired, often in small flocks, in late May to early June. Spectacled eider nests are widely separated, nesting mainly from the Sagavanirktok River to the Chukchi Sea, and only sparsely to the east (Larned et al. 2001a). The highest densities determined from Service aerial surveys for eiders in 1998-2001 on the Arctic Coastal Plain east to the Arctic National Wildlife Refuge were found south of Barrow, with smaller areas east of Teshekpuk Lake, on the Colville River Delta, and near western Simpson Lagoon. Overall density was determined as 0.24 birds per square kilometer in 2001 (Larned et al. 2001a).

Male spectacled eiders begin to depart breeding areas during incubation, which coincides with late June on the North Slope. On the North Slope, the number of pairs peaks in mid-June and the number of males declines 4-5 days later (Smith et al. 1994, Anderson and Cooper 1994, Anderson et al. 1995). Following their late June departure from the nesting areas, males apparently make little use of the Beaufort before migrating to the Chukchi Sea.

During late June the Beaufort Sea has little open water, hence males present at breeding grounds east of Barrow normally do not use marine habitats and fly directly overland (most heading to a molting/staging area in Ledyard Bay) (TERA 2002, review). Later in the season (late June through September), when females depart the North Slope, much more of the nearshore zone is ice free. Open water in marine habitat allows for extensive use of the western Beaufort Sea. Radio telemetry studies have shown that most female spectacled eiders that migrate west toward Barrow use the nearshore zone of the Beaufort Sea as they transit to their molting/staging areas. The 13 female spectacled eiders tracked by Troy et al. (2002, review) primarily used the western Beaufort (71 percent of all bird-days) while areas near Stockton Island were also extensively used (17 percent of all bird-days). The females remained in the Beaufort Sea nearshore zone for an average of about 2 weeks (range 6-30 days).

Predators of spectacled eider eggs include gulls, jaegers, and foxes. In Arctic Russia, apparent nest success has been calculated to be as low as <2 percent in 1994 and 27 percent in 1995; foxes, gulls, and jaegers are suspected to have depredated most of the nests (Pearce et al. 1998). On Kigigak Island in the Yukon-Kuskokwim Delta, nest success ranged from 20-95 percent in 1991-1995 (Harwood and Moran 1993, Moran and Harwood 1994, Moran 1995, Moran 1996). Nest success may have been higher in 1992 than in other years of observation, because foxes were eliminated from the Island prior to the nesting season that year. Nest success in 1991 and 1993-1995 in the Kuparuk and Prudhoe Bay oil fields on the North Slope ranged from 25-40 percent (Warnock and Troy 1992, Anderson et al. 1998).

Spectacled eider incubation lasts 20-25 days (Dau 1974, Kondratev and Zadorina 1992, Harwood and Moran 1993, Moran and Harwood 1994, Moran 1995). Hatching on the North Slope occurs from mid- to late July (Warnock and Troy 1992). Fledging occurs approximately 50 days after hatching. At this time, females with broods move directly from freshwater to marine habitats (Dau 1974, Kistchinski and Flint 1974).

On the nesting grounds, spectacled eiders feed by dabbling in shallow freshwater or brackish ponds, or on flooded tundra (Dau 1974, Kistchinski and Flint 1974). Food items include molluscs, insect larvae such as craneflies, trichopterans, and chironomids; small, freshwater crustaceans, and plants or seeds (Cottam 1939, Dau 1974, Kistchinski and Flint 1974, Kondratev and Zadorina 1992). Spectacled eiders in the marine environment feed predominately on clams and small amounts of snails, amphipods, and other bivalves. In March-April 1999 and 2001, studies within the spectacled eider wintering areas showed that the esophagi of collected eiders contained only clams, almost entirely *Nuculana radiata* with no trace of the once-dominant and preferred *Macoma calcarea* (Lovvorn 2002). Changes in the density of *Macoma calcarea* in the Bering Sea are coincident with an oceanic regime shift to warmer conditions in 1976-77 (Lovvorn et al. 2002 review). Exceptional climate change in the arctic and subarctic, and associated changes in marine communities and ice dynamics in spring, may have had important impacts on spectacled eiders whose declines of ~90 percent are largely unexplained.

timed in mid-June, indicates a smaller population, averaging about 200 birds from 1992-2001 (Larned et al. 2001b). These surveys likely underestimate actual population size, however, because an unknown proportion of birds are missed when counting from aircraft, and no species-specific correction factor has been developed and applied. Nonetheless, these observations indicate that hundreds or low thousands of Steller's eiders occur on the North Slope. These surveys do not demonstrate a significant population trend over the last decade. However, based on the observed interannual variability, it is estimated that it would take 14 years to detect a trend equivalent to a 50 percent change over 10 years (Larned et al. 2001a). Current sampling intensity is too low to provide useful trend data for this very rare species. There is some support for the hypothesis that Steller's eiders have abandoned formerly occupied areas in eastern portions of the North Slope; if true, this likely indicates that the Alaska-breeding population is in decline.

Steller's eiders spend most of the year in marine habitats. During winter, most of the Steller's eiders concentrate along the Alaska Peninsula from the eastern Aleutian Islands to southern Cook Inlet in shallow, near-shore marine waters (Jones 1965, Petersen 1980). They also occur in the western Aleutian Islands and along the Pacific coast, occasionally to British Columbia, along the Asian coast (from the Commander islands to the Kuril islands), and some are found along the north Siberian coast west to the Baltic States and Scandinavia (Palmer 1976, Cramp et al. 1977). In spring, large numbers concentrate in Bristol Bay before migration; in 1992, an estimated 138,000 Steller's eiders congregated there before sea ice conditions allowed movement northward (Larned et al. 1994).

Steller's eiders arrive in pairs on the North Slope in early June. Nesting effort varies widely from year to year. In the years from 1991-2001, there were 6 "nesting years" (1991, 1993, 1995, 1996, 1999, 2000) when typical breeding activities occurred, and 5 "non-nesting years" (1992, 1994, 1998, 2001) when birds appeared in early summer, but no nests were found and Steller's eiders are believed not to have nested (Quakenbush et al. 1995, Obritschkewitsch et al., unpublished data). Four nests were found in 1997, but these were initiated late (early July) and none survived past mid-incubation (Service/North Slope Borough), unpublished data). The reasons for the observed variation in nesting effort are unknown, but an association has been noted between nesting years and years of lemming abundance. Nest success could be enhanced in years of lemming abundance, because predators are less likely to prey on eider nests when small mammals are abundant. It has also been hypothesized that avian predators such as pomarine jaegers (*Stercorarius pomarinus*) and snowy owls (*Nyctea scandiaca*), which nest at high densities only when lemmings are abundant, may provide protection for nearby eider nests incidental to defense of their nesting territories (Quakenbush and Suydam 1999). If this hypothesis is correct, the presence of avian predators is an essential element of breeding habitat.

In nesting years, initiation dates are typically in the first half of June (Quakenbush et al. 1995), and hatching dates range from 7 July to 3 August (Quakenbush et al. 1998). Nests in Barrow are located in wet tundra, in areas of low-center polygons or low (indistinct flatcentered) polygons, frequently within drained lake basins (Quakenbush et al. 1998). Average clutch sizes at Barrow ranged from 5.3-6.3 in 5 different years, with clutches up to 8 reported (Quakenbush et al. 1995). Nest success (proportion of nests at which at least 1 egg hatched) at Barrow averaged approximately 17 percent from 1991-2001 (Service, unpublished data). Egg loss was attributed mostly to predation by predators, including jaegers, common ravens (*Corvus corax*), and possibly glaucous gulls (*Larus hyperboreus*) and Arctic foxes (*Alopex lagopus*) (Quakenbush et al. 1995, Obritschkewitsch et al. 2001). The fledging period is not known, but is estimated to be 37 days (Obritschkewitsch et al. 2001). Broods most often used ponds with emergent grass (*Arctophila fulva*) (Quakenbush et al. 1998). Broods were reared close to their nest site; 8 broods tracked near Barrow in 1995 remained within 650m of their nest sites during the first 32 days after hatching (Quakenbush et al. 1998).

Males typically depart the breeding grounds after females begin incubating. Based on observations in the Barrow area, and on a small sample of birds equipped with satellite transmitters, males depart Barrow around the end of June or early July (Quakenbush et al. 1995, Obritschkewitsch et al. 2001). Both males and females tracked with satellite transmitters in a non-breeding year dispersed across the area between Admiralty Inlet and Wainwright in late June and early July, with most birds entering marine waters by the first week of July. The satellite-tracked birds used coastal locations from Barrow to Cape Lisburne, and made extensive use of lagoons and bays on the north coast of Chukotka (Service, unpublished data). Visual observations in other years confirm the use of nearshore areas of the Chukchi Sea; small groups of males (less than 10) have been observed in July near Barrow (Service, unpublished data). Females that fail in breeding attempts may remain near Barrow later in the summer; a single failed-breeding female equipped with a transmitter in 2000 remained near the breeding site until the end of July, and stayed in the Beaufort Sea off Barrow until late August. Females and fledged young depart the breeding grounds in early to mid-September.

In mid-August, Alaska-breeding Steller's eiders migrate to molting areas, where they congregate in large flocks in protected waters. Concentrations of molting Steller's eiders have been noted in Russia on the Chukchi and Bering sea coasts, near Saint Lawrence Island in the Bering Sea , and along the northern shore of the Alaska Peninsula (Kistchinski 1973, Fay 1961, Jones 1965, Petersen 1981). Satellite-tracked birds from Barrow molted at Nunivak Island, Cape Avinof (Kuskokwim Shoals), Nelson Lagoon/Port Moller, and Izembek Lagoon (Service, unpublished data).

Causes of suspected population declines are not known. Possible causes currently being examined include community dynamics of nesting avian populations in the Barrow area, artificial increases in predator populations on the North Slope, subsistence harvest and lead contamination.

ENVIRONMENTAL BASELINE

Regulations implementing the ESA (50 CFR §402.2) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area that have undergone Section 7 consultation, and the impacts of State and private actions, which are contemporaneous with the consultation in progress.

Status of Spectacled Eiders and Steller's Eiders Within the Action Area

Currently, no trend is discernible in spectacled and Steller's eider population sizes on the North Slope. Furthermore, the factors that limit population size on the North Slope have not been identified. Therefore, it is impossible to determine whether human activity and habitat alteration have affected the status of the species in the project area. However, factors that may have affected the status of the species in the project area include loss of breeding habitat, disturbance from oilfield operations, research efforts, lead contamination, increases in predator populations, and subsistence harvest.

Factors Affecting Species Environment Within the Action Area

Breeding habitat on the North Slope has remained largely unaltered and uninhabited by humans. A small portion of the species' potential breeding range has been altered by oil and gas development. Within the last decade oil and gas development has spread out from the coastal plain near Prudhoe Bay to offshore platforms in the Beaufort Sea to the borders of the Arctic National Wildlife Refuge in the east and the Colville River in the west. Since 1979, 7 OCS lease sales have been held and 30 OCS exploration wells have been drilled in the Beaufort Sea Planning Area. In 1999, the Service has completed Section 7 consultation on a development and production plan for the Northstar Project, which straddles Alaska State and Federal waters (Lease Sale 186 EIS). Northstar began production on October 31, 2001. The Service also completed consultation on a development and production plan for the Liberty Project, which is wholly located on the Federal OCS. A final EIS for the Liberty Project was published in May 2002. The applicant, BP Exploration (Alaska) Inc., announced that it has suspended work on the project pending a re-evaluation of project costs. The future of this project is uncertain. Impacts of oil development include construction, accidental spills of toxic materials, off-road vehicle use, wetland filling, and indirect effects of human presence in areas previously uninhabited.

Human population growth in the vicinity of Barrow and other North Slope communities has also resulted in localized habitat loss due to construction activities and off-road vehicle use. On-road and off-road vehicle traffic are potential sources of disturbance. Steller's eider research conducted jointly by the Service and North Slope Borough is also a source of disturbance, because those activities are oriented toward locating nests and broods. One nest was depredated in 2000 as a likely result of nest-search disturbance, when a nest was left exposed to a jaeger because of the proximity of the researcher (Service, unpublished data). Nest abandonment, in the absence of predation, has only been documented as a result of research-related trapping and handling of an incubating hen; it is possible, however, that chronic human disturbance close to a nest could cause abandonment.

Lead or other sources of contamination of habitat or prey species are possible in localized areas within the range of Steller's and spectacled eiders. Exposure of waterfowl to lead has been documented in the range of the Alaska-breeding population of Steller's eiders. Elevated blood and tissue lead levels, morbidity, and mortality from lead poisoning were found in spectacled and common eiders (*Somateria fischeri* and *S. mollissima*, respectively) on the Yukon-Kuskokwim Delta (Franson et al. 1995, Flint et al. 1997, Flint and Herzog 1999). On the breeding grounds near Barrow, one Steller's eider found dead in June had liver and kidney lead concentrations suggestive of lead poisoning, although several other Steller's eiders examined at the same time of year had lower lead tissue concentrations (Trust et al. 1997, Service, unpublished). Blood samples from nesting hens trapped near Barrow in 1999 and 2000 showed that all (8 of 8) had concentrations exceeding the clinical threshold for lead exposure and 7 of 8 exceeded thresholds for lead poisoning in waterfowl.

Often, with increases in human presence, there is a concomitant increase in nest predator populations such as gulls, ravens, and foxes. Residents of Barrow and other North Slope communities have observed an increase in populations of gulls and arctic foxes. There is very little information on predation of Steller's and spectacled eider nests throughout most of the species' range in Alaska. Near Barrow, however, Steller's eider nest success in recent years has been very poor. Of 186 nests found from 1991-2000, only 15-18 percent survived until hatching, with predation thought to be the primary factor causing nest failures (Quakenbush et al. 1995, Obritschkewitsch et al. 2001). In addition to causing complete nest failures during incubation, predators at Barrow further reduced productivity through partial predation (where some but not all eggs in a nest were taken) and by killing ducklings that survived the incubation period (Quakenbush et al. in prep.). Studies of nest predation in other areas have reported mixed results. For example, "apparent" nest success on the Indigirka River Delta, Russia in 1971 was 10-15 percent, and eiders nesting near gull nests had higher nesting success (Kistchinski and Flint 1974, Mayfield 1975). However, in 1994 nest success was <2 percent and nest predators such as Arctic foxes, glaucous and herring gulls, and parasitic and pomarine jaegers are suspected to have depredated most of the nests (Pearce et al. 1994). Also, nearly complete predation of spectacled eider nests by jaegers and foxes was recorded on the Chaun River Delta, Russia after a June snow storm (Kondratev and Zadorina 1992). Predation by gulls, jaegers, and Arctic foxes probably affects the survival of Steller's and spectacled eider eggs and ducklings throughout the species' range.

Sport hunting for Steller's and spectacled eiders was closed in 1991 by Alaska State regulations and Service policy. Outreach efforts have been conducted by the North Slope Borough and Service to inform hunters of these closures. Accurate information on current harvest rates is not available, but hunter surveys and other observations indicate that hunting of Steller's and spectacled eiders likely continues in Northwest Alaska (Paige et al. 1996, Georgette 2000, Wentworth 2001).

Conservation efforts also affect spectacled eiders and their habitat within the action area. The Service provides project applicants with recommendations and restrictions intended to minimize impacts of oilfield activities on spectacled eiders. These include timing restrictions and buffers around known nest sites and likely benefit spectacled eiders at the individual level.

All of the factors discussed here may have influenced populations of spectacled and Steller's eiders in northern Alaska, although it is unknown if these factors played a major role in either species' decline.

EFFECTS OF THE ACTION ON LISTED SPECIES

Helicopter Overflights

Nesting Steller's and spectacled eiders could be disturbed by helicopter overflights related to exploration and delineation activities. However, disturbance to nesting spectacled and Steller's eiders is unlikely due to their extremely low densities across the North Slope. Across the Arctic Coastal Plain of the North Slope, breeding season density averages approximately one pair per 8 km^2 for spectacled eiders (Larned et al. 2002a). Steller's eiders are so rare in some years that they are not detected at all by aerial survey methods. In the core Steller's eider breeding area near Barrow, the highest density recorded in 4 years of aerial surveys was estimated as approximately one pair per 12.5 km (Ritchie and King 2002). Densities elsewhere on the Arctic Coastal Plain are much lower, and may approach zero.

The number of helicopter trips flown in support of exploration- and delineation-well drilling is assumed to range from about 90-270 each year, depending on the number of wells (1-3) that are drilled. For each drilling operation, it is assumed that there would be one flight per day of drilling. The time required to drill and test a well is about 90 days. Most flights will transport employees between Deadhorse and as yet unspecified exploration sites.

Heavy helicopter traffic could adversely affect spectacled eiders by: 1) displacing adults and/or broods from preferred habitats during pre-nesting, nesting, brood rearing and migration; 2) displacing females from nests, exposing eggs or small young to inclement weather or predators; and 3) reducing foraging efficiency and feeding time. The behavioral response of eiders to aircraft overflights is unknown; some spectacled eiders nest and rear broods near the Deadhorse Airport, indicating that some individuals may tolerate frequent aircraft noise. Individual tolerances are likely to vary, however, and the intensity of disturbance associated with the proposed action would, in some cases, be greater than that experienced by birds near the airport. Some birds may be displaced, with unknown physiological and reproductive consequences. The number of eiders that would be exposed to helicopter overflights is variable, however. This is, in part, because the potential flight paths to drilling sites within the Lease area could range from short (e.g., a direct route from Deadhorse to Beaufort Sea) to lengthy (e.g., a flight path to a remote site 25 mi. north of Barrow). Because most oil exploration and development in the Lease Sale 186 area is anticipated to occur in the Near and Mid Zone areas close to primary support facilities at Deadhorse and vicinity, spectacled eiders in the Deadhorse area are much more likely to be overflown than those in more distant portions of the lease area.

In conclusion, while helicopter overflights potentially could cause adverse effects to individuals of either species of listed eider, their low nesting densities and low use of nearshore areas during migration, suggest that few individuals would likely be impacted. Likewise, the wide range of tolerances found in individual birds to this type of potential disturbance make it difficult to predict whether adverse impacts would actually occur. Finally, the EIS indicates that the most likely locations for exploration are in the Near and Mid zones. Steller's eiders are extremely rare in these zones, and the probability of affecting large numbers is diminished because of the relatively short flight paths.

Onshore Bases and Pipelines

Disturbance to Steller's and spectacled eiders from onshore bases and pipelines is also possible. The level of disturbance anticipated is highly variable depending on the zone within the OCS within which future development actually occurs. For the Near Zone, an area anticipated to receive over 70 percent of all development, MMS expects that no new landfalls, shore bases, or new onshore processing facilities would be required. For development within the Mid- and Far Zones, projects could involve new pipeline landfalls and shore bases. Because the Mid- and Far Zones are mostly beyond the influence of existing infrastructure on the North Slope, new development projects could introduce significant changes to the level of disturbance experienced at landfall areas. The MMS's Lease Sale 186 EIS states that route selection and installation of offshore pipelines could occur either in the summer open-water season or during mid- to late winter when landfast ice has stabilized. New onshore pipeline sections would be constructed simultaneously with the offshore pipeline installation. Because onshore pipelines and support bases may be constructed during the summer breeding season, there is potential for disturbance to nesting spectacled eiders. Observations from Prudhoe Bay suggest that spectacled eiders exhibit some tolerance of facilities (including pipelines) and service roads (TERA 1996). Telemetry studies in 1993 and 1994 showed broods spending time within 200 m (656 feet) of facilities, and crossing roads (five known broods in 1995 and two in 1994).

The development of onshore bases and pipelines would only occur in support of oil production and thus is not a part of the leasing and exploration action being considered in this incremental consultation other than with regard to the jeopardy determination. Although construction and operation of onshore bases may displace and/or disturb individual eiders, the total area affected is not expected to result in population-level impacts. If onshore bases and additional pipelines to transport produced oil and gas are proposed in the future, the impacts of those actions would be fully considered when consultation is requested on that increment of the OCS program.

Exploration, Production and Support Activity

Encounters between marine seismic equipment, offshore drilling, dredging, and vessels involved in ice breaking and threatened eiders at sea is also a possibility. During the open-water season, MMS assumes various levels of seismic-survey activity and supply boat support. Site-specific surveys of the exploration and delineation well sites would be conducted during the ice-free seasons of the years of the exploratory phase. The MMS estimates each survey would cover roughly 23 square kilometers for each exploration well and last between 2 and 5 days. The annual number of supply boat trips per open-water season could be as high as 14.

If exploration occurs between October and May, the probability of exploratory activities (not including accidental discharge of oil) in the Beaufort Sea resulting in encounters with spectacled or Steller's eiders would be low. This probability increases, however, if the action occurs between May and October because of the presence of spectacled and Steller's eiders migrating across the Chukchi and Beaufort seas to reach breeding grounds in the spring and when migrating to molting/staging areas in the summer and fall.

Extensive nearshore and offshore aerial surveys in the Beaufort Sea in 1999 and 2000 failed to detect concentrations of spectacled eiders (no Steller's eiders were observed), except for two flocks (numbering 40 and 100) offshore in the Harrison Bay area (Fischer at al. 2002). Given the rarity of these species, we assume that few threatened eiders would encounter vessel traffic. We surmise that eiders would avoid such encounters by diving or flying away, that the frequency of those disturbances will not reach the threshold that would impair survival, and that alternative suitable habitat is available. Under these conditions, take is unlikely, and would not reach a population-level effect.

Collisions with Drilling Structures

Migrating birds are at risk of collision with objects in their path, particularly when visibility is impaired during darkness or inclement weather, such as rain, drizzle, or fog (Weir 1976). The incidence of bird strikes appears to rise when objects are illuminated with constant diffuse light, and the tendency for birds to be drawn to diffuse light appears to increase during rainy or foggy weather. Accidental strikes of "hundreds" of unidentified eiders were reported to have occurred in association with the Bering Sea crab fishery, presumably influenced by the bright lights used on fishing vessels (Service 1996). Comparisons have shown that blinking lights cause less mortality than constant lighting, and the color of the lights and the object may influence collision frequency (Weir 1976). Cross-sectional area also affects the number of birds that strike an obstruction.

Johnson and Richardson (1982) reported that 88 percent of eiders flew below an estimated altitude of 10 m (32 feet) and well over half flew below 5 m (16 feet). Recently, (September/October 2001) several sea duck fatalities as a result of platform strikes were documented at Northstar Island, a production platform within the Lease Sale 186 area. In 2001,18 birds were retrieved at Northstar Island, all sea ducks, including 4 king eiders, 6 common eiders, and 8 long-tailed ducks (Service, unpublished). The densities of Steller's and spectacled eiders on the North Slope are much lower than those of the species found dead at Northstar. Therefore the potential for them striking OCS oil platforms is much lower. Although information specific to spectacled eider flight behavior is lacking, a spectacled eider was seen striking a utility wire near an electric light in white-out conditions on St. Lawrence Island in 1998 (Service, unpublished).

Several structures associated with exploration and delineation wells may pose a risk to migrating eiders, including crane boom, drilling rigs, and other buildings. Although the total profile of exploratory and delineation wells and associated structures is small relative to the Beaufort Sea, the Service believes that the structures pose a risk to migrating eiders, including spectacled and possibly Steller's eiders, because: 1) the Lease Sale186 area contains the "main route" used by female eiders migrating west through the Beaufort Sea, speculated to be "just north of the barrier islands" (Johnson and Richardson 1982); 2) the artificial lighting associated with drill rigs may serve as a magnet to migrants, particularly during fog and rain (Weir 1976); and 3) the flight altitude of migrating eiders is low and within the height range of exploration and production facilities.

It is estimated that 47 percent of the North Slope spectacled eider population breeds to the east of Barrow, and it is a reasonable (though unproven) assumption that birds breeding west of the project infrastructure do not wander eastward (Service, unpublished). The likelihood of death or injury as a result of collision is diminished because recent radio telemetry studies have shown that few male spectacled eiders migrate through the Beaufort Sea on their way from their North Slope breeding grounds to molting/staging areas in the Chukuchi Sea (TERA 2002 review). Females nesting east of Barrow have been shown to utilize the western regions of the Beaufort Sea extensively en route to molting/staging areas (TERA 2002, review). Therefore, based on our understanding of the biology of the species, their migration routes, distribution, and behavior, we believe that there is some risk of injury or death of some individuals from collisions with oil and gas exploration and delineation structures. However, the best available scientific and commercial information does not lead us to believe that significant population-level impacts are likely to result from the proposed action.

Increase in Predator Populations

Several North Slope predators that prey on waterfowl eggs and young concentrate in areas where anthropogenic food sources are made available. Examples include glaucous gulls, ravens, and Arctic foxes that are abundant near camps, roads, oilfields, and villages. For ravens and foxes, there is evidence showing population increases and/or changes in distribution in response to anthropogenic food sources, and the breeding distribution of ravens has expanded on the North Slope because buildings and other structures in oil developments provide nesting sites (Day 1998). The predation pressure that foxes and, to a lesser degree, gulls and ravens, exert on ground-nesting birds is also well documented, and in some areas predation may be the single most important factor affecting nest success (ibid.).

Spectacled and Steller's eiders may be adversely affected by increased numbers or distribution of predators. Ravens apparently never successfully nested in Barrow until 1991 when a single pair began raising a brood each year on a man-made structure. In 1991, one of these ravens was seen depredating five eggs from two Steller's eider nests (Quakenbush et al. 1995). Although information showing a direct link between oilfield activities and waterfowl nest predation rates is lacking, the Service believes that actions that artificially enhance predator populations are a potential adverse impact to listed eiders.

The development of significant permanent infrastructure would only occur in support of oil production and thus is not a part of the leasing and exploration action being considered in this incremental consultation other than with regard to the jeopardy determination. If permanent infrastructure is proposed in the future, the impacts of those actions would be fully considered when consultation is requested on that increment of the OCS program including their potential impacts on predator populations. Based on the limited number and ephemeral nature of exploratory drilling rigs, we do not believe that these will affect predator populations sufficiently to cause impacts to threatened eiders on the population level.

Oil Spills

Spilled oil can have significant impacts on birds. Exposure to oil can affect birds in several ways. Most birds exposed to oil die within a short period of time, often through loss of the insulative properties of their plumage so that hypothermia ensues (Hunt 1987, Piatt et al. 1990). Embryos or young can be killed by contact with adults that have oiled plumage (King and Lefever 1979, Peakall et al. 1982). Birds that ingest contaminated food can suffer fatal toxicological effects (Peakall et al. 1983). Species that feed on invertebrates or other organisms that bioaccumulate and/or biomagnify toxins are particularly vulnerable.

Oil spills and associated clean-up could result from the proposed project. Potential sources of a spill include a drilling blowout, failure of diesel fuel storage tanks on exploratory islands, rupture of pipelines (loss > 0.15 percent of flow rates), chronic leaks from the pipelines (loss < 0.15 percent of flow rate), or spills from barges or trucks used to transport fuel oil to exploratory and delineation rigs. Historical data from North Slope oil production show that between 0 and 102 spills per year occurred from 1970-1997; most were small spills, as mean spill size in all years was <100 bbl (Lease Sale 186 EIS). Small spills, although the most likely, have the least impact to wildlife populations because a smaller area is affected and fewer individuals are likely to be exposed. Similarly, spills in the terrestrial environment, though possible, will likely have minimal impact because the density of Steller's and spectacled eiders is relatively low in the project area and spills on land spread slowly and will be more easily detected and contained. Therefore, the Service considers the possible impacts from small marine spills and spills in the terrestrial environment to be unlikely to affect more than a few individual Steller's and spectacled eiders. Thus, the remainder of this discussion will focus exclusively on medium or large (≥1,000 bbl [42,000 gal]) spills in the marine environment.

The expected impacts of oil spills depends on how accurately spill characteristics, as well as the distribution and behavior of the birds are predicted. Estimating the probability of spills is fundamental: if no oil is spilled, there will be no impacts. If one or more spills occur, characteristics such as volume, trajectory, and timing will greatly influence the impact on eiders. Patterns of use of the Beaufort Sea by Steller's and spectacled eiders are equally relevant. Evaluating the likelihood of spills from exploration and delineation is constrained by the small number of comparable projects in the Beaufort Sea. The Lease Sale 186 EIS estimated that the risk of one or more spills of at least 1,000 bbl (42,000 gal) over the life of the project is 8-10 percent. Oil-Spill-Risk Analysis modeling within the Lease Sale 186 EIS estimates that if such a spill does occur the chance that listed eiders will come in contact with spilled oil in nearshore or offshore areas ranges up to 55 percent in summer; along the shoreline contact probability is less than 8 percent. No estimates of spill risk from barges or trucks used to transport fuel oil to exploratory and delineation sites were given in the Lease Sale 186 EIS.

Cleanup of a spill in the Beaufort is anticipated to be limited by ice and weather conditions in the area. In many cases, final cleanup of an oil spill may only be possible from early July through August after the Lease Sale 186 area is ice free (National Research Council 1994). Because of unstable and broken ice conditions in the area, once a leak is detected, response for containment and cleanup of a spill will be delayed or hindered during 6 months of the year, and then only as weather permits. In addition, historical recovery rates of spilled oil are traditionally very low even when cleanup is not hampered by Arctic weather and frozen or partially frozen seas. Based on national and international data, recovery rates of 20-25 percent are considered high and are usually not above 10 percent (Alaska Department of Environmental Conservation 1998, National Research Council 1994).

Oil spill response activities such as hazing and other human activities (boat and air traffic) could also impact spectacled eiders. Hazing, according to the Lease Sale 186 EIS, may have limited success during spring when migrants occupy open water in ice leads. The hazing effect of cleanup activity or actively hazing birds out of ice leads that oil is expected to enter may be counterproductive, because there are few alternative habitats that flushed birds can occupy. Cleanup activities in leads during May and open water in July through September are likely to adversely affect spectacled eiders.

In summary, accidental oil spills can have significant impacts on birds as a result of direct and indirect contact. Potential sources of a spill include a drilling blowout, failure of diesel fuel storage tanks on exploratory islands, rupture of pipelines, chronic leaks from the pipelines, or spills from barges or trucks used to transport fuel oil to exploratory and delineation rigs. Small spills are the most likely to occur but that also have the least potential impact to listed species because a smaller area is affected and fewer individuals are likely to be exposed. Similarly, spills in the terrestrial environment will likely have minimal impact because the density of Steller's and spectacled eiders is relatively low in the project area and spills on land spread slowly and will be more easily detected and contained. Large spills (≥1,000 bbl [42,000 gal]) spills in the marine environment are of a greater concern, however, the risks during exploration and delineation are significantly less than during production, which the EIS indicates is 8-10 percent over the life of the proposed project. The probability of a large oil spill contacting a significant number of spectacled or Steller's eiders is further diminished by considerations of timing, ice and weather conditions, effectiveness of spill response, and the dispersed nature of the birds' distribution. The coincidence of all those factors which would have to occur simultaneously in order to appreciably reduce the likelihood of survival and recovery is improbable. Thus, we conclude that such an impact is not reasonably certain to occur.

Toxics Contamination

Leasing and exploration may also result in increasing contamination of marine habitats, due to the disposal of drilling muds and cuttings, or accidental eruption of oil from test wells during a blowout. Such contamination may impact individuals either through direct contact or indirectly as a result of effects on prey populations or important habitats. Information provided by the MMS indicates that industry's record on the Outer Continental Shelf allows the assumption of a probability of crude-oil release during exploration to be zero, however the potential for such an occurrence exists.

The Lease Sale 186 scenario developed by the MMS, which this opinion will assume, indicates that 6 exploration and 6 delineation wells are expected to be drilled during the period 2004 through 2010. A maximum of two drilling rigs would be operable in any one exploratory year, assuming one exploration rig per platform. Discharges as a result of these wells are regulated by the Environmental Protection Agency through a National Pollutant Discharge Elimination System (NPDES). The EPA initiated consultation with the Service in January 1994 to determine the likelihood that the proposed discharges associated with exploratory drilling would adversely affect listed species. The Service concurred with the EPA that the proposed NPDES permit issuance would not be likely to adversely affect listed species. Therefore, the EPA and MMS have already satisfied the requirements of the

Endangered Species Act regarding effluent discharges associated with oil and gas exploration in the Beaufort and Chukchi seas (State and Federal waters).

CUMULATIVE EFFECTS

Cumulative effects include future State, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the Act.

State or private actions reasonably certain to occur within or near the proposed sale area would include: State of Alaska oil and gas lease sales, exploration, development, and production; gravel mining, support facility and road construction to support these activities as well as pipelines and related oil and gas transport facilities, including feeder lines, Trans-Alaska Pipeline operation and maintenance; possibly some future Canadian Beaufort Sea oil and gas activities; land reconveyances from Native corporations to private individuals; subsistence harvest activities; commercial fishing; marine shipping; and recreational activities.

CONCLUSION

After reviewing the proposed action, the current status of spectacled and Steller's eiders, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that Beaufort Sea Oil and Gas Lease Sale 186 and associated activities, as proposed, are not likely to jeopardize the continued existence of the spectacled and Steller's eider. There is no designated or proposed critical habitat on the North Slope for spectacled or Steller's eiders.

Regulations (51 FR 19958) that implement Section 7(a)(2) of the Act define "jeopardize the continued existence of" as "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." In evaluating the impacts of the proposed Lease Sale 186 to Steller's and spectacled eiders, the Service identified a series of direct impacts that could result, such as disturbance from helicopter overflights, collisions with drill rig facilities by migrants, and changes in the number or distribution of predators. However, the Service believes that the combined impacts to spectacled and Steller's eiders through these avenues will be minimal for the reasons given in the *Effects of the Action* section of this biological opinion. The widely dispersed nature of these two species, both onshore and offshore in the Beaufort Sea region, reduces their vulnerability to perturbations of limited geographic scope.

The Service believes that the greatest risk to listed species from the proposed Lease Sale 186 is potential impacts from accidental oil spills in the marine environment. However, as noted above, for the project to jeopardize the continued existence of spectacled eiders, an appreciable reduction in the likelihood of both the survival and recovery of one or both species must be "reasonably expected to occur." Thus, when determining whether possible oil spills jeopardize listed species, the Service must consider the following: 1) the likelihood of one or more spills occurring; and 2) if one or more spills occur(s), the likelihood that the spill(s) will kill enough spectacled eiders to appreciably reduce their likelihood of survival and recovery.

The likelihood of one or more large spills $\geq$1,000 bbl in size occurring during the lifetime of Lease Sale 186 is estimated to be 8-10 percent. Assuming factors similar to Northstar, the likelihood of a very large spill (blowout) $\geq$150,000 bbl in size occurring during the lifetime of Lease Sale 186 is 9.4×10^{-7}. However, the impacts of a spill to biological resources (e.g., eiders) vary with spill volume, spill trajectory, whether the resource is present during the time of year that spilled oil is present, and the length of time that oil persists in the environment. This is exemplified by Stehn and Platte's (2000) model, which estimated mortality from a 30 day spill in July caused by exploratory activity within the Lease Sale 186 area at 2-52 spectacled eiders. While if a 30 day spill were to occur throughout August during the period of active westward migration, mortality resulting from a large spill is estimated to be $\leq$100 individuals. Although the estimates of spill probability and impacts to threatened eiders are constrained by lack of information on oil development, subsea pipeline safety, and numbers/locations of threatened eiders in the region, the available information leads the Service to conclude that an appreciable reduction in the likelihood of survival and recovery of listed eiders is not reasonably expected to occur.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. "Harm" is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by MMS so that they become binding conditions of any grant or permit issued to an applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The MMS has a continuing duty to regulate the activity covered by this Incidental Take Statement. If the MMS fails to assume and implement the terms and conditions or fails to require any applicant to adhere to the terms and conditions of the Incidental Take Statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the MMS must report the progress of the action and its impact on the species to the Service as specified in the Incidental Take Statement. [50 CFR 402.14(i)(3)]

Helicopter Overflights

Disturbance from helicopter overflight to Steller's and spectacled eiders is unlikely because over most of the lease area, there is a low probability that the few areas occupied by scattered flocks during the spring to fall staging and migration periods would be overflown routinely by support aircraft flying between a few offshore drill sites and onshore facilities. A potential exception might be spectacled eiders occurring in coastal or offshore portions of the Near Zone or western Midrange Zone areas that are relatively close to primary support facilities at Deadhorse. Eiders in this vicinity may be more likely to be overflown than those in the more distant portions of the lease area. However, few eiders remain for long in marine waters in the immediate vicinity of Prudhoe Bay and therefore disturbance would be minimal (TERA 1997, 1999).

As described in the *Effects of the Proposed Action* above, spectacled and Steller's eider adults and/or broods may occur below or adjacent to helicopter routes. However, the Service does not anticipate that helicopter flights associated with Lease Sale 186 will result in take of spectacled or Steller's eiders due to low recorded densities of breeding and migrating spectacled eiders in the project area and observed tolerance of nesting spectacled eiders to overhead flights near Deadhorse airport.

Exploration, Production and Support Activity

Because Steller's eiders using the marine environment rarely occur in the Near or Midrange Zones from Harrison Bay east, where 90 percent of the Lease Sale 186 leasing activity and development projects are expected to occur, it is unlikely that the action will generate major disturbance. Because of the large amount of nearshore habitat available to spectacled eiders in the Beaufort Sea, spectacled eiders staging or migrating in offshore water are not likely to experience significant disruption of foraging or displacement as a result of routine exploration, development, or support activities during the open-water season.

Despite potential encounters with exploration and support activities at sea, eiders typically avoid such encounters by diving or flying away from such disturbance. Substantial adverse effects on spectacled or Steller's eiders resulting from offshore marine activities in the vicinity of the proposed area of the action are unlikely. Therefore, the Service does not anticipate that disturbance from exploration, production and support activity will result in take of spectacled or Steller's eiders.

Collisions with Drilling Structures

The Service anticipates that some level of take of spectacled and/or Steller's eiders may result from collisions with exploratory, delineation and production drilling structures. Such losses may affect the regional population of spectacled eiders, which shows a non-significant downward trend in the past decade, and Steller's eiders, which shows a nonsignificant upward trend over the same time period. However, the MMS's uncertainty over locations, number and size of drilling platforms within Lease Sale 186 makes quantifying potential bird strikes difficult. Also, limited information available on spectacled and Steller's eider migration routes, behavior, and vulnerability to obstructions when migrating further complicates estimating anticipated take. However, the anticipated footprint of all exploratory and production platforms is likely to be relatively small within the Lease Sale 186 area (3.95 million hectares) and the majority of eiders encountering platforms during migration are likely to miss or avoid the obstruction.

Estimating incidental take of Steller's and spectacled eiders from strikes is extremely difficult due to a lack of available information on sea duck strikes coupled with uncertainty over potential numbers, locations, seasonality and duration of potential Beaufort OCS activities. Limited data is available for common eider (*Somateria mollissima v-nigra*) strikes to Northstar Island, which is located within the Lease Sale 186 area. From this data it is possible to generate a generic strike rate for sea ducks per well-year by dividing the number of common eider strikes (6) to Northstar Island in 2002 by the most recent population estimate of common eiders migrating west over the Beaufort Sea (111,635) (Suydam et al. 1996, Service, unpublished). That number is then multiplied by the North Slope population estimates for spectacled (7,370) and Steller's eiders (433) (Larned et al. 2001a) to give a "strikes per well year" estimate for both species. The results of this methodology indicate that 0.40 spectacled and 0.02 Steller's eiders will be taken per well-year as a result of colliding with drill rigs and/or other exploratory and delineation structures.

The Lease Sale 186 EIS states that no more than two drilling rigs would operate at any time, with a total of 6 exploration and 6 delineation wells expected to be drilled over a 7-year exploration period. Therefore, the Service anticipates that the maximum number of exploration and/or delineation wells drilled within the Beaufort Sea resulting from the MMS's Lease Sale 186 would be twelve. Twelve wells result in 12 well-years, from which we estimate take of five spectacled and one Steller's eider over the life of the proposed leases.

It is important to note that the above estimates for incidental take from strikes to drill rigs are crude. The estimates do not take into consideration that eider strikes are episodic in nature, many spectacled and most Steller's eiders never migrate through the Beaufort Sea, and that the strike rates are generated from only 1 year of data at a single location in the Lease area. Therefore, as more data on eider strikes to OCS platforms in the Beaufort Sea becomes available, the MMS may need to reinitiate consultation if observed strike rates are higher than the above anticipated incidental take level.

Increase in Predator Populations

State of Alaska, Department of Environmental Conservation regulations that govern refuse management in oilfields include provisions to make it illegal for any person to intentionally feed wildlife or leave human food or garbage in a manner that attracts wildlife [5 AAC 92.230]. The Service assumes that the applicant will completely comply will all applicable regulations governing waste management, and therefore anticipates that no incidental take of listed eiders will result from an increase in predator abundance caused by improper waste management.

Oil Spills

If a large oil spill occurred in the location of and during spectacled eider presence, spectacled eider mortality likely would be ≤100 individuals; however, any substantial loss (25+ individuals) would represent a significant effect (MMS Lease Sale 186). It is unlikely that take of Steller's eiders will result from a large oil spill in late spring or in early summer unless atmospheric and oceanic conditions were such that spilled oil dispersed towards Barrow and into the Chukchi Sea. The MMS's Lease Sale 186 Oil-Spill-Risk-Analysis modeling runs predict the probability of such a spill scenario to be very low.

Extent of take that will result from oil spills from the proposed action is extremely difficult to estimate. First, it is uncertain that oil will be spilled. As stated in the biological evaluation, the likelihood of at least one spill of at least 1,000 bbl (42,000 gal) during the life of the project (~26 years) is currently estimated to be 8-10 percent. In the unlikely event of such an oil spill, the extent of take will be greatly influenced by the number, volume, trajectory, and timing of spills as well as the period that oil remains in the environment. In addition, the low probability of such an event, combined with the uncertainty of the location of the spill, and the seasonal nature of the resources inhabiting the area, make it highly unlikely that a large oil spill would contact a threatened eider. Spectacled and Steller's eiders are present on the North Slope for only 3-5 months out of the year. Even if an eider were present in the vicinity of an oil spill, it might not be contacted by the oil due to avoidance behavior, ice conditions or weather patterns. Furthermore, the MMS requires companies to have and implement oil-spill-response plans to help prevent oil from reaching critical areas and to remove oil from the environment. Therefore, the probability of a large oil spill contacting a Steller's or spectacled eider is much less than 8-10 percent over the 30 year life of the proposed leases (2003-2033).

Considering the low probability of a large spill coupled with a variety of other factors that would need to satisfied to result in take, the Service anticipates that it is highly unlikely that incidental take of listed eiders will result from oil spills within the Lease Sale 186 area. However, should any oil spill within the Lease Sale 186 area result in the take of any Steller's or spectacled eider, the MMS will immediately cease all operations responsible for the take pending reinitiation.

Toxics Contamination

The EPA initiated consultation with the Service in January 1994 to determine the likelihood that the proposed discharges associated with exploratory drilling would adversely affect listed species. The Service concurred with the EPA that the proposed NPDES permit issuance would not be likely to adversely affect listed species. Therefore, the EPA and MMS have already satisfied the requirements of the Endangered Species Act regarding effluent discharges associated with oil and gas exploration in the Beaufort and Chukchi seas (State and Federal waters). The Service anticipates that no incidental take of listed eiders will result from an increase in discharges associated with exploratory drilling.

Conclusion

In conclusion, the Service anticipates the proposed action will likely result in the take of five spectacled and one Steller's eiders over the life of the lease sale as a result of bird collisions with exploratory and delineation structures. The take is expected to be in the form of killing. In the accompanying Biological Opinion, the service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

While the incidental take statement provided in this consultation satisfies the requirements of the Act, as amended, it does not constitute an exemption from the prohibitions of take of listed migratory birds under the more restrictive provisions of the Migratory Bird Treaty Act. However, the Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

Reasonable and Prudent Measures

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of Steller's and spectacled eiders: to minimize the likelihood that migrating spectacled or Steller's eiders will strike exploration or delineation structures, the MMS and the Service will cooperatively develop a lighting protocol intended to reduce radiation of light outward from structures and to increase the visibility of structures to migrating eiders.

Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of the Act, the MMS must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

To minimize the likelihood that migrating spectacled or Steller's eiders will strike structures associated with exploration and delineation drilling, the MMS and Service will cooperatively develop a lighting protocol to be used on exploration and delineation structures and identify where and when the protocol should be applied. The lighting protocol will contain the following two components:

1. The radiation of light outward from exploration/delineation structures will be minimized. This will be achieved by shading and/or light fixture placement to direct light inward and downward to living and work surfaces while minimizing light radiating upward and outward.

2. Structures will be lighted and/or marked to improve visibility to migrants according to a strategy to be jointly developed by the MMS and the Service.

   a) This strategy will be developed using available information on bird avoidance measures including, but not limited to, results of the ongoing study of lighting regimes for Northstar Island being conducted by BP Alaska, ABR, Inc., and the Service.

   b) A draft strategy will be provided by the Service to MMS by December 31, 2003; the final strategy must be mutually agreed upon by the MMS and Service by April 1, 2004, or a later date that is mutually agreed upon.

   c) This strategy applies to all exploratory and delineation structures used after April 1, 2004, because bird avoidance measures that provide unequivocal benefits are not available at this time.

   d) Any lighting requirements resulting from strategy need not apply between October 31 and May 1, because listed eiders are not thought to be present in the Beaufort Sea during this period.

   e) This strategy will be modified, as appropriate, if significant new information on bird avoidance measures becomes available during activities covered by this consultation. Modifications to the strategy will be developed jointly by MMS and the Service.

The Service believes that no more than five spectacled eider and one Steller's eider will be incidentally taken during the life of the proposed project. The reasonable and prudent measure, with its implementing term and condition, is designed to minimize the impact of incidental take that might otherwise result from the proposed action. If during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measure provided. The Federal action agency must immediately provide an explanation of the causes of the take and review with the Service the need for possible modification of the reasonable and prudent measure. If Steller's and/or spectacled eiders are encountered injured or killed through collisions with exploration and delineation structures, please contact the Fairbanks Fish and Wildlife Field Office, Endangered Species Branch, Fairbanks, Alaska, at (907) 456-0499 for instruction on the handling and disposal of the injured or dead bird.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. We recommend the following actions be implemented during the leasing and exploration phase of this lease sale:

1. The MMS should work with the Service and other Federal and State agencies in implementing recovery actions identified in the spectacled and Steller's eider recovery plans. Research to determine important habitats, migration routes, and wintering areas of spectacled and Steller's eiders would be an important step toward minimizing conflicts with current and future oil and gas development activities.

2. The Service believes that having oil industry employees recognize the presence of listed species during activities associated with exploration would allow the employee to take measures to minimize disturbance and avoid unauthorized incidental take. To this end, the MMS should work with the Service to produce, and work with the industry, to disseminate wallet-size information cards to company and contract employees. Dissemination of cards would preferably occur at employee orientations required in Stipulation 2 of the Lease Sale 186 EIS. These cards could provide information on identifying eiders and distinguishing among eider species as well as contact information for observations relevant to conservation.

3. The oil spill contingency plans for exploration and delineation wells drilled as a result of Lease Sale 186 should include measures and the capability to deploy at least 10 *Breco* buoys (or other similar devices, to be approved by the Service) to haze or scare seaducks from oiled

areas in the event of a marine spill. The spill plans should require that spill response personnel are knowledgeable of the location of available hazing devices and trained in their use.

4. To minimize disturbance of nesting, brood-rearing, and migrating spectacled and Steller's eiders with aircraft, the MMS should work with the Service to cooperatively develop project-specific aircraft flight route strategies for exploration and delineation drilling activities. Any decision regarding aircraft flight routes will comply with all appropriate Federal Aviation Administration (FAA) rules, regulations and policies. This recommendation does not apply to aviation activities conducted when eiders are not present (October 31- May 1).

Additional conservation recommendations may be proposed during subsequent incremental steps of this lease sale. In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the actions outlined in the MMS's letter received May 29, 2002. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: 1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the action agency that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; 3) the agency action is subsequently modified in a manner that causes an effect to listed or critical habitat not considered in this opinion; or 4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Thank you for your concern for endangered species and for your cooperation in the development of this Biological Opinion. If you have any comments or require additional information, please contact Jonathan Priday at (907) 456-0499 with the Fairbanks Fish and Wildlife Field Office, Endangered Species Branch, Fairbanks, Alaska.

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The total population of spectacled eiders is estimated at 375,000 (Larned and Tiplady 1999). From the early 1970s to the early 1990s, numbers of pairs on the Yukon-Kuskokwim Delta declined by 96 percent from 48,000 to 2,000, apparently stabilizing at that low level (Stehn et al. 1993, Petersen et al. 1999). On the North Slope, the mean numbers of breeding spectacled eiders estimated from aerial surveys between 1993 and 2001 ranged from a high of almost 9,300 in 1993 to a low of 5,800 birds in 1996 and back up to 7,370 birds in 2001 (Larned et al. 2001b).

Factors known or suspected to affect survival of spectacled eiders have been identified. However, the relative importance of these factors to the species' decline and to recovery are not known. The extent and causes of population declines or extirpations on the breeding grounds are difficult to assess because historical data are lacking for many locations. Several of the following factors are known to affect survival during the nesting season, but it is not clear whether they contributed to the decline of the spectacled eider population.

Lead ingestion from foraging habitat on breeding grounds in the Yukon-Kuskokwim Delta has been confirmed to cause mortality of eiders that ingested lead shot. The proportion of spectacled eiders on the Yukon-Kuskokwim Delta's lower Kashunuk River drainage that contained lead shot in their gizzards is high (11.6 percent, n=112) compared to other waterfowl in the lower 48 states from 1938-1954 (8.7 percent, n=5088) and from 1977-1979 (8.0 percent, n=12,880). The lead exposure rate in spectacled eiders (based on X-rays) is likely biased low (Flint et al. 1997), because lead is retained in the gizzard for only about 3 weeks (Elder 1954, Dieter and Finley 1978, Anderson and Havera 1986, Franson 1986, Anderson et al. 1987). Blood analyses of spectacled eiders indicate elevated levels of lead in 13 percent of pre-nesting females, 25.3 percent of females during hatch, and 35.8 percent during brood rearing. Nine of 43 spectacled eider broods (20.9 percent) contained 1 or more ducklings exposed to lead by 30 days after hatch (Flint et al. 1997). Spent lead shot in the lower Kashunuk River area and on Kigigak Island is causing additive mortality in spectacled eiders, that is, mortality over and above that caused by natural circumstances (Grand et al. in press). It is possible that exposure to lead occurs in small, localized hunting areas on the North Slope as well, however there are no site-specific data on lead contamination in this region.

Predation pressure on spectacled eider eggs, young, and adults may have increased in recent decades. Predators include Arctic foxes (*Alopex lagopus*), red foxes (*Vulpes fulva*), large gulls (*Larus* spp.), jaegers (*Stercorarius* spp.), and snowy owls (*Nyctea scandiaca*). Native elders on the North Slope believe that fox numbers have increased in recent decades as a result of reduced trapping. Population sizes of large gulls on the North Slope may have increased as a result of increased food supplies from anthropogenic wastes. Wastes made available from the commercial fishing industry in the Bering Sea and North Pacific, along with an increase in the garbage generated by coastal communities, have increased the year-round food supply for gulls.

Subsistence harvest of spectacled eider eggs and adults is another potential factor in the decline of the spectacled eider population. Alaska Natives have traditionally harvested eiders and their eggs in coastal villages during spring and fall. Although human populations on the Yukon-Kuskokwim Delta and in North Slope communities have grown substantially, changes in the numbers of hunters are unknown. In addition, improved technology for hunting has allowed greater efficiency, but the actual effects of these improvements on harvest levels are unknown.

There are other sources of take such as avicultural egg collecting (until 1991), research activity, and loss of habitat in growing communities and oilfields. Their overall impacts to the spectacled eider population is unknown.

Other potential factors that may affect spectacled eider survival have been suggested but not investigated. These include changes in the invertebrate community structure in their winter habitats, bioaccumulation of contaminants in the marine environment, human harvest for sport and subsistence outside their breeding grounds, disease, parasites, and accidental strikes and/or disturbance of benthic feeding areas by commercial fishing activity.

Steller's Eider

The Alaska-breeding population of Steller's eider was listed as threatened on June 11, 1997 (Federal Register 62(112): 31748- 31757). This action was based on a substantial decrease in the species' nesting range in Alaska, a reduction in the number of Steller's eiders nesting in Alaska, and the resulting increased vulnerability of the remaining breeding population to extirpation. Historically, Steller's eiders nested in Alaska in two general regions: 1) western Alaska, where the species has been nearly extirpated; and 2) the North Slope, where the species still occurs. In western Alaska, Steller's eiders occurred primarily in the coastal fringe of the Yukon-Kuskokwim Delta, where the species was common at some sites in the 1920s, was still present in the 1960s, but was not recorded as breeding from 1976-1994 (Kertell 1991, Flint and Herzog 1999). In 1994 and 1996-1998, 1-2 nests were found at either or both the Tutakoke River and Hock Slough study sites on the Yukon-Kuskokwim Delta (Flint and Herzog 1999).

On the North Slope, Steller's eiders historically occurred from Wainwright east, nearly to the United States-Canada border (Brooks 1915). The species may have abandoned the eastern North Slope in recent decades, but it still occurs at low densities from Wainwright to at least as far east as Prudhoe Bay. The majority of sightings in the last decade have occurred east of Point Lay, west of Nuiqsut on the Colville River, and within 90 km (56 miles) of the coast. Near Barrow, Steller's eiders still occur regularly, though they do not nest annually. In some years, up to several dozen pairs may breed in a few square kilometers.

Contemporary aerial breeding pair surveys conducted in late June indicate a population averaging about 1,000 birds from 1986-2000 (Mallek 2001). A separate set of aerial surveys,

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ATTACHMENT 1

OCS Oil and Gas Lease Sale 186, Beaufort Sea
Consultation History

05/09/02 - MMS requests formal consultation from Service (Washington D.C. Office) for Lease Sale 186, and transmits Biological Evaluation.

05/22/02 - Service (FFWFO staff) and MMS meet to discuss initiating formal consultation Lease Sale 186.

05/23/02 - MMS transmits maps to Service comparing Beaufort Sea Lease Sales 144, 170 and proposed Lease Sale 186.

05/29/02 - The Service's Fairbanks Fish and Wildlife Office (FFWFO) receives MMS's Draft Lease Sale 186 EIS. Service begins reviewing it for completeness.

06/17/02 - Service Washington D.C. Office transmits acknowledgment of receipt of request for formal consultation and agrees to prepare draft Biological Opinion (BO).

07/10/02 - FFWFO receives MMS's completed/bound Draft Lease Sale 186 EIS and accompanying CD-ROM.

09/06/02 - Service and MMS discuss further information needs, potential delivery date for draft BO, and what the Service anticipate including as "Terms and Conditions."

09/10/02 - Service and MMS discuss uncertainties over quantifying number, location, and operational lifetime of potential exploratory and production drilling. Also discuss time lines and potential "Terms and Conditions."

09/11/02 - Service and MMS discuss BO. MMS stated their desire to get a BO by the end of the comment period on the EIS (9/20) so they could finalize the EIS. The Service explained their understanding of the time line and their desire to complete the BO on time.

09/17/02 - Service requests that MMS generate language that provides more refined estimates of total exploration/production activity that will result from Lease Sale 186 (include methodology for estimating number of wells and longevity of operation).

09/17/02 - MMS asks the Service to use their estimates of exploration/delineation activity in the EIS to generate incidental take. The Service explained to them that we can proceed but we would like them to send us something in writing explaining whether their exploration/production numbers in the EIS represent an average or maximum scenario.

09/18/02 - MMS and the Service meet to discuss due dates and scope of Lease Sale 186 BO. MMS stated that the exploration and development scenarios described in the Lease Sale 186 EIS were maximum estimates.

09/19/02 - Service tells MMS that the Service received MMS's request for consultation on May 29, 2002. Therefore, the 135-day clock for the Service issuing its BO terminates on October 10th not on September 21. The Service commits to providing MMS with a draft as soon as possible and prior to deadline.

09/19/02 - Service forwards MMS draft "Reasonable and Prudent Measures", "Terms and Conditions", and "Conservation Recommendations" sections from draft Lease Sale 186 BO.

09/27/02 - Service transmits draft BO to MMS.

10/02/02 - MMS and Service discuss MMS's comments on the Service's draft Lease Sale 186 BO. The Service agrees to consider MMS's comment and get them a revised draft BO by Monday at 5:00 p.m..

10/07/02 - Service transmits revised draft BO via email to MMS.

10/10/02 - MMS transmits comments on revised draft BO via email. MMS states that if their changes are acceptable to the Service, another meeting to further discuss the draft BO is not necessary.

10/17/02 - Service makes changes to draft Biological Opinion and transmits it back to MMS via email.

10/18/02 - MMS transmits comments on revised draft BO via email.

10/18/02 - Service and MMS discuss MMS's comments and agree to language for final BO.

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Washington, DC 20240

MAY 9 2002

Memorandum

To: Assistant Director for Endangered Species
U.S. Fish and Wildlife Service

From: Thomas A. Readinger
for Associate Director for Offshore Minerals Management

Subject: Endangered Species Act Section 7, Consultation Request for the Proposed Beaufort Sea Lease Sales from 2003 Through 2007

The Minerals Management Service has completed the draft Environmental Impact Statement for the proposed multiple oil and gas lease sales in the Beaufort Sea for the time period 2003-2007. The proposed Beaufort Sea oil and gas Lease Sales 186, 195, and 202 are planned for September 2003, 2005, and 2007 respectively.

Under section 7(a)(2) of the ESA, the MMS requests formal consultation with the U. S. Fish and Wildlife Service on leasing and exploration activities associated with these proposed sales. The consultation should address all aspects of activities associated with oil and gas leasing and exploration. We understand that when the FWS issues a biological opinion for the Beaufort Sea proposed oil and gas lease sales, the FWS does not relinquish the opportunity to reconsider and modify that opinion for future proposed sales. Therefore, the MMS will prepare an Environmental Assessment for each subsequent proposed sale covered by this EIS and send those EAs to FWS for review. We also ask that the FWS biological opinion supercede all existing biological opinions for leasing and exploration activities in the Beaufort Sea.

To facilitate completion of this consultation, we are sending copies of this memorandum and attachments to FWS Region 7 Office in Anchorage, Alaska, and the Northern Alaska Ecological Services Office in Fairbanks, Alaska. The draft EIS contains information on the anticipated composition, procedures, execution, and effects of the proposed Beaufort Sea oil and gas lease sales and exploration activities. The draft EIS, which serves as our biological evaluation for the proposed action, satisfies the information requirements specified in 50 CFR 402.12 and 402.14. We request that the biological opinion be prepared in as timely a manner as possible to allow the MMS to include it in the final EIS in January 2003 and to ensure consideration by the Secretary of the Interior during the decisionmaking process for Lease Sale 186.

If you consider recommending measures to minimize impacts to threatened and endangered species or determine a jeopardy situation may exist for all or any part of the proposed action, we ask that you notify us as early as possible, according to 50 CFR 402. 14(g)(5), to allow the MMS and FWS staff time to jointly discuss the findings. We believe that such discussions will facilitate the consultation and ensure effective protection of listed species. These discussions can also ensure that any proposed alternatives are within our authority to control and implement, and are feasible, appropriate, and effective.

If you have any questions on this consultation or require additional information, please contact Ms. Judy Wilson, Minerals Management Service, Mail Stop 4042, 381 Elden Street, Herndon, Virginia 20170-4817 (commercial and FTS telephone: (703) 787-1075), or Mr. Fred King, Minerals Management Service, Alaska OCS Region, Mail Stop 8303, 949 East 36th Avenue, Suite 300, Anchorage, Alaska 99503-4363 (commercial and FTS telephone: (907) 271-6696).

Attachments

cc: (w/attachments)

Regional Director
U.S. Fish and Wildlife Service
Region 7
1011 East Tudor Road
Anchorage, Alaska 99503

Field Office Supervisor
U.S. Fish and Wildlife Service
Northern Alaska Ecological Services
101 12th Avenue, Box 19
Fairbanks, Alaska 99701

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Washington, DC 20240

MAY 9 2002

Mr. Donald Knowles
Director, Office of Protected Resources
National Oceanic and Atmospheric
Administration Fisheries
1315 East-West Highway, SSMC3
Silver Spring, Maryland 20910

Dear Mr. Knowles:

The Minerals Management Service has completed a draft Environmental Impact Statement for the proposed multiple oil and gas lease sales in the Beaufort Sea for the time period 2003-2007. This is the first multiple-sale EIS the MMS has prepared for the Beaufort Sea Planning Area. The proposed Beaufort Sea oil and gas Lease Sales 186, 195, and 202 are planned for September 2003, 2005, and 2007 respectively.

On March 10, 2000, under section 7(a)(2) of the Endangered Species Act and 50 CFR 402.16, the MMS requested the National Oceanic Atmospheric Administration Fisheries to reinitiate consultation on the November 23, 1988, biological opinion concerning leasing and exploration activities in the Beaufort Sea. The NOAA Fisheries issued a new non-jeopardy Beaufort Sea biological opinion on May 25, 2001. The biological opinion addressed the incremental step of leasing and exploration in the Alaskan Beaufort Sea Outer Continental Shelf Planning Area. The MMS has determined there is no new information revealing effects of the proposed activities expected as a result of multiple sales that may affect the bowhead whale in a manner or to an extent not previously considered in the May 2001 biological opinion. Nor have the proposed activities been modified to cause an effect to bowhead whales not considered in the May 2001 biological opinion.

Under section 7(a)(2) of the ESA, we request that you uphold the biological opinion issued in May 2001 concerning Beaufort Sea oil and gas leasing and exploration activities for proposed Lease Sales 186, 195, and 202. We request that the results of this consultation be prepared in as timely a manner as possible to allow MMS to include it in the final EIS in January 2003, and to ensure consideration by the Secretary of the Interior during the decisionmaking for Lease Sale 186. We also ask that you affirm that the May 2001 biological opinion supercedes all existing biological opinions for leasing and associated exploration activities the Beaufort Sea Planning Area. We understand that when NOAA Fisheries issues a biological opinion for the proposed oil and gas lease sales in the Beaufort Sea Planning Area, NOAA Fisheries does not relinquish the opportunity to reconsider and modify that opinion for future proposed sales. Therefore, the MMS will prepare an Environmental Assessment for each subsequent proposed sale covered by this draft EIS and send those EAs to NOAA Fisheries for review.

We submit for your review the draft EIS for Beaufort Sea Lease Sales 186, 195, and 202 in hard copy and CD format to assist you in completing this consultation. The draft EIS contains information on the anticipated composition, procedures, execution, and effects of the proposed Beaufort Sea oil and gas lease sales and associated exploration. The draft EIS, which serves as our biological evaluation for the proposed action, satisfies the information requirements specified in 50 CFR 402.12 and 402.14. We are glad to provide any additional information that you may find necessary for your deliberations. To facilitate completion of this consultation, we are sending a copy of this letter and enclosures to the NOAA Fisheries Alaska Regional Office in Juneau, Alaska, and the Anchorage Field Office.

If you have any questions on this consultation, please address them to Ms. Judy Wilson, Minerals Management Service, Mail Stop 4042, 381 Elden Street, Herndon, Virginia 20170-4817 (commercial and FTS telephone: (703) 787-1075), or Mr. Fred King, Minerals Management Service, Alaska OCS Region, Mail Stop 8303, 949 East 36th Avenue, Suite 300, Anchorage, Alaska 99508-4363 (commercial and FTS telephone: (907) 271-6696).

Sincerely,

Michael Hunt

Thomas A. Readinger
for Associate Director for
Offshore Minerals Management

Enclosures

cc: (w/enclosures)
Mr. James Balsiger
Administrator, Alaska Region
National Oceanic Atmospheric
Administration Fisheries
P.O. Box 21668
Juneau, Alaska 99802-1668

National Oceanic Atmospheric
Administration Fisheries
Anchorage Field Office
Federal Building
222 West 7th Avenue, Box 43
Anchorage, Alaska 99513-7577

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

July 23, 2002

Thomas A. Readinger
Associate Director for Offshore Minerals Management
Minerals Management Service
Washington, D.C. 20240

Dear Mr. Readinger:

Thank you for your letter concerning the need for consultation under section 7 (a)(2) of the Endangered Species Act of 1973 (ESA), as amended, for the proposed multiple oil and gas lease sales in the Beaufort Sea for the time period 2003-2007. Your letter has been forwarded to my attention. In your letter, you request that the National Marine Fisheries Service (NMFS) uphold the May 25, 2001, biological opinion for oil and gas leasing and exploration activities in the Beaufort Sea by determining that the opinion satisfies the consultation requirements of the ESA for the following proposed sales; Sales 186, 195, and 202. These sales would occur in the years 2003, 2005, and 2007, respectively. In June, 2002, the Minerals Management Service prepared a draft Environmental Impact Statement (EIS) for these three sales. A supplemental EIS or Environmental Assessment will be prepared for Sales 195 and 202 in order to determine whether or not the information and analysis in the 2002 EIS remains valid for those future dates.

NOAA Fisheries has reviewed the EIS and other information relative to the effects of the proposed sales on ESA species and/or critical habitats under our jurisdiction. We find the May 2001 opinion addresses these sales, in terms of the listed species and habitats present, the legal status of these species under the ESA having been unchanged, the anticipated actions associated with these sales being consistent with those actions considered in the opinion, and the sale area being consistent with that previously assessed. We also affirm that the May 2002 opinion supercedes all existing biological opinions for leasing and associated exploration activities in the Beaufort Sea Planning Area. In view of this finding, NOAA Fisheries believes the section 7 consultation requirements of the ESA have now been met for Sale 186. We have not applied this conclusion to Sales 195 and 202 at this time however, as the logic which MMS has used in determining the need for supplemental analysis under NEPA for these sales would also extend to ESA consultation. The applicability of the May 2002 opinion will be reconsidered prior to these subsequent sales.

Please direct any questions to Mr. Brad Smith at the Anchorage, Alaska, office, NMFS, at (907) 271-5006.

Sincerely,

P. Michael Payne
Assistant Administrator
for Protected Resources
Alaska Region

cc: Brad Smith, AKR, NMFS

APPENDIX D

APPLICABLE FEDERAL LAWS REGULATORY RESPONSIBILITIES, AND EXECUTIVE ORDERS

APPLICABLE FEDERAL LAWS, REGULATORY RESPONSIBILITIES, AND EXECUTIVE ORDERS

APPLICABLE FEDERAL LAWS, REGULATORY RESPONSIBILITIES, AND EXECUTIVE ORDERS

This appendix briefly explains or summarizes only those portions of Federal public laws enacted by Congress (see the list of legal mandates in Section I.B of this EIS) and other applicable Federal regulatory responsibilities, executive orders, and stipulations (mitigating measures) as they relate directly or indirectly to Minerals Management Service's (MMS's) management of mineral leasing, exploration, and development and production activities on leases located in the submerged lands of the Outer Continental Shelf (OCS). Additionally, this section includes responsibilities and jurisdictions of other Federal Agencies and departments involved in the regulatory process of oil and gas lease sales and operations on the OCS. This is not intended to be a comprehensive summary or explanation of all the laws associated with proposed leasing, exploration, and development and production activities that might significantly affect the OCS. References, explanations, or summaries are given only to acquaint the reader with the law and are not meant as legal interpretations. Readers always should consult the entire text of the laws for updates and additional requirements and information.

D.1. Federal Laws and Regulatory Responsibilities

D.1.a. The Outer Continental Shelf Lands Act

A jurisdictional dispute concerning the ownership of coastal submerged lands arose as new technology became available for developing offshore oil resources in increasingly deeper waters. This dispute was resolved in 1953 by two congressional statutes that clarified Federal and State rights and responsibilities for the "continental shelf" (the submerged lands extending from the coastline to the edge of the continental slope). The first statute, the Submerged Lands Act of 1953 (43 U.S.C. § 1331 et seq.), affirmed the coastal states' assertion of ownership of the submerged lands and resources within a 3-mile belt seaward of the line of low tide. The second statute, the OCS Lands Act of 1953, as amended (43 U.S.C. § 1331 et seq.), established that the submerged lands and resources of the OCS or beyond 3 miles, "appertained to the United States and [were] subject to its jurisdiction, control, and power of disposition." The OCS Lands Act authorizes the Secretary of the U.S. Department of the Interior (USDOI) to issue mineral leases and grant rights-of-way and to prescribe regulations governing oil and gas activities on OCS lands.

The OCS Lands Act defines the OCS as:

> ...all submerged lands lying seaward and outside of the areas lands beneath navigable waters as defined in section 2 of the Submerged Lands Act and of which the subsoil and seabed appertain to the United States and are subject to its jurisdiction and control.

The pertinent provision of the Submerged Lands Act defines "navigable waters" as:

> ...all lands permanently or periodically covered by tidal waters up to but not above the line of mean high tide and seaward to a line three geographical miles distant from the coast line of each such State and to the boundary line of each such State where in any case such boundary as it existed at the time such State became a member of the Union, or as heretofore approved by Congress, extends seaward (or into the Gulf of Mexico) beyond three geographical miles....

Under the OCS Lands Act, the Department of the Interior is required to:

- make Federal OCS resources available to meet the Nation's energy needs;
- conduct, develop, and manage the orderly leasing, exploration, development, and production of mineral resources on the Federal OCS;
- balance orderly energy resource development while ensuring the protection of the human, marine, and coastal environments;
- ensure that the public receives a fair and equitable return for Federal OCS resources; and
- ensure that free-enterprise market competition is preserved and maintained.

The Secretary of the Interior has delegated the responsibility of managing and regulating the development of OCS oil and gas resources in accordance with the provisions of the OCS Lands Act to the MMS.

The MMS leasing regulations are presented in Chapter 30, Code of Federal Regulations (CFR) part 256. The MMS operating regulations governing exploration, development, and production on OCS leases are presented in 30 CFR parts 250 and 270.

The OCS Lands Act extends the authority of the Secretary of the Army, through the Corps of Engineers, to the OCS to prevent obstruction to navigation in U.S. navigable waters.

The OCS Lands Act grants authority to the U.S. Coast Guard to promulgate and enforce regulations covering lighting and warning devices, safety equipment, and other safety-related matters pertaining to life and property on fixed OCS platforms and drilling vessels.

In accordance with the OCS Lands Act (43 U.S.C. § 1354) and the Export Administration Act of 1969 (50 App. U.S.C. 2405(d)), oil that is produced on the U.S. OCS must go to a U.S. port.

D.1.b. The National Environmental Policy Act of 1969 and the Council on Environmental Quality

The National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. § 4321 et seq.), is the foundation of environmental policymaking in the U.S. Recognizing the profound impact of human activity on the interrelations of all components of the natural environment, the Congress declares in NEPA that it is the continuing policy of the Federal Government, in cooperation with State and local governments and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare; to create and maintain conditions under which humans and nature can exist in productive harmony; and fulfill the social, economic, and other requirements of present and future generations of Americans. The Congress authorizes and directs that, to the fullest extent possible, the policies, regulations, and public laws of the U.S. shall be interpreted and administered in accordance with the policies set forth in NEPA. The NEPA process is intended to help Federal officials make decisions based on an understanding of environmental consequences and take actions that protect, restore, and enhance the environment.

The NEPA established two primary mechanisms for this purpose:

1. The Council on Environmental Quality (CEQ) was established to advise Federal Agencies on the environmental decisionmaking process and to oversee and coordinate the development of Federal environmental policy.
2. Federal Agencies must include an environmental review process early in the planning for proposed actions.

Congress first established the CEQ as part of the NEPA. Additional responsibilities were provided by the Environmental Quality Improvement Act of 1970. The CEQ established uniform procedures by issuing regulations (40 CFR, parts 1500 through 1508) to implement the procedural provisions of NEPA. These regulations include procedures to be used by Federal Agencies for the environmental review process. The regulations provide for the use of the NEPA process to identify and assess reasonable alternatives to proposed Federal actions that avoid or minimize adverse effects of these actions on the quality of the human environment.

The NEPA requires all Federal Agencies to use a systematic, interdisciplinary approach to protect the human environment. Such an approach ensures the integrated use of natural and social sciences in any planning and decisionmaking that may have an impact on the environment. The NEPA also requires the preparation of a detailed environmental impact statement (EIS) on any major Federal action that may have a significant impact on the environment. The EIS must address any adverse environmental effects that cannot be avoided or mitigated, alternatives to the proposed action, the relationship between short-term resources and long-term productivity, and irreversible and irretrievable commitments of resources. Environmental assessments (EA's) are prepared to determine if significant impacts may occur. If an EA finds that significant impacts may occur, NEPA requires the preparation of an EIS. The briefest form of NEPA review is the categorical exclusion review, which verifies that neither an EA nor an EIS is needed before making a decision on the activity being considered for approval.

For compliance with the NEPA, see 40 CFR, parts 1500 through 1508.

D.1.c. The Clean Air Act of 1970 and the Clean Air Act Amendments of 1990

The Clean Air Act of 1970 (42 U.S.C. § 7401 et seq.), authorizes the U.S. Environmental Protection Agency (USEPA) to establish National (primary or secondary) standards within air-quality-control regions of each state in addition to National emission standards for hazardous air pollutants (National Ambient Air Quality Standards [NAAQS]). The Act requires Federal departments or agencies that have jurisdiction over any property or facility or that are engaged in any activity resulting from the discharge of air pollutants to comply with all Federal, State, interstate, and local requirements in the control and abatement of air pollution. Section 5(a)(8) of the OCS Lands Act requires MMS, through the Secretary of the Interior, to ensure that OCS regulations incorporate and comply with NAAQS.

The 1990 Clean Air Act Amendments (CAA) delineate jurisdiction of air quality between the USEPA and the U.S. Department of the Interior (USDOI), MMS and affect the attainment and maintenance of NAAQS (Title I), motor vehicles and fuel reformulation (Title II), hazardous air pollutants (Title III), acid deposition (Title IV), facility operating permits (Title V), stratospheric ozone protection (Title VI), and enforcement (Title VII).

Section 328 of the CAA transfers authority for air quality on the OCS to the USEPA. Under the CAA, the Secretary of the Interior is required to consult with the USEPA "to assure coordination of air pollution control regulations for OCS emissions and emissions in adjacent onshore areas." On September 4, 1992, the USEPA promulgated requirements (40 CFR, part 55) to control air pollution from OCS sources to attain and maintain Federal and State air-quality standards and to comply with CAA provisions for the Prevention of Significant Deterioration. The promulgated regulations require OCS sources to comply with applicable onshore air-quality rules in the corresponding onshore area.

On November 30, 1993, the USEPA instituted final rules for determining general conformity of Federal actions with Federal and State air-quality implementation plans. Section 176(c) of the CAA, the General Conformity Rule, requires Federal Agencies to ensure that actions undertaken in nonattainment or maintenance areas are consistent with the applicable implementation plan. A Federal Agency must make a determination that a Federal action conforms to the applicable implementation plan before the Federal action is taken.

To comply with the CAA, the MMS established regulations to address air quality concerning OCS operations. These regulations are found under 30 CFR 250.302, 250.303, and 250.304. The regulated pollutants include carbon monoxide, particulates, sulfur dioxide, nitrogen oxides, and volatile organic compounds (as a precursor to ozone). In areas where hydrogen sulfide may be present, OCS operations are regulated by 30 CFR 250.417. The MMS regulations allow for the collection of information about potential sources of pollution for the purpose of determining whether the projected emissions of air pollutants from a facility could result in ambient onshore air-pollutant concentrations above maximum levels provided in the regulations. These regulations also stipulate appropriate emissions controls considered necessary to prevent accidents and air-quality deterioration.

D.1.d. The Federal Water Pollution Control Act and Clean Water Act

The Federal Water Pollution Control Act (FWPCA) of 1972, as amended (33 U.S.C. § 251 et seq.), established water-pollution-control activities to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The Clean Water Act (CWA) of 1977 (91 Stat. 1566) amended the FWPCA. Most activities are administered by the USEPA.

Title III of the CWA requires the USEPA to establish national effluent limitation standards for existing point sources of wastewater discharges that reflect the application of the best practical control technology currently available. These standards apply to existing OCS exploratory drillships, semisubmersible vessels, and jackup rigs used in exploration activities. The CWA also requires the USEPA to establish regulations for effluent limitations for categories and classes of point sources that require the application of "best available control technology economically achievable."

Section 311 of the CWA (33 U.S.C. § 1321), as amended, prohibits the discharge of oil or hazardous substances into the navigable waters of the U.S. that may affect natural resources, except under limited circumstances, and establishes civil penalty liability and enforcement procedures to be administered by the Coast Guard.

Title IV of the CWA establishes requirements for Federal permits and licenses to conduct an activity (including construction or operation of facilities) that may result in any discharges into navigable waters. Section 402 of the CWA (33 U.S.C. § 1342) gives the USEPA the authority to issue National Pollutant Discharge Elimination System (NPDES) permits for discharges of any pollutant from a point source into navigable waters. The NPDES permits are issued in compliance with USEPA's guidelines for determining the degradation of marine waters, and they apply to all sources of wastewater discharges from exploratory vessels and production platforms operating on the OCS.

Section 404 of the CWA (33 U.S.C. § 1344) authorizes issuance of permits, under certain criteria, for discharge of dredged or fill material into navigable waters at specified disposal sites. The Secretary of the Army, acting through the Corps of Engineers, has the authority to administer Section 404. Permits may be issued only after a determination is made that the activities involving discharges of dredged or fill material are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effects on the environment.

Pursuant to the 1984 Memorandum of Understanding between the USEPA and the USDOI concerning the coordination of NPDES permit issuance with the OCS oil and gas lease program, the MMS Alaska OCS Region and the USEPA Region 10 entered into a Cooperating Agency Agreement to prepare EIS's for oil and gas exploration and development and production activities on the Alaskan OCS. Section 402 of the CWA authorizes the USEPA to issue NPDES permits to regulate discharges to waters of the U.S., including the territorial seas, contiguous zone, and oceans. The NPDES permits for OCS oil and gas facilities many contain effluent limitations developed pursuant to sections of the CWA, including sections 301, 302, 306, 307, and 403. With the offshore subcategory under the CWA, the USEPA may have NEPA responsibilities for permits issued to new sources (Section 306 of the CWA), that overlap with those of the MMS. The USEPA's primary role in the Cooperating Agency Agreement is to provide expertise in those fields specifically under its mandate.

In conjunction with the issuance of an NPDES permit, the USEPA is responsible for publishing an Ocean Discharge Criteria Evaluation (ODCE) that evaluates the impacts of waste discharges proposed for oil and gas projects. The purpose of the ODCE is to demonstrate whether or not a particular discharge will cause unreasonable degradation to the marine environment.

For multiple-use conflicts, see the USEPA listing of ocean-dumping sites found under 40 CFR part 228.

The MMS pollution prevention and control regulations are found under 30 CFR 250.300.

D.1.e. The Coastal Zone Management Act and the Coastal Zone Reauthorization Amendments

Congress passed the Coastal Zone Management Act (CZMA) of 1972, as amended (16 U.S.C. § 1451 et seq.) and created the Coastal Zone Management Program to improve the management of the Nation's coastal areas. Both the Coastal Zone Reauthorization Amendments of 1990 (P.L. No. 101-508), enacted November 5, 1990, and the Coastal Zone Protection Act of 1996 (P.L. No. 104-150), enacted June 3, 1996, amended and reauthorized the CZMA. The Program, a voluntary partnership between the Federal Government and the coastal states and territories, is administered at the Federal level by the National Oceanic and Atmospheric Administration (NOAA) within the U.S. Department of Commerce (USDOC). The Program's goal is to reduce conflict between environmental and economic interest in the coastal area through the use of federally approved coastal management programs (CMP's). Each state's CZM program sets forth objectives, policies, and standards regarding public and private use of land and water resources in that state's coastal zone.

The CZMA allows a coastal state or territory with a federally approved CMP to review Federal activities for Federal consistency. Consistency applies whenever a Federal activity initiates a series of events where coastal effects are reasonably foreseeable (see H.R. Rep. No. 1012, 96th Cong., 2d Sess. 4382). The CZMA requirement that all Federal activity, including OCS oil and lease sales, regardless of location (in or outside the coastal zone) that is reasonably likely to affect any land or water use or natural resource of the coastal zone be consistent with the enforceable policies of a state's/territory's CMP. Section 307 of the CZMA (16 U.S.C. § 1456) contains the following Federal consistency provisions that impose certain requirements on Federal Agencies to comply with enforceable policies detailed in the federally approved CMP's:

> Section 307(c)(1) requires that Federal Agencies must conduct their activities, regardless of location, if coastal effects are reasonably foreseeable, that affects any land or water use or natural resources of the coastal zone in a manner that is fully consistent to the maximum extent practicable with enforceable policies of the affected state's coastal zone management (CZM) program. This section applies to OCS lease sales. On May 3, 1995, the MMS Regional Director, Alaska OCS Region, and the Director, Alaska Division of Governmental Coordination signed a Memorandum of Understanding Between State of Alaska Division of Governmental Coordination and USDOI, MMS Alaska OCS Region. This document facilitates and coordinates both agencies' efforts with respect to consistency determination procedures prior to MMS Alaska OCS Region's oil and gas lease sales.
>
> Section 307(c)(3)(A) requires that any Federal licenses/permits affecting any land or water use or natural resources of the coastal zone be consistent with enforceable policies of the state's CMP. This section applies to geological and geophysical permits. Additionally, this section prohibits the Federal Agency from issuing the license/permit until the affected state(s) has concurred with or presumed to concur with the applicant's consistency certification or until the Secretary of Commerce has overridden the state's consistency objection to the licensed/permitted activity.
>
> Section 307(e)(3)(B) requires that activities affecting any land or water use or natural resources of the coastal zone, described in detail in OCS exploration or development and production plans, be consistent with enforceable policies of the state's CMP. The MMS is prohibited from approving an OCS plan until the affected state(s) has concurred with or is presumed to concur with the applicant's consistency certification, or until the Secretary of Commerce has overridden the state's consistency objection. On August 7, 1980, a Memorandum of Understanding Between Division of Policy and Development and Planning and U.S. Geological Survey was signed between the State of Alaska and MMS (formerly USGS). This document establishes procedures for coordinating plans and programs for consistency review and includes procedures for approvals of

exploration plans, development and production plans, and other licenses and permits for OCS activities.

On December 8, 2000, NOAA revised the regulations that implement the Federal consistency provisions of the CZMA with federally approved CMP's. These regulations are found under 15 CFR § 930.

The MMS regulations for CZMA consideration affecting OCS lease sales are found under 30 CFR 256.20. The MMS regulations for CZMA consideration affecting OCS operations and/or permit activities are found under 30 CFR 250.203, 250.204, 250.414, and 250.417.

D.1.f. The Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 (42 U.S.C. § 6213 et seq.) prohibits joint bidding by major oil and gas producers. Bidders submitting bids on OCS leases are subject to the provisions of 18 U.S.C. 1860, prohibiting unlawful combination or intimidation of bidders (30 CFR 256.46(f)).

The MMS authority and regulations for compliance with the Energy Policy and Conservation Act of 1975 are found under 30 CFR 256.4, 256.41, and 256.44.

D.1.g. The Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) of 1972, as amended (16 U.S.C. § 1361 et seq.) was enacted to ensure that marine mammals are maintained at or, in some cases, restored to healthy population levels. Jurisdiction and regulatory responsibility for the conservation and protection of these marine mammals under the MMPA is split between two Federal Agencies. The Secretary of the Interior is responsible for walruses, polar bears, sea otters, manatees, and dugongs and has delegated this responsibility to the Fish and Wildlife Service (FWS). The Secretary of Commerce is responsible for the protection of all other marine mammals (cetaceans and pinnipeds [except walruses]) and has delegated the authority for implementing the MMPA to the National Marine Fisheries Services (NMFS).

The Marine Mammal Commission is responsible for reviewing and advising Federal Agencies on the protection and conservation of marine mammals. The commission has a Committee of Scientific Advisors that provides advice on actions needed to fulfill the purposes of the MMPA. The commission is authorized to make recommendations on the prohibition of taking and importing marine mammals and marine mammal products, except as expressly provided for by an international treaty, convention, or agreement to which the U.S. is a party.

The MMPA established a moratorium on the taking or importing of marine mammals in waters under U.S. jurisdiction except during certain activities that are regulated and permitted. Such activities include scientific research, public display, and the incidental take of marine mammals in the course of commercial-fishing operations. The MMPA defines "take" to mean "hunt, capture, or kill or attempt to harass, hunt, capture, or kill any marine mammal." "Harass" is defined as any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal or marine mammal stock in the wild; or has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns including, but not limited to, migrating, breathing, nursing, breeding, feeding, or sheltering.

The moratorium may be waived when the affected species or population stock is within its optimum sustainable population range and would not be disadvantaged by the authorized taking (for example, be reduced below its maximum net productivity level), which is the lower limit of the optimum sustainable population range. On request, the Secretary (of either the USDOI or the USDOC, depending on jurisdiction) can authorize the unintentional taking of small numbers of marine mammals incidental to activities other than commercial fishing (for example, offshore oil and gas exploration and development) when, after notice and opportunity for public comment, the Secretary finds that the total of such taking during the 5-year (or less) period would have a negligible impact on the affected species. Also, the Secretary will withdraw, or suspend for a specified time, permission to take marine mammals incidental to oil and gas production, and other activities if the applicable regulations concerning the methods of taking, monitoring, or reporting are not being complied with, or the taking is having, or may be having, more than a negligible impact on the affected species or stock.

In 1994, a new subparagraph (D) was added to Section 101(a)(5) of the MMPA to simplify the process of obtaining "small take" exemptions when unintentional taking is by incidental harassment only. Specifically, the incidental take of small numbers of marine mammals by harassment can now be authorized for periods of up to 1 year without the rulemaking as required by Section 101(a)(5)(A), which remains in effect for other authorized types of incidental taking.

To ensure that activities on the OCS adhere to MMPA regulations, the MMS must actively seek information concerning impacts of OCS activities on local species of marine mammals. The MMPA provides exemptions to taking of certain marine mammals by Alaskan Natives under certain conditions. The MMS coordinates with the FWS and NMFS to ensure that the MMS and offshore operators comply with the MMPA and to identify mitigation and monitoring requirements for permits or approvals for OCS activities, such as seismic surveys and platform removals.

D.1.h. The Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (MBTA), as amended (16 U.S.C. § 703-712), is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico, and Russia for the protection of shared migratory bird resources.

The MBTA governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts and nests. The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent overutilization. Section 704 of the MBTA states that the Secretary of the Interior is authorized and directed to determine if, and by what means, the take of migratory birds should be allowed and to adopt suitable regulations permitting and governing take. The Secretary in adopting regulations is to consider such factors as distribution and abundance to ensure that take is compatible with the protection of the species.

The provisions of the MBTA apply equally to Federal and non-Federal entities and prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase or barter, any migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11). Certain exceptions apply to employees of the Department of the Interior to enforce the MBTA and to employees of Federal agencies, State game departments, municipal game farms or parks, and public museums, public zoological parks, accredited institutional members of the American Association of Zoological Parks and Aquariums (now called the American Zoo and Aquarium Association) and public scientific or educational institutions.

D.1.i. The International Convention of the Prevention of Pollution from Ships and Marine Plastics Pollution Research and Control Act

In 1978, the International Convention of the Prevention of Pollution from Ships (MARPOL) was updated to include five annexes on ocean dumping. By signing onto MARPOL, countries agree to enforce Annexes I and II (oil and noxious liquid substances) of the treaty. Annexes III (hazardous substances), IV (sewage), and V (plastics) are optional. The U.S. is signatory to two of the optional MARPOL Annexes (III and V). Annex V is of particular importance to the maritime community (for example, shippers, oil-platform personnel, fishers, and recreational boaters) because it prohibits the disposal of plastics at sea and regulates the disposal of other types of garbage at sea. The Coast Guard is the enforcement agency for MARPOL Annex V within the U.S. Exclusive Economic Zone (EEZ) (within 200 miles of the U.S. shoreline).

The Marine Plastic Pollution Research and Control Act (MPPRCA) of 1988 (33 U.S.C. § 1901 et seq.) is the Federal law implementing MARPOL Annex V in all U.S. waters. Under the MPPRCA, it is illegal to throw plastic trash off any vessel within the EEZ. It also is illegal to throw any other garbage (for example, orange peels, paper plates, glass jars, and monofilament fishing line) overboard while navigating in inland waters or within 3 miles offshore. The greater the distance from shore, the fewer restrictions apply to nonplastic garbage. However, dumping plastics overboard in any waters anywhere is illegal at anytime. Fixed and floating platforms, drilling rigs, manned productions platforms, and support vessels operating under a Federal oil and gas lease are required to develop waste management plans and to post placards reflecting discharge limitations and restrictions. Garbage must be brought ashore and properly disposed of in a trash can, dumpster, or recycling container. Docks and marinas are required to provide facilities to handle normal amounts of garbage from their paying customers. Violations of MARPOL or MPPRCA may result in a fine of up to $50,000 for each incident. If criminal intent can be proven, an individual may be fined up to $250,000 and/or imprisoned up to 6 years. If an organization is responsible, it may be fined up to $500,000 and/or receive 6 years of imprisonment.

D.1.j. The Marine Protection, Research, and Sanctuaries Act

The Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972, as amended (33 U.S.C. § 1401-1445 and 16 U.S.C. § 1431-1445) regulates ocean dumping of waste, provides for a research program on ocean dumping, and provides for the designation and regulation of marine sanctuaries. Also known as the Ocean Dumping Act, the MPRSA regulates the ocean dumping of all material beyond the territorial limit (3 miles from shore) and prevents or strictly limits dumping material that “would adversely affect human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities.” Material includes, but is not limited to, dredged material; solid waste; incinerator residue; garbage; sewage; sewage sludge; munitions; chemical and biological warfare agents; radioactive materials; chemicals; biological and laboratory waste; wrecked or discarded equipment; rocks; sand; excavation debris; and industrial, municipal, agricultural, and other waste. The term does not include sewage from vessels or oil, unless the oil is transported via a vessel or aircraft for the purpose of dumping. Disposal by means of a pipe, regardless of how far at sea the discharge occurs, is regulated by the CWA through the NPDES permit process. Permits under Section 103 of this Act for dumping dredged material into ocean waters are issued by the Corps of Engineers.

Title III of the MPRSA, later called the National Marine Sanctuaries Act, charged the Secretary of Commerce to identify, designate, and manage marine sites based on conservation and ecological, recreational, historical, aesthetic, scientific, or educational value within significant national ocean and Great Lakes waters. Twelve national marine sanctuaries, representing a wide variety of ocean environments, have been designated. The National Marine Sanctuary Program is administered by USDOC, NOAA.

The regulations regarding designation and management of marine sanctuaries are found under 15 CFR § 922.

D.1.k. The National Fishing Enhancement Act

The National Fishing Enhancement Act of 1984 (33 U.S.C. § 2101 et seq.), also known as the Artificial Reef Act, established broad artificial reef development standards and a national policy to encourage the development of artificial reefs that will enhance fishery resources and commercial and recreational fishing. The national plan identifies oil and gas structures as acceptable material of opportunity for artificial reef development. The MMS adopted a rigs-to-reefs policy in 1985 in response to this Act and to broaden interest in the use of petroleum platform as artificial reefs.

D.1.l. The Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (FCMA) of 1976 (16 U.S.C. § 1801 et seq.) established and delineated an area from the states' seaward boundary to approximately 200 nautical miles out as a fisheries conservation zone for the U.S. and its possessions. The Act created eight regional Fishery Management Councils (FMC's) and mandated a continuing planning program for marine fisheries management by the FMC's. The Act, as amended, requires that a Fishery Management Plan (FMP) (50 CFR 600), based on the best available scientific and economic data, be prepared for each commercial species (or related group of species) of fish in need of conservation and management within each respective region.

The FCMA was reauthorized by Congress through passage of the Sustainable Fisheries Act of 1996. This reauthorization implements a number of reforms and changes. One change required the NMFS to designate and conserve Essential Fish Habitat (EFH) for those species managed under an existing FMP. By designating EFH's, Congress hoped to minimize, to the extent practicable, any adverse effects on habitat caused by fishing or nonfishing activities and to identify other actions to encourage the conservation and enhancement of such habitat. The phrase "essential fish habitat," as defined in the Sustainable Fisheries Act of 1996, encompasses "those waters and substrate necessary to fishes for spawning, breeding, feeding, or growth to maturity." As a result of this change, Federal Agencies must consult with NMFS on those activities that may have direct (for example, physical disruption) or indirect (for example, loss of prey species) effects on EFH.

Of the FMP's for Alaskan fisheries, only the plan for salmon designates EFH present within the Alaska OCS Beaufort Sea Planning Area. The FMP's are amended and updated as new information from studies and public input is received and assessed. For OCS activities in the Alaska Region's Beaufort Sea Planning Area, the MMS consults with NMFS at each project stage individually (for example, the lease sale, the exploration plan, and the development and production plan). The MMS will enter into formal consultation with NMFS for EFH as part of this EIS process.

D.1.m. The Endangered Species Act

The Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 et seq.), establishes the National policy for the protection and conservation of threatened and endangered species and the ecosystems on which they depend. The ESA is administered by USDOI, FWS and the USDOC, NMFS. Section 7 of the ESA (16 U.S.C. § 1536) governs interagency cooperation and consultation requiring Federal Agencies to formally consult with the NMFS and FWS, when there is a reason to believe that a species listed (or proposed to be listed) as endangered or threatened may be affected by an action, such as an OCS lease sale. Section 7 mandates Federal Agencies to consult with the FWS or NMFS to ensure that any agency action is not likely to jeopardize the continued existence of any endangered or threatened species, and/or destroy or adversely modify an endangered or threatened species' critical habitat.

Formal endangered species consultation is required to provide a threshold examination and to allow both the FWS and NMFS to each prepare a biological opinion on the likelihood that the proposed activity will or will not jeopardize the continued existence of the resource, and on the effect of the potential activities on the endangered species. The biological opinion may include recommendations for modification of the proposed activity. If, as a result of the threshold examination, insufficient information is available to conclude that the proposed activity is not likely to jeopardize the species or its habitat, the Federal Agency (i.e., MMS) is notified in writing by the FWS or NMFS. In such cases, the Federal Agency must obtain additional information and, if recommended by the FWS or NMFS, conduct appropriate biological surveys or studies to determine how the proposed activity may affect the endangered species or its critical habitat. After such additional information is received, FWS or NMFS usually concludes the consultation process by issuing a formal biological opinion.

As needed during the early stages and throughout prelease processes, the MMS will formally consult with both FWS and NMFS to ensure that the Federal activities proposed in the Beaufort Sea Planning Area do not jeopardize the continued existence of threatened or endangered species and/or result in adverse modification or destruction of their critical habitat. This consultation covers only the proposed OCS lease sales and exploration activities scenarios. A separate Section 7 consultation is conducted for development, production, and decommissioning phases for OCS activities. The FWS and NMFS make recommendations regarding modifications to proposed OCS activity to minimize adverse environmental impacts; however, it remains the responsibility of the MMS to ensure that proposed actions do not impact threatened or endangered species.

Joint regulations published in 50 CFR § 402 by the USDOI (FWS) and the USDOC (NMFS) establish procedures and rules governing interagency consultation under Section 7 of the ESA.

Section 9 of the ESA (16 U.S.C. § 1538) contains prohibitions (except as provided in law) with respect to any endangered species of fish, wildlife, and plant. For example, it is unlawful for any person subject to the jurisdiction of the U.S. to (1) take any species within the U.S. or the territorial seas of the U.S. and (2) take any species upon the high seas. The term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.

The regulations that provide the rules for determining and listing endangered and threatened species and designating their critical habitats are found under 50 CFR § 424.

D.1.n. The National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. § 470 et seq.), established a program for the preservation of historic properties throughout the U.S. and established the Advisory Council on Historic Preservation. This Act requires the head of any Federal Agency possessing licensing authority or having direct or indirect jurisdiction over a proposed Federal or federally assisted activity to consider the proposed activity’s effect on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historical Places (30 CFR 60.4 or its successor). The historic properties (i.e., archaeological resources) on the OCS include historic shipwrecks, sunken aircraft, lighthouses, and prehistoric archaeological sites that have become inundated due to the 120-meter rise in global sea level since the height of the last ice age (about 19,000 years ago).

Because the OCS is not federally owned land and the Federal Government has not claimed direct ownership of historic properties on the OCS, the MMS has the authority under Section 106 of the NHPA only to ensure that any MMS funded and permitted actions do not adversely affect significant historic properties. Beyond avoidance of adverse impacts, the MMS does not possess the legal authority to manage the historic properties on the OCS.

The MMS has conducted archaeological baseline studies of the OCS to determine where known historic properties may be located and to outline areas where presently unknown historic properties may be located. These baseline studies are used to identify “archaeologically sensitive” areas that may contain significant historic properties. When proposing a Federal action (i.e., an oil and gas lease sale), the MMS may request comments concerning geological conditions, including archaeological sites on the seabed or nearshore (30 CFR 256.24).

Before approving any OCS exploration or development activities within an archaeologically sensitive area, the MMS requires the lessee to conduct a marine remote-sensing survey and to prepare an archaeological report (30 CFR 250.194).

Archaeological surveys are required both onshore and offshore in areas where there is the potential for archaeological resources to exist, so that potential impacts to archaeological resources from physical disturbance could be mitigated. If the marine remote-sensing survey indicates any evidence of a potential historic property, the lessee must either:

> move the site of the proposed lease operations a sufficient distance to avoid the potential historic property, or conduct further investigations to determine the nature and significance of the potential historic property. If further investigation determines that there is a significant historic property within the area of proposed OCS operations, NHPA consultation procedures are followed.

The MMS Alaska Region and the State of Alaska Historic Preservation Office have an agreement regarding procedures for invoking Section 106 of the NHPA.

The MMS responsibilities in archaeological resource management and protection on the OCS are found under 30 CFR 250.203(b)(15), 250.203(o), 250.204(b)(8)(v)(A), 250.204(s), 250.1007(a)(5), and 250.1009(c)(4).

D.1.o. The Oil Pollution Act

The Oil Pollution Act of 1990 (OPA 90), as amended (33 U.S.C. § 2701 et seq.), establishes a single uniform Federal system of liability and compensation for damages caused by oil spills in U.S. navigable waters. The OPA 90 requires removal of spilled oil and establishes a national system of planning for and responding to oil-spill incidents. The OPA 90 includes provisions to:

- improve oil-spill prevention, preparedness, and response capability;
- establish limitations on liability for damages resulting from oil pollution;
- provide funding for natural resource damage assessment;
- implement a fund for the payment of compensation for such damages; and
- establish an oil pollution research and development program.

The U.S. Coast Guard is responsible for enforcing vessel compliance with OPA 90. The U.S. Coast Guard regulations on the oil-spill liability of vessels and operators are found under 33 CFR §§ 132, 135, and 136.

Section 1016 of OPA 90 (33 U.S.C. § 2716), as amended by the Coast Guard Authorization Act of 1996, supersedes the offshore oil-spill financial-responsibility provision of Title III of the OCS Lands Act Amendments of 1978, previously administered by the U.S. Coast Guard. Under OPA 90 and Executive Order 12777 (October 18, 1991), the Secretary of the Interior is given authority over covered offshore facilities and associated pipelines (except deepwater ports) for all Federal and State waters, including responsibility for spill prevention, oil-spill-contingency plans, oil-spill-containment and -cleanup equipment, financial-responsibility certification, and civil penalties. The Secretary delegated this authority to the MMS.

The MMS regulations found under 30 CFR § 253 that implement Title I of the OPA 90 establish the requirements for demonstrating oil-spill financial responsibility for covered offshore facilities requiring responsible parties to demonstrate they can pay for cleanup and damages caused by facility oil spills. These regulations govern financial responsibility requirements for oil spills for covered offshore facilities and related requirements for certain crude oil wells, production platforms, and pipelines located in the OCS and certain State waters became effective in October 1998. Responsible parties can be required to demonstrate as much as $150 million in oil-spill financial responsibility if the MMS determines that it is justified by the risks from potential oil spills from the covered offshore facilities. The minimum amount of oil-spill financial responsibility that must be demonstrated is $35 million for covered offshore facilities located in the OCS, and $10 million for covered offshore facilities located in State waters. The regulations exempt persons responsible for facilities having a potential worst-case, oil-spill discharge of 1,000 barrels or less, unless the risks posed by a facility justify a lower threshold.

D.1.p. The Rivers and Harbors Appropriation Act

The geographic jurisdiction of the Rivers and Harbors Act of 1899 (33 U.S.C. § 401 et seq.) includes all navigable water of the U.S. (defined in 33 CFR § 329) as "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce." This jurisdiction extends seaward to include all ocean waters within a zone 3 nautical miles from the coastline (the "territorial seas"). Limited authorities extend across the OCS for artificial islands, installations, and other devices (43 U.S.C. § 333 (e)).

Various sections of the Act establish permit requirements to prevent unauthorized obstruction or alteration of any navigable water of the U.S. The Corps of Engineers, through the Secretary of the Army, has permitting authority for any structure work conducted in or affecting U.S. navigable waters and for construction of artificial islands, fixed structures, and other installations on the OCS. This authority arises from a provision in the OCS Lands Act (43 U.S.C. § 1333(e)) that extends the Secretary of the Army's authority to prevent obstruction to navigation in U.S. navigable waters from structures located on the OCS that are used for exploring, developing, producing, or transporting natural resources.

In addition, Section 10 of the Act (33 U.S.C. § 403) authorizes the Corps of Engineers, through the Secretary of the Army, to issue permits for all offshore construction in U.S. navigable waters, including pipelines, exploratory drilling vessels, fixed and mobile platforms, piers, wharves, bulkheads, or other works. Permits also must be issued for onshore facilities that involve dredging, filling, and excavating in U.S. navigable waters.

D.1.q. The Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) of 1976 (42 U.S.C. § 6901 et seq.), and as amended through 1996, provides a framework for the safe disposal and management of hazardous and solid wastes. Most oil-field wastes have been exempted from coverage under the RCRA hazardous-waste regulations. Any hazardous wastes generated on the OCS that are not exempt must be transported to shore for disposal at a hazardous-waste facility.

D.1.r. The Ports and Waterways Safety Act

The Ports and Waterways Safety Act of 1972, as amended (33 U.S.C. § 1221 et seq.), authorizes the U.S. Coast Guard to designate safety fairways, fairway anchorages, and traffic separation schemes to provide unobstructed approaches through oil fields for vessels using ports. The Coast Guared regulations provide listings of these designated areas along with special conditions related to oil and gas production. In general, no fixed structures such as platforms are allowed in fairways. Temporary underwater obstacles such as anchors and attendant cables or chains attached to floating or semisubmersible drilling rigs may be placed in a fairway under certain conditions. Fixed structures may be placed in anchorages, but the number of structures is limited.

The Coast Guard regulations on port access routes are found under 33 CFR § 164.

D.1.s. The Merchant Marine Act of 1920 (Jones Act)

The Merchant Marine Act of 1920, commonly referred to as the Jones Act (P.L. 66-261), regulates coastal shipping between U.S. ports and inland waterways. The Act provides that "no merchandise shall be transported by water, or by land and water…between points in the United States…in any other vessel than a vessel built in and documented under the laws of the United States and owned by persons who are citizens of the United States…" The Act requires that all goods shipped between different ports in the U.S. or its territories must be:

- • carried on vessels built and documented (flagged) in the U.S.,
- • crewed by U.S. citizens or legal aliens licensed by the U.S. Coast Guard, and
- • owned and operated by U.S. citizens.

The rationale behind the Jones Act and earlier sabotage laws was that the U.S. needed a merchant marine fleet to ensure that its domestic waterborne commerce remains under government jurisdiction for regulatory, safety, and national defense considerations. The same general principles of safety regulations are applied to other modes of transportation in the U.S. While other modes of transportation can operate foreign-built equipment, these units must comply with U.S. standards. However, many foreign-built ships do not meet the standards required of U.S.-built ships and, thus, are excluded from domestic shipping.

The U.S. Customs Service has determined that facilities fixed or attached to the OCS for the purpose of oil exploration, as described under 43 U.S.C. § 333(a), are considered points within the U.S. The OCS oil facilities are considered U.S. sovereign territory and fall under the requirements of the Jones Act. This carries the implication that all shipping to and from these facilities related to oil exploration on the OCS can be conducted only by vessels meeting the requirements of the Jones Act. Therefore, OCS facilities can be legally served only by U.S.-registered vessels and aircraft that are properly endorsed for coastwise trade under the laws of the U.S.

D.1.t. The Federal Oil and Gas Royalty Management Act

The Federal Oil and Gas Royalty Management Act (FOGRMA) of 1982 (30 U.S.C. § 701 et seq.), was enacted to ensure that all oil and gas originating on public land and on the OCS are properly accounted for under the direction of the Secretary of the Interior. This Act defines the responsibilities and obligations of lessees, operators, and other persons involved in the transportation of oil and gas from Federal, Indian, and OCS lands. The Secretary of the Interior has the responsibility to maintain a royalty management system and enforce the prompt collection and disbursement of oil and gas revenues owed to the U.S., Indian lessors, and the states.

The Secretary of the Interior oversees a comprehensive inspection and collection system with fiscal and production accounting and auditing system to accurately determine oil and gas royalties, interest, fines, penalties, fees, deposits, and other payments owed and to collect and account for the payments in a timely manner.

The FOGRMA requires a lessee, operator, or other person directly involved in the developing, producing, transporting, purchasing, or selling of oil and gas to establish and maintain records, make reports, and provide information as required by the Secretary of the Interior.

Regulations at 30 CFR 201 through 243 were published by the MMS to implement the provisions of the FOGRMA. For royalties, net profit shares, and rental payments on Federal OCS leases, see 30 CFR 218.150 through 156.

D.1.u. The Arctic Research and Policy Act

The Arctic Research and Policy Act of 1984 (15 U.S.C. § 4101 et seq.) provides national policy, priorities, and goals and a Federal program plan for basic and applied scientific research with respect to the Arctic, including natural resources and materials, physical, biological and health sciences, and social and behavioral sciences.

The Arctic Research Commission, in cooperation with the Interagency Arctic Research Policy Committee, both established under this Act, were directed to develop a national arctic research program plan to implement the arctic research policy and facilitate cooperation between the Federal Government and State and local governments with respect to research in the Arctic. The Commission guides the Interagency Arctic Research Policy Committee in the performance of its duties and submits to the President and Congress a report each year describing the activities and accomplishments of the Commission during the immediately preceding fiscal year.

The Interagency Arctic Research Policy Committee, with the National Science Foundation as lead agency, works with the Commission in developing and establishing an integrated National Arctic Research Policy that guides Federal Agencies in developing and implementing their research program in the Arctic. The public is provided with an opportunity to participate in the development and implementation of National Arctic Research Policy through public meetings. The Committee is directed to submit to Congress, through the President, a biennial statement of activities and accomplishments of the Interagency Committee and a description of the activities of the Commission with respect to Federal activities in arctic research.

Section 201 of the Arctic Research and Policy Act is cited as the National Critical Materials Act of 1984. The purpose of this section is to (1) establish National Critical Material Council, (2) establish a national

Federal program for advanced materials research and technology, and (3) to stimulate innovation and technology use in basic as well as advanced materials industries.

D.2. EXECUTIVE ORDERS

D.2.a. Executive Order 13212 - Actions to Expedite Energy-Related Projects (May 18, 2001)

Executive Order 13212 states that "… in order to take additional steps to expedite the increased supply and availability of energy to our Nation …," it is necessary to improve the Federal Government's internal management of actions associated with energy-related projects. In general, the executive order directs executive departments and agencies to take appropriate actions to expedite projects that will increase the production, transmission, or conservation of energy. Departments and agencies must expedite their review of permits or take other actions as necessary to accelerate the completion of such projects while maintaining safety, public health, and environmental protections. Agencies must take such actions to the extent permitted by law, theregulations, and where appropriate.

D.2.b. Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994)

Executive Order 12898 on environmental justice provides that each Federal Agency must make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.

Agencies are required to incorporate into their NEPA documents analysis of the environmental effects of their proposed action on minorities and low-income populations and communities. The environmental justice issues encompass a broad range of impacts covered by NEPA, and concerns may arise from impacts on the natural or physical environment or from interrelated social, cultural, and economic effects. These effects must be considered in EIS's and EA's.

The Department of the Interior has developed guidelines in accordance with Executive Order 12898 on environmental justice. The MMS participated in the development of these guidelines. In August 1994, the Secretary of the Interior directed the Department's bureaus to include environmental justice in NEPA documentation and, in February 1998, the CEQ issued guidance to assist Agencies in addressing environmental justice.

Environmental justice concerns are considered anywhere (including the MMS Pacific and Gulf of Mexico regions) where OCS projects and associated NEPA documentation take place; however, issues concerning Alaska OCS-related impacts primarily have focused on the subsistence hunting, fishing, and gathering activities that occur in coastal areas.

The MMS's existing process of involving all affected communities, Native Alaskans, and minority groups in the NEPA compliance process meets the intent and spirit of Executive Order 12898. Scoping and review for the EIS is an open process that provides an opportunity for all participants, including minority and low-income populations, to express concerns that can be addressed in the EIS. It should be emphasized that the reason the MMS holds scoping meetings is to encourage and facilitate public involvement into the EIS process. Valuable public input ensures that the EIS will be thorough and will address all pertinent issues that affect the quality of the human environment to the fullest extent possible and that will contribute a major role in the MMS's planning and final decisionmaking. The MMS will continue to identify ways to improve the input from all Alaskan residents, not only in commenting on official documents but also contributing their knowledge to the scientific and analytical sections of the EIS.

D.2.c. Executive Order 13175 - Consultation and Coordination With Indian Tribal Governments (November 6, 2000)

The United States has a unique legal relationship with Indian tribal governments as set forth in the Constitution of the United States, treaties, statutes, Executive Orders, and court decisions. Since the formation of the Union, the United States has recognized Indian tribes as domestic dependent nations under its protection. The Federal Government has enacted numerous statutes and promulgated numerous regulations that establish and define a trust relationship with Indian tribes.

To strengthen the United States government-to-government relationships with Indian tribes (Indian tribe is defined as Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian tribe pursuant to the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a), Executive Order 13175 requires the Secretary of the Interior to establish regular and meaningful consultation and collaboration with Indian tribal officials in the development of Federal policies that have tribal implications. Policies that have tribal implications refers to regulations, legislative comments or proposed legislation, and other policy statements or actions that have substantial direct effects on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes. The United States continues to work with Indian tribes on a government-to-government basis to address issues concerning Indian tribal self-government, tribal trust resources, and Indian tribal treaty and other rights.

D.2.d. Executive Order 13007- Indian Sacred Sites (May 24, 1996)

The Indian Sacred Sites executive order directs Federal land-managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. It is MMS's policy to consider the potential effects of all aspects of plans, projects, programs, and activities on Indian sacred sites, and to consult, to the greatest extent practicable and to the extent permitted by law, with tribal governments before taking actions that may affect Indian sacred sites located on Federal lands.

D.2.e. Executive Order 12114 - Environmental Effects Abroad(January 1979)

Executive Order 12114 requires that Federal officials be informed of environmental considerations, and take those considerations into account when making decisions on major Federal actions that could have environmental impacts anywhere beyond the borders of the U.S., including Antarctica. Such Federal actions include the following:

- All major Federal actions significantly affecting the environment outside the jurisdiction of any nation (the oceans or Antarctica). This would apply to proposals that result in actions within the U.S. that, because of ocean currents, winds, stream flow, or other natural processes, may affect parts of the oceans not claimed by any nation (high seas). Included in this category would be an OCS project that, because of ocean currents, could result in effluents or spilled oil reaching fishing grounds or areas not claimed by another nation.
- All major Federal actions significantly affecting the environment of a foreign nation not involved in the action. This would apply to proposals that result in actions within U.S. territory, or within the EEZ that, because of ocean currents, winds, stream flow, or other natural processes, may affect parts of another nation, or seas or oceans within the jurisdiction of other nations. This category would include an OCS project located upcurrent from the Mexican coastline that could affect Mexico's territory in the

event of an oil spill. Also in this category are all major Federal actions in which a foreign nation is a participant and that normally would be covered by the EIS addressing the U.S. part of the Proposal. An example would be an OCS right-of-way pipeline bringing Canadian energy resources to the northeast U.S.

- All major Federal actions providing a foreign nation with a product or involving a project that produces an emission or effluent prohibited or regulated by U.S. Federal law because of its effects on the environment or the creation of a serious public health risk.

Federal actions causing significant impacts on environments outside the U.S. are to be addressed in:

- • EIS's (generic, program [5-year OCS programmatic EIS]), and project-specific (OCS lease-sale EIS);
- • documents prepared for decisionmakers containing reviews of environmental issues involved in Federal actions, or summaries of environmental analyses (for example, OCS lease-sale decision documents, Records of Decision); and
- • environmental studies or research prepared by the U.S. and one or more foreign nations, or by an international body in which the U.S. is a member or participant.

The U.S., Canada, and Mexico are negotiating a Transboundary Environmental Impact Assessments (TEIA) Agreement through the North Atlantic Free Trade Agreement (NAFTA) Commission on Environmental Cooperation (CEC). The CEC deals with a wide range of environmental and natural resource protection issues common to Canada, the U.S., and Mexico. Developing a TEIA process is one of the requirements of the 1991 North American Agreement on Environmental Cooperation. Under this agreement, a transboundary environmental impact is any impact on the environment within the area under the jurisdiction of Canada, the U.S., or Mexico caused by a proposed project, the physical origin of which is situated wholly or in part within the area under the jurisdiction of one of the three countries. For example, a proposed project on the U.S. OCS that, because of ocean currents, winds, or proximity to the Mexican coastline, could affect Mexican waters (fishing industry, fish resources, etc.) or the Mexican coastline (oil-spill contacts, etc.) would be a project considered to have the potential to cause transboundary environmental impacts. The agreement recognizes that there is a significant bilateral nature to many transboundary issues and calls upon the three countries to develop an agreement to:

- • assess the environmental impacts of proposed projects in any of the three countries party to the agreement (NAFTA) that would be likely to cause significant adverse transboundary impacts within the jurisdiction of any of the other parties;
- • develop a system of notification, consultation, and sharing of relevant information between countries with respect to such projects; and
- • give consideration to mitigating measures to address the potential adverse effects of such projects.

Negotiations are under way between the three parties to the agreement, but the final language has yet to be worked out. Because the requirements of the assessment portion of the agreement are somewhat similar to the requirements imposed by Executive Order 12114 (i.e., impacts to foreign territory must be addressed in NEPA documents), the MMS requires that EIS's prepared on major Federal OCS actions contain an assessment of potential significant impacts to foreign territory.

D.2.f. Executive Order 13158 - Marine Protected Areas (May 26, 2000)

Executive Order 13158 defines Marine Protected Areas (MPA's) as any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein.

This executive order directs Federal Agencies to work closely with State, local, and nongovernmental partners to create a comprehensive system of MPA's "representing diverse U.S. marine ecosystems, and the Nation's natural and cultural resources." Ultimately, the MPA system will include new sites, as well as enhancements to the conservation of existing sites. Five principal components of this executive order are:

1. **National MPA List**: The USDOC and the USDOI will develop and maintain a National list of MPA's in U.S. waters. Candidate sites for the list are drawn from existing programs for Federal,

tribal, State and local protected areas. When completed, the list and the companion data on each site will serve several purposes such as ensuring that agencies "avoid harm" to MPA's, providing a foundation for the analysis of gaps in the existing system of protections, and helping improve the effectiveness of existing MPA's.

2. **The MPA Web Site**: The USDOC and USDOI will develop and maintain a publicly accessible web site to provide information on MPA's and Federal Agency reports required by Executive Order 13158. Also, the web site will be used to publish and maintain the National MPA List and other useful information, such as maps of MPA's; a virtual library of MPA reference materials, including links to other web sites; information on the MPA Advisory Committee; activities of the National MPA Center; MPA program summaries; and background materials such as MPA definitions, benefits, management challenges, and management tools.
3. **The MPA Federal Advisory Committee**: This committee was created to provide expert advice on, and recommendations for, a national system of MPA's. This advisory committee will include non-Federal representatives from science, resource management, environmental organizations, and industry.
4. **The Mandate to Avoid Harmful Federal Actions**: This mandate directs Federal Agencies to avoid harm to MPA's or their resources through activities that they undertake, fund, or approve.
5. **The MPA Center**: The executive order directs NOAA to create an MPA Center. In cooperation with the USDOI and working closely with other organizations, the MPA Center will coordinate the effort to implement the executive order and will:
   - develop the framework for a national system of MPA's;
   - coordinate the development of information, tools, and strategies;
   - provide guidance that will encourage efforts to enhance and expand the protection of existing MPA's and to establish or recommend new ones;
   - coordinate the MPA web site;
   - partner with Federal and non-Federal organizations to conduct research, analysis, and exploration;
   - help maintain the National MPA List; and
   - support the MPA Advisory Committee.

D.2.g. Executive Order 13112 - Invasive Species (February 3, 1999)

Executive Order 13112 defines an "invasive species" as a species that is not native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. This executive order requires all Federal Agencies to:

- identify any actions affecting the status of invasive species;
- prevent invasive-species introduction;
- detect and respond to and control populations of invasive species in a cost-effective and environmentally sound manner;
- monitor invasive-species populations accurately and reliably;
- provide for restoration of native species and habitat conditions in invaded ecosystems;
- conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species;
- promote public education on invasive species and the means to address them; and,
- refrain from authorizing, funding, or carrying out actions that are likely to cause or promote invasive species introduction or spread, unless the Federal Agency has determined that the benefits of such actions clearly outweigh the potential harm caused by invasive species and that all feasible and prudent measures to minimize risk of harm will be taken.

Additionally, this executive order established the National Invasive Species Council (Council), cochaired by the Secretaries of Agriculture, Commerce, and the Interior and comprised of the Secretaries of State, Treasury, Defense, and Transportation, and the Administrator of the Environmental Protection Agency. The Council:

- provides national leadership on invasive species;
- sees that Federal efforts are coordinated and effective;
- promotes action at local, State, tribal, and ecosystem levels;
- identifies recommendations for international cooperation;
- facilitates a coordinated network to document and monitor invasive species;
- develops a web-based information network;
- provides guidance on invasive species for Federal Agencies to use in implementing the NEPA; and
- prepares an Invasive Species Management Plan to serve as the blueprint for Federal action to prevent introduction; provide control; and minimize economic, environmental, and human health impacts of invasive species.

The MMS requires that EIS's prepared on major Federal OCS actions (for example, 5-year OCS program and OCS lease sales) contain an assessment of the proposed action's contribution to the invasive species problem.

D.3. MITIGATION MEASURES

D.3.a. Lease Term Stipulations

In each OCS planning area, oil and gas exploration and development activities have the potential for causing adverse environmental impacts. Many measures have been implemented by the MMS to "mitigate" or prevent and lessen possible impacts on environmental resources from both OCS and non-OCS activities. Mitigating measures are protective measures designed to prevent adverse impacts and to lessen and mitigate unavoidable impacts. Some of these protective measures are developed and applied to specific blocks in a planning area before leasing a block. The MMS develops and administers these requirements, which become a part of the lease-term conditions at lease issuance.

If a block is leased as a result of a lease sale, these protective measures are identified as lease-term stipulations and are attached to and become part of the lease and its conditions. These stipulations are designed to protect potentially sensitive resources in the affected block and to reduce possible multiple-use conflicts and are the requirements that the lessee must meet to mitigate adverse impacts. They also may be considered to apply to all activities that occur on the leased area throughout the life of the lease.

All stipulations are considered part of this proposed Federal action. All lease-term stipulations are considered part of this proposed Federal action and all alternatives are discussed in this EIS.

D.3.b. Special Stipulations

To mitigate adverse environmental impacts for actions associated with a specific project (i.e., proposed plans for exploration, development and production plans, and site-clearance activities in an area located on an OCS lease block), mitigating measures may be necessary. Mitigating measures are special stipulations that limit OCS operations and are in addition to the aforementioned lease-term stipulations.

Conditions of plan approval are mechanisms determined by the MMS to control or mitigate potential environmental or safety problems that are associated with a specific proposed Federal action. During the life of the action, these protective measures are applicable specifically to the individual activities proposed in a plan and are imposed following environmental reviews (according to the NEPA) of the OCS lease location and potential resources.

Protective measures for certain resources may be suggested or identified during the scoping process for this EIS and mitigating measures may develop as a result. The MMS will evaluate additional stipulations, if any, that may develop during this EIS process.

APPENDIX E

SCOPING REPORT: BEAUFORT SEA PROPOSED OIL AND GAS LEASE SALES 186 (2003), 195 (2005), AND 202 (2007)

APPENDIX E: SCOPING REPORT: BEAUFORT SEA PROPOSED OIL AND GAS LEASE SALES 186 (2003), 195 (2005), AND 202 (2007)

A. Introduction

A.1. Purpose

This report summarizes scoping comments received and the significant environmental issues, reasonable alternatives for analysis, and potential mitigating measures that will be examined in the Minerals Management Service's (MMS's) environmental impact statement (EIS) for the proposed Beaufort Sea Outer Continental Shelf Lease Sales 186, 195, and 202 in the Beaufort Sea Planning Area.

A multiple-sale prelease process has been implemented for the Beaufort Sea sales in the proposed final 2002-2007 5-year program. From the initial step in the process (the Call for Information and Nominations [Call], and the Notice of Intent to Prepare an EIS [NOI]) through the final EIS/Consistency Determination step, this process covers proposed multiple sales. A multiple-sale EIS will analyze the first proposed sale (Sale 186) and the effects of the subsequent two proposed sales (Sale 195 and Sale 202). There also will be complete National Environmental Policy Act (NEPA) and Coastal Zone Management Act coverage for all sales after the first sale; either an Environmental Assessment (EA) or supplemental EIS, and a Consistency Determination (focusing primarily on new issues or changes in a State's federally approved coastal management plan) will be prepared for each subsequent sale. A proposed and final Notice of Sale will be prepared for each proposed lease sale identified in the draft proposed program.

One of the key features of the prelease process is the preparation of a multiple-sale EIS. One EIS covers three lease sales: Sale 186 scheduled for 2003; Sale 195 scheduled for 2005; and Sale 202 scheduled for 2007, according to the release of the 2002-2007 5-Year proposed final program. This will enable the MMS to conduct the prelease decision processes for subsequent sales (Sales 195 and 202) more efficiently, consistent with the new Executive Order of May 18, 2001, to expedite energy-related projects. Federal regulations (40 CFR 1502.4) allow several similar proposals to be analyzed in one EIS. The EIS will include: (a) an analysis for each of the three Beaufort Sea sales; (b) an analysis of the three sales collectively; and (c) a cumulative analysis of the incremental effects of holding the three sales when added to the other past, present, and reasonably foreseeable State and Federal onshore and offshore oil and gas activities on the North Slope and other activities that could affect the same resources.

This EIS will have a specific analysis for all issues, alternatives, and mitigating measures developed during the assessment process. Issues, alternatives, and mitigating measures that were determined to be insignificant will not be examined in the EIS but are identified in Sections II.B and IV of this report.

B. Summary of the Scoping Process

Scoping for the Beaufort Sea multiple-sale EIS included:

- reviewing the comments received from the Call/NOI;
- reviewing comments from scoping meetings;
- re-evaluating issues raised and analyzed in the EIS's for previous Beaufort Sea Planning Area lease sales (Sales BF, 71, 87, 97, 124, 144, and 170); and
- soliciting staff input.

Scoping comments for the proposed lease sale were requested from the public through newspaper, radio, and television advertisements in the North Slope Borough (NSB) communities of Barrow, Nuiqsut, and Kaktovik, and in Anchorage. The Call/NOI and scoping process provided a forum in which a wide variety of professionals and private citizens representing a broad spectrum of concerned groups had the opportunity to review and comment on areas of concern and appropriate areas for future studies. Environmental Justice was discussed with participants on the North Slope, both in the Government-to-Government meetings and with individual participants at the scoping meetings. The MMS provided an Inupiat translator for scoping meetings held on the North Slope to facilitate communication and comments. A Notice of Intent to prepare an EIS was published in the *Federal Register* on September 19, 2001, and comments were due by November 5, 2001.

B.1. Comments Received in Response to the Call/NOI and the Scoping Process

The MMS received nine written comments through the Call/NOI and scoping process from the following: State of Alaska, Office of the Governor, Division of Governmental Coordination; North Slope Borough, Office of the Mayor; North Slope Borough, Planning Department Director; Alaska Eskimo Whaling Commission, Director; City of Wainwright, Mayor; combined letter from the Sierra Club, Arctic Connections, the Wilderness Society, and Greenpeace; Phillips Alaska Exploration; Shell Oil; and British Petroleum (Alaska) Inc.

Specific Comments: Specific concerns expressed in the letters received in response to the Call/NOI are summarized in the following.

B.1.a State of Alaska, Office of the Governor, Division of Governmental Coordination

- The State supports the deferrals and mitigating measures that have been incorporated into previous outer continental shelf (OCS) lease sales.
- The State supports the Barter Island deferral that was included in Sale 144. This deferral area did not apply in Sale 170.
- The State recommends that the MMS retain the conflict avoidance measures developed for Lease Sale 170, especially in regard to subsistence resources. The Cross Island Stipulation for protection of subsistence resources in the Cross Island area should be retained.
- The Information to Lessees (ITL's) adopted for Sale 170 also should be included for the upcoming sales. The MMS may wish to consider expanding the ITL on polar bear interaction to include brown bears to minimize conflicts between bears and humans that might arise on onshore facilities associated with onshore development.
- The Alaska Department of Natural Resources and the Alaska Department of Fish and Game expressed support for a single EIS covering all three sales. However, the North Slope Borough opposes this change, and the State encourages MMS to work with the North Slope Borough to address their concerns before switching to a multiple-sale process.
- The State recommends that the MMS use the existing process for the coastal consistency review for the upcoming sales.

B.1.b North Slope Borough, Office of the Mayor

- There should be a full public process associated with each sale.
- An EIS should be developed, and a Coastal Management Program Consistency Analysis should be conducted for each sale.
- The MMS and other State and Federal leasing agencies are moving ahead with their plans without a good handle on the cumulative impacts of all of this (other related oil and gas activities) on the environment, wildlife resources, and residents of the North Slope. Serious cumulative impacts already have occurred.
- Areas deferred from past Beaufort Sea sales should be removed permanently from consideration for leasing.
- The spring-lead system and eastern Beaufort Sea should be deferred from leasing in all Beaufort Sea sales under the proposed 2002-2007 OCS leasing program. The spring-lead system around Point Barrow concentrates and renders highly vulnerable a variety of arctic marine resources. It is a critical subsistence-use area.
- The eastern Beaufort Sea is a feeding area for bowheads migrating westward in the fall. The level of industrial activity in waters east of Barter Island is of critical importance to the success or failure of subsistence-hunting efforts. In the past, fall exploratory drilling operations occurring to the east of the subsistence-harvest zone have deflected whales beyond the reach of subsistence hunting.
- The 10-mile distance (around Cross Island) is arbitrary and too small. The zone should be expanded to include a larger area based on the true area used by Nuiqsut in the traditional pursuit, harvest, retrieval, and processing of bowhead whales, in addition to the areas used for transportation and storage of the products of the bowhead whale hunt. This includes the areas to the east where production noise from permanent industrial facilities would have the potential to deflect whales out of reach of subsistence hunters. The goal should be to add protection for the area directly used by subsistence whalers and to the east of that area where noise from permanent industrial facilities would have the potential to deflect whales beyond the reach of subsistence whalers.
- A new whale-deferral zone should be defined in consultation with the Alaska Eskimo Whaling Commission (AEWC) and Nuiqsut and refined as noise-monitoring studies, including those associated with Northstar and Liberty, to produce more accurate information on (bowhead) impacts.

B.1.c North Slope Borough, Planning Department Director

- The NSB finds the lease sales (proposed) by MMS to be inconsistent with the policies of the NSB Coastal Management Plan and the Alaska Coastal Management Program.
- Industrial noise from seismic activities has proven to deter migrating bowhead whales by up to 12 miles.
- The continued availability of these waters for oil and gas exploration and development conflicts with (our) culture and the habitat values of the bowhead whale.
- Our culture is dependent on the continued availability of whales and our being able to hunt them close by. The spring migration area is particularly important.
- Oil-spill-cleanup trials have failed to meet response-planning standards for open-water and broken-ice conditions. The oil industry has yet to come up with a system for mechanical oil recovery that will work in ice-infested waters. It is irresponsible to continue leasing, exploratory drilling, and development in the arctic marine environment until the oil industry has demonstrated definitively that it has the capability to effectively respond to a significant oil spill in the entire range of environmental conditions that it may face in the region.
- If the need arises to provide relief-well operations in cases where a blowout or other catastrophic uncontrolled release should happen, no effective relief-well operations can occur within the unstable ice regimes that exist from 3-60 miles offshore. Completion of a relief well and well control could take 2-3 months under extreme broken-ice conditions.
- We believe that the MMS has underestimated the ice forces of the area, and that these forces could result in a significant release of oil. An ice-override event can occur at anytime when ice is present, subjecting all human activities in the area to great danger.
- The OCS from 3-60 miles offshore has not been extensively explored or studied for exploration or production activities. The placement and protection of fuel tanks, drilling rigs, and other oil and gas activities must be able to withstand the combined forces of current and wind-driven ice. These placements must be based on actual measurements of ice forces and movements.

- Other potential offshore hazards may exist, such as methane hydrate pockets. Historically, methane hydrate is responsible for the sinking of some ships and fires on or toppling of oil platforms.
- Spilled oil could persist in the migration path of the bowhead whale, with the potential to divert the animals from their preferred migratory path, or to subject the whales and other marine wildlife to the harmful effects of hydrocarbon exposure.
- The community of Nuiqsut, which uses the Cross Island area for subsistence, and other subsistence communities that use resources migrating through the Beaufort Sea, would suffer loss of resources, impaired access to resources, or the tainting of resources.
- Any perceived threat to the bowhead whale that results from a spill may elicit action by the International Whaling Commission (IWC). The IWC may reduce subsistence quotas as the only means of enhancing the protection of whale populations at risk.
- The North Slope Borough Planning Department stated that 10-mile no permanent facility area in Stipulation 6 as adopted in OCS Lease Sale 170 cannot now be developed without precluding reasonable subsistence access to fall-migrating bowhead whales.
- A study has not been forwarded to the NSB that concludes that the areas around the lease proposals can or cannot be developed, nor has (there been) any (information on) new technology in recovering oil from arctic waters (as well as) an assessment concerning subsistence-user access to subsistence resources and the effects on the (bowhead) migration path relative to Cross Island.
- The Beaufort Sea lease sales include areas 3-60 miles offshore and are in an area that cannot be developed without harming subsistence activities and the migratory route or feeding areas of the bowhead whale during the life expectancy of a field.
- Given the unpredictability of the arctic environment, opportunities for oil and gas leasing should be focused on land where proven systems exist and more accurate performance predictions can be made.

B.1.d Alaska Eskimo Whaling Commission Director

- The AEWC submitted comments to MMS on the Proposed draft 5-Year OCS Leasing Program 2002-2007 and the related EIS. The AEWC hereby incorporates those comments by reference.
- The present Notice of Proposed Lease Sales by MMS is premature, because the 5-Year OCS Leasing Program 2002-2007 has not been finalized and approved. The Secretary does not have the authority to act on planned leases that are part of a proposed leasing program until the Secretary fully complies with the notice and comment periods of the OCS Lands Act and the leasing program has reached the stage of final approval.
- MMS must address the mitigation of adverse impacts before going any further with OCS leasing in the Beaufort Sea.
- The AEWC claims that Congress gave the grant of authority in the OCS Lands Act and quotes 43 USC 1334(a): "Congress further authorized the Secretary to 'at any time prescribe and amend such rules and regulations as he determines to be necessary and proper in order to provide for the protection of correlative rights.'" the AEWC contends that their staff time is dominated by OCS-related matters with no Government funding to help them, in spite of repeated requests for assistance. They believe that the MMS has a statutory responsibility to provide for their correlative rights. As such, they request assistance so that they may be able to fully participate in mitigation of adverse effects.
- MMS is required to prepare an EIS for each lease sale it proposes to hold. The AEWC states: that according to NEPA, "the decision whether or not to prepare an EIS comes after the preparation of an EA not before." (MMS Note: Subsequent to the submission of this comment, the Executive Director of the AEWC acknowledged that this statement was based upon a rather unclear description of the multiple sale EIS process by MMS. MMS interprets this subsequent acknowledgement by the AEWC as a withdrawal of the previous comment)
- Areas used for our bowhead whale subsistence hunt should be permanently removed from any future consideration for OCS leasing. These removal areas must be of a size and configuration that will ensure their effectiveness as a means of mitigating adverse impacts to the bowhead whale subsistence hunt from OCS oil and gas activities.

B.1.e City of Wainwright, Mayor

- The majority of the community is opposed to leasing in the Beaufort Sea. The area available for leasing is in the path of migrating bowhead whales, and any activity in that area would interfere with the whale's migration and related subsistence activities.

B.1.f Sierra Club, Arctic Connection, Wilderness Society, and Greenpeace (joint letter)

- Industry is unable to contain and clean up oil spills in arctic waters during most of the year.
- The new subsea buried pipeline technology has unprecedented risks of oil spills.
- The environment and local communities are experiencing the simultaneous impacts of a massive surge of exploration (seismic surveys and drilling) on the North Slope as well as new offshore oil construction.
- Offshore lease sales jeopardize the integrity of the wilderness, wildlife, and coastal habitats of the Arctic National Wildlife Refuge (ANWR). The Refuge would be degraded from pollution from offshore development, transport and industrial noise, and potential oil spills.
- In the future, there would be intense pressure to construct sprawling onshore airports, pipelines, roads, docks, and other support facilities within the Refuge.
- The last Beaufort Sea Sale 170 set a precedent of not leasing off the coast of ANWR. Among the reasons cited by the Interior Department, was a lack of information on cumulative impacts on the Refuge, emergency response plans, and subsea pipelines. that lack of information still exists.
- They support a deferral requested by the city of Kaktovik, an offshore deferral area from the Canning River to the Canadian border.
- They oppose the streamlining proposal and desire the full process for each sale.
- The cumulative impacts of simultaneous onshore and offshore exploration and development must be considered.
- Areas that were deferred or deleted from past Beaufort Sea sales should be removed permanently from consideration for leasing. The importance and sensitivity of the Barrow-area spring-lead system and the eastern Beaufort Sea has been recognized in recent OCS lease sales, and the areas have been deferred from leasing. The spring-lead system and eastern Beaufort Sea should be deferred from leasing under the proposed 2002-2007 OCS leasing program.

B.1.g Phillips Alaska Exploration

- They support sales every other year covering an area within 30 miles of the shoreline.
- They do not support “discretionary sale deferrals and arbitrary exclusions.” “the greater the foreseeable leasing area, the greater the incentive.”
- “It is important that all nearshore acreage be included in upcoming sales.”
- They encourage the MMS “to set and apply consistent and reasonable lease terms and mitigating measures for all upcoming sales.”

B.1.h Shell Oil

- They support leasing the entire nearshore area out to about 15 miles.

B.1.i British Petroleum (Alaska) Inc.

- They applaud MMS’s efforts to streamline the environmental review process, and they endorse the proposed Beaufort Sea sale schedule.
- They encourage the MMS to use existing EIS supporting documentation in upcoming work and coordinate information exchanges with the State of Alaska relative to research and studies already conducted in the Beaufort area.

B.2. Scoping Meetings

The Scoping Meeting for the Beaufort Sea multiple-sale EIS were held in Nuiqsut, Barrow, Kaktovik, and Anchorage on October 16, 18, 19, and 26, 2001, respectively. Meetings with the Native Village of Barrow, and the Mayor of the North Slope Borough and Alaska Eskimo Whaling Commission also were held while the scoping team was in Barrow. An additional meeting was requested by the AEWC and the Inupiat Community of the Arctic Slope (ICAS) and held on November 15, 2001. Environmental Justice concerns were accepted during the meeting held on the North Slope and those comments are included in summary of issues and concerns below. The EIS will include an Environmental Justice analysis. Following are the major concerns that were raised at these scoping meetings.

B.2.a Government-to-Government Nuiqsut Tribal Council Meeting, October 16, 2001

The meeting was held in the afternoon; five to six persons attended. The Council is concerned about the following:

- the safety of OCS activities and potential impacts from oil spills;
- the effects to subsistence resources including bowheads, seals, and fish;
- the breadth of the sale, from Barrow to Canada;
- that MMS is not using traditional knowledge when making decisions; and
- that OCS activities are impacting the local sociocultural and health systems.

The Council indicated the following:

- the preparation of a single EIS for all three sales will limit their input into the sale process;
- the MMS needs to look at the cumulative impacts and consequences of offshore leasing when making decisions; locals are not responsible for cumulative effects; and
- they also are requesting local impact assistance.

B.2.b Nuiqsut Public Scoping Meeting, October 16, 2001

The meeting was held in the evening; 31 persons attended.

- Individuals are concerned about the ability of oil companies to clean up oil. They are most concerned that three oil-spill drills have failed to pick up oil in ice-infested water under relatively mild conditions.
- The Mayor of Nuiqsut stated his concern that ice forces are capable of overriding manmade islands and can result in oil spills.
- Some expressed concern about adverse effects to their subsistence lifestyle, especially fish harvests.
- Some stated that they should have more input before the lease-sale decisions, and they feel that MMS is not using local traditional knowledge. They need to protect their natural resources—no drilling on the OCS. They support onshore drilling.
- The people of Nuiqsut want Cross Island completely deferred. The area should be permanently dropped from leasing consideration.
- Those commenting stated that the managing Federal Agencies and the oil companies should share resources found with the village.
- Others stated that:
  - MMS should fund local oversight subsistence programs,
  - bowhead whale feeding areas should be off limits to leasing,
  - industry is offering limited local job opportunities,
  - offshore pipelines which come onshore are restricting caribou movement, and
  - an EIS should be written for each Beaufort Sea sale, otherwise they will have limited input to the process.

B.2.c Government-to-Government Native Village of Barrow Scoping Meeting, October 18, 2001

The meeting was held in the morning; seven persons attended. The commenting expressed concerns about:

- industry's ability to contain a pipeline break and the long-term environmental effects from an offshore pipeline oil spill;
- the potential effects to their subsistence lifestyle;
- the lack of power the locals have to get information and learn the process; they stated that education is power;
- platform types in ice-infested waters and whether they would withstand the arctic winters; and
- circumpolar ice movement and the difficulty it adds to OCS drilling.

B.2.d Barrow Scoping Meeting with the North Slope Borough and AEWC, October 18, 2001

The meeting was held in the afternoon; seven persons attended:

- Those attending stated that they do not support the OCS program, as no efficient oil-spill cleanup technology is available. The Secretary and MMS should permanently remove from leasing and oil and gas activities those areas that are important subsistence areas, such as the spring lead system, the area near Cross Island, and the bowhead whale feeding areas.
- The NSB, AEWC, and Whaling Captains should be consulted and included in the development of mitigation and deferral areas.
- They want impact assistance and local participation in decisionmaking.
- They are concerned about oil-spill cleanup and pipeline design.
- The North Slope Borough wants to protect the food and cultural resources of the residents on the North Slope. The resources from the ocean are vital parts of the Inupiat culture.
- They view leasing, exploration, and development and production as a continuing process; one stage leads to the next with no stopping the momentum once it gets started.
- The Secretary of the Interior needs to approve the 5-year program before the MMS starts the individual lease-sale process under this program. They stated there should be an independent EIS for each lease sale. They want an independent Coastal Zone Consistency evaluation for each sale.
- They expressed concern that seismic vessels working on the northern gas route survey spooked the whales farther offshore this past year.
- MMS needs to be an advocate of the NSB positions. The MMS needs to deal with the NSB and local concerns and issues.
- MMS should require the employment of local NSB residents in OCS activities.
- The OCS Policy Committee recommended (a) funding to locals and (b) NSB oversight of the plans; this is through (1) peer review of studies material and technical material; (2) mitigation, if needed; and (3) impact funding to locals.
- They need mitigation for local economic/social impacts.
- The AEWC is against all offshore leasing, exploration, and development.
- They stated that cumulative impacts are really "snowballing" now. The NSB residents are becoming increasingly frustrated. It seems like cumulative impact is being left up to the locals to address/solve.

B.2.e Barrow Public Scoping Meeting, October 18, 2001

The meeting was held in the evening; six persons attended. Those attending stated the following:

- They are concerned about the potential adverse effects from an oil spill. They want a performance bond for catastrophic spill. They are concerned about adverse effects to fish, bowhead whales, and subsistence lifestyles.
- They wish they could repair Native sovereignty and control their own destiny in their own environment.
- They want oil and gas pipelines to be buried in the road system so pipelines will not impede caribou movement.

- They want impact assistance at the community level.

B.2.f Kaktovik Public Scoping Meeting, October 19, 2001

The meeting was held in the evening; six persons attended:

- They voiced concerns about the extensive barge traffic along the coast this summer bringing in the sewer and water pipes for their village, plus Canadian seismic boats working on the gas pipeline. Indications were that both actions seemed to push their subsistence whaling efforts farther offshore.
- They are against offshore oil and gas activities.

B.2.g Anchorage Public Scoping Meeting, October 26, 2001

The meeting was held in the evening; two persons attended:

- One individual from an environmental organization delivered a group joint letter, which is summarized earlier in this section under B.1.f on page E-5.
- The other individual, an MMS study subcontractor gave his perception of local reactions to OCS oil and gas activities.

B.2.h Barrow Meetings with Inupiat Community of the Arctic Slope and the Alaska Eskimo Whaling Commission on November 15, 2001

- The AEWC provided whale-strike information and two potential deferral alternatives, one near Barrow and one near Nuiqsut.
- The ICAS is against OCS drilling.

C. Environmental Concerns

C.1. Significant Environmental Issues

No entirely new significant environmental concerns were identified during the scoping process that was not identified in the previous Sale 170 final EIS. Since this last sale EIS, Northstar, the first partial OCS jurisdictional development and production island, has been built and has come online. This has raised feelings of environmental uncertainty by local residents, because many do not trust the engineering designs to overcome known North Slope environmental constraints. Many concerns extend to the Liberty Development and Production Project, which was under review.

The following environmental issues are identified for analysis in the EIS, because they are related to important resources, activities, systems, or programs that could be affected by petroleum exploration, development, and production, and transportation activities associated with the proposals for all three sales. The cumulative effects of present and future major activities on each of these resources, activities, systems, or programs will be analyzed.

C.1.a Effects of Spilled Oil on Marine Resources

Contamination and Effects: the likelihood of large oil spills is very small. However, if oil spilled, it could contaminate the affected marine and coastal environments and, depending on the amount and time of the year, have short- to long-term local to regional effects on those resources and sociocultural systems adjacent to the planning area. A hydrocarbon-spill event, especially a large one, could have a significant impact on water quality. In situ burning of spilled oil would affect the air quality of the region. Lower trophic-level organisms within the spill area also would be affected. Marine mammals, including the endangered bowhead whale, could be affected as they migrate through the Beaufort Sea. The bowhead whale is integral to the continuation and survival of the cultural and subsistence lifestyle of the Inupiat. Both the spectacled eider and the Steller's eider are listed as threatened species.

Other resources affected by an oil spill that are crucial to Inupiat subsistence include anadromous fish, including the Arctic cisco, and various marine and coastal birds. The Inupiat are concerned that a spill could adversely affect many of the traditional food sources and, thereby, could affect the economic and cultural well-being of the North Slope. The temporary or permanent elimination of primary subsistence foods would cause North Slope residents to either shift to less desired subsistence resources or replace them with western foods.

C.1.b Fate, Behavior, and Cleanup of Spilled Oil in the Marine Environment

The fate and behavior of spilled oil in the marine and coastal environments and the capability and methods of spill cleanup are of major concern to local communities. Identified concerns include:

- the availability and adequacy of containment and cleanup technologies, especially under broken-ice conditions;
- the ability to detect and clean up pipeline spills and spills under ice;
- the effects of winds and currents on the transport of spilled oil within ice;
- the removal of oil from contaminated water sediments and ice;
- the toxicological properties of fresh and weathering oil; and
- the air pollution that would result from the at-sea evaporation or burning of spilled oil.

This concern has been intensified in recent years, as industry has on three occasions not proved their ability to adequately clean up spilled oil with mechanical equipment in relatively calm environmental conditions in ice-infested waters. Other non-mechanical tactics are available in these periods.

Oil spills and a general discussion of oil-spill contingency plans will be covered in this EIS.

C.2. Habitat Disturbance and Alteration

Habitat disturbance and alteration might result from both offshore and onshore construction activities associated with the operation of petroleum facilities, depending on location of activities.

C.2.a Habitat Disturbance

Habitat disturbance, including noise, might be associated with air traffic, vessel operations, traffic along gravel and ice roads, marine and over-the-ice seismic activities, offshore drilling, dredging, vessels involved in icebreaking and management operations, and facility construction. The primary concern in all communities and by the North Slope Borough is interference with the bowhead whale hunt. Depending on the type of operation and the time of occurrence, these habitat disturbances may have short- to long-term local to regional effects on fishes (particularly anadromous species such as the Arctic cisco), marine and coastal birds, marine mammals, caribou, and endangered and threatened species such as the bowhead whale, Steller's eider, and spectacled eider, all of which will have an effect on subsistence hunting and fishing. Issues related to the above will be evaluated in EIS analysis for new projects when they are submitted to the MMS.

C.2.b Habitat Alteration

Habitat alteration, including reduction, would be associated with both onshore and offshore construction activities that include pipeline and ice- and gravel-road construction, dredging-excavation and dumping of dredge material, removal of gravel from onshore sites, and dumping of onshore gravel in offshore locations. Depending on the type of operation and the time and location of occurrence, they could have short- to-long-term local to regional effects on lower trophic-level organisms; fishes (especially Arctic cisco) and other anadromous species; marine and coastal birds; marine mammals; endangered bowhead whales, especially in the spring-lead system and fall-feeding area; caribou; archaeological resources; and subsistence hunting and fishing activities related to reduced access to the resources. The MMS does not have the authority to mitigate disturbances to wildlife due to onshore pipeline routing.

C.3. Protection of Inupiat Culture and Way of Life

The Inupiat believe their culture and way of life need to be protected from effects associated with petroleum development. As such, activities might lead to social disruption and a change in cultural values through employment changes (further displacement of the subsistence lifestyle by a cash economy), and the alteration of subsistence-harvest patterns as discussed in relation to other significant issues previously noted in this section. The EIS will discuss and evaluate sociocultural and health systems of local communities.

C.4. Other Significant Concerns

Following are other significant issues related to petroleum-development activities that were raised during the scoping process:

- Incorporation of “traditional knowledge” (TK) in the EIS, although acknowledged, still does not seem to satisfy those who criticize this aspect. Concern seems to center around a perception that MMS does not recognize TK on the same level as scientific knowledge. The implication is that although MMS has quoted TK within the EIS text, TK has not been a part of the decisionmaking process. Villages seemed to appreciate the fact that MMS gathered the last 25 years of public testimony and prepared a publicly available searchable CD-ROM. The MMS will continue to communicate with the AEWC and whaling captains to gain insight into local conditions. The TK (for example, about fish species and other subsistence values) will continue to be incorporated into EIS text and provided to MMS decisionmakers.
- Cumulative effects of oil and gas operations on the biological (i.e., caribou migration restricted in relation to pipeline routes, and onshore effects, including fishing in the Colville River) and physical resources and social systems (i.e., development impact to the Inupiat way of life, and no rights to visit family’s ancestral ice cellars in Prudhoe Bay) in and adjacent to the planning area from past, present, and future Arctic oil and gas lease sales and other major projects, will be analyzed in the EIS. Criticism still arises from not having a definite database to tier off of before oil and gas operations even occurred on the North Slope. The National Research Council is conducting a 2-year review on cumulative effects of oil and gas operations on the North Slope. Results may be available for incorporation, as applicable, into the final EIS for this lease sale.
- Include all of the mitigating measures-stipulations and notices to lessees from the last lease sale (Sale 170) into this Beaufort Sea multiple-sale EIS.

C.5. Topics and Issues Not Analyzed in the EIS

This includes issues that were identified during the scoping process and that are not analyzed in the EIS.

C.5.a Revenue Sharing/Impact Assistance

One issue, repeatedly identified as being of primary concern to the North Slope Borough and all of the North Slope villages, is the need for revenue-sharing assistance to local communities from OCS receipts. Impact assistance beyond what is provided for under the OCS Lands Act would require congressional action and cannot be addressed or resolved through the EIS process. Under the 1997-2002 5-Year Oil and Gas Leasing Program, recommendations of the OCS Policy Committee for such revenues were passed through MMS to appropriate congressional constituents. However, it is Congress and not MMS that makes this decision. A version of this type of legislation (the CARA bill) was passed by Congress for FY 2001; however, monies derived did not filter down to the local villages. Funding was only at the State and Borough level. Locals do not like to be competing among themselves for monies they feel rightfully belong to them.

C.5.b Participation of Local Communities

The need for active participation and involvement, including decisionmaking authority, of the North Slope Borough and local communities was another issue raised at each of the scoping meetings. Examples are Borough, City, and Native village participation in the review of oil-industry operations, development of monitoring programs, and helping to write the various NEPA documents. Locals would like to be brought to Anchorage and be a part the of internal review process of industry-submitted projects. The MMS did solicit and receive Environmental Justice comments, which are included above, and the EIS will include an Environmental Justice analysis. The MMS will continue to engage local governments and tribes in government-to-government meetings to share information and will meet as often as needed to discuss potential solutions.

C.5.c Process Issues

Several commenters suggested that MMS should wait to start the individual lease-sale process until the Secretary had approved the final 5-year program for 2002-2007. They suggested it was illegal or improper for MMS to start the Beaufort Sea multiple-sale process before a final decision by the Secretary. However, to meet the proposed schedule, MMS must start the preliminary scoping and writing of the EIS based on the draft proposed program, otherwise it would be impossible to hold any sales in the first 2 years of any 5-year program. Once the proposed program is approved, adjustments will be made to any text within the draft EIS. Any 5-year program decisions concerning the Beaufort Sea Planning Area will be incorporated into this EIS and into the potential lease sale decisions for Sale 186, 195, and 202. The current proposed actions for this EIS are to conduct the three sales identified in the 2002-2007 5-Year Draft Proposed Program for the Beaufort Sea: Sale 186 to be held in 2003; Sale 195 to be held in 2005; and Sale 202 to be held in 2007. This will enable the MMS to conduct the prelease decision processes for subsequent sales (Sales 195 and 202) more efficiently, consistent with the new Executive Order of May 18, 2001, to expedite energy-related projects. Federal NEPA regulations allow several similar proposals to be analyzed in one EIS (40 CFR 1502.4). There also will be complete NEPA and Coastal Zone Management Act coverage for all sales after the first sale, either an Environmental Assessment or Supplemental EIS, and a Consistency Determination (focusing primarily on new issues or changes in a State's federally approved coastal management plan) will be prepared for each subsequent sale.

Commenters suggested that areas deferred (i.e., bowhead subsistence-hunt areas) or deleted from past Beaufort Sea sales should be removed permanently from consideration for leasing. The EIS looks at deferrals for each sale and in the areas considered in the 5-year planning process. Any 5-year program decision made by the Secretary whether to exclude or to continue to exclude areas will be incorporated into this EIS.

A suggestion was made that MMS have industry provide job opportunities and training for local communities to help their economy. Under a lease-sale or postlease-sale EIS, the MMS does look at and evaluate the local community in relation to the proposed actions. However, the MMS has no authority to require an operator to provide local hire. We can suggest, but not enforce, such a suggestion.

Some reviewing constituents consider a continuum between leasing, exploration, and eventual production and development phases of the Federal oil and gas-leasing program. They feel that once a decision is made to lease an area, any subsequent decisions are a "done deal" that cannot be stopped or altered. The OCS Lands Act and the regulations consider these as four separate phases, each of which has a separate decision process attached to that phase. Subsequently, there are four NEPA documents prepared for these various phases: (1) a national 5-Year leasing program EIS; (2)a leasing program EA or EIS; (3) an exploration program EA or EIS; and (4) a production and development plan EA or EIS. Each NEPA phase has a different level of analysis, depending on the specificity of the information being submitted for review. This concern is not supported by the history of leasing in the Alaskan OCS and the Beaufort Sea. Thousands of leases have been issued; however, fewer than 100 wells have been drilled and only one project, Northstar, has started production. A second project, Liberty, is under NEPA review.

C.5.d MMS Should Allow Locals to Provide Input in Development of Monitoring and Mitigation Measures and Should Provide Funding to Local Oversight Subsistence Programs

MMS will continue to consult local communities throughout the presale process about possible mitigation measures. Some involvement by locals is being considered separately, as this topic is outside the EIS process. MMS cannot obligate OCS revenues for support of local subsistence program, only Congress can appropriate funds. Please see the previous discussion of impact assistance.

C.5.e MMS and the Oil Companies Should Provide Local Communities with a Reasonable Energy Source

Commenters at the meetings on the North Slope feel that MMS should require the oil companies to provide energy to the residents of nearby local communities, which are the potential recipients of adverse impacts associated with offshore oil and gas development. Both Barrow (Barrow gas field) and Nuiqsut (from Alpine) have nearby natural gas supplies, which have been made available to local residents. Such arrangements are between the operator and the local community.

C.5.f Ice Override

Commenters at meetings in Nuiqsut and Barrow feel that proposed oil and gas activities could be adversely impacts by the movement of ice in the Arctic. A general discussion of known unstable ice regimes and historic ice-override events are included in our lease-sale EIS analysis. Specifics as to placement of fuel tanks, relief wells, and human safety factors relating to these topics are addressed in subsequent exploration plan and development and production plan analysis. The MMS takes traditional knowledge into consideration when evaluating ice forces. This procedure was used for both Northstar and Liberty development and production plans.

C.5.g Gas Hydrates

Some stated that methane-hydrate pockets might be present and a safety hazard to OCS operations. A general discussion of these phenomena is covered under the general geology section of lease sale EIS's. Specifics as to an actual drilling plan are discussed in the exploration plan or development and production plan, and are covered under MMS regulations.

C.5.h Unprecedented Subsea Buried Pipeline Technology

Some commenters stated the subsea buried pipelines are based on unproven technology, and they do not feel that such pipelines are safe. Within the lease-sale EIS, buried subsea pipelines are described and the potential effects from construction or from an oil spill are evaluated. Design criteria are set by Federal and State regulations; the operator can design as they see fit, but they must meet this criteria. The operator submits engineering analysis to back up their design specifications. The development and production plan EIS discusses the environmental effects of the overall pipeline analysis. This procedure was used for both the Northstar and Liberty development and production plans.

C.5.i Critical Habitat Should be Deleted from OCS Leasing

Some comments in Barrow suggested that the ongoing Federal process to identify and designate critical bowhead whale habitat automatically required its exclusion from consideration for future leasing. However, the designation of critical habitat requires additional analysis within the EIS and consultation with the responsible regulatory agency. This does not necessarily mean that the area designated will be automatically deleted from future leasing proposals. Therefore, the MMS suggested that these commenters provide suggestions for deferral alternatives, which they did.

C.5.j Bonding for Operators

The NSB and the AEWC both indicated that locals have required the operator to put up a performance bond for operations on the North Slope to protect their subsistence resources. They stated that local communities should not have to require bonds, because requirements for bonding are an MMS responsibility. MMS regulations do require operator bonding for financial liability on their lease, but the Oil Pollution Act of 1990 covers this.

C.5.k Bury Pipelines in North Slope Roads to Eliminate Visual Pollution and to Eliminate Blockage of Caribou Migration Routes

A commenter in Barrow was concerned that existing onshore pipelines maybe inhibiting the movement of bull caribou. Onshore pipeline routes are under the jurisdiction of the State, not MMS. Cumulative effects to caribou will be evaluated in this EIS and in future NEPA documents for any OCS oil and gas exploration or development.

D. Alternatives Recommended for Inclusion in the EIS

Six alternatives have been identified by MMS, taking into consideration the area identification and scoping process, industry interest, and publicly available information on potential effects of the proposed action on the environment.

D.1. Description of Alternative I (Proposal for Sales 186, 195, and 202)

Alternative I, the proposal for each sale, would offer for lease those blocks selected as a result of the area identification. The Beaufort Sea Multiple-Sale Program Area includes 1,877 whole or partial blocks covering 9,770,000 acres (about 3,954,000 hectares) in the Beaufort Sea, See Map 1 and 2.) This area was identified as being of high and medium interest to industry and is the entire area of the Call. This alternative reflects a range of resource development and activity from 340-570 million barrels of recoverable oil for each sale. There are 55 active leases in this area, 21 of which were leased in Sale 170. Previous sales in this area have resulted in 688 leases; of these, 623 have been relinquished or have expired. A total of 30 wells have been drilled, and 10 wells have been found producible, but only two development proposals (Northstar and Liberty) have been submitted to the MMS. Two Federal leases are part of the Northstar Unit that went into production in November 2001. Recently, British Petroleum (Alaska), Inc. (BPXA) put the plan for development and production of the Liberty Prospect on hold but, because the final EIS essentially was completed, it was published in May 2002.

D.2. Alternative II (No Sale)

This alternative would remove the entire area of the Proposal for Sales 186, 195, and 202 from leasing for a sale.

D.3. Alternative III (Barrow Subsistence Whale Deferral)

This alternative was developed by the MMS in response to comments received in Barrow. This deferral was developed as a potential way to reduce conflicts between bowhead whale subsistence-hunter and offshore oil and gas operations and was based on bowhead whale-strike data provided by the AEWC. This alternative would offer for leasing all of the area described for Alternative I except for a subarea located in the western portion of the proposed sale area. Alternative III would offer 1,851 whole or partial blocks, comprising 9,632,000 acres (about 3,898,000 hectares). The areas that would be removed by the Barrow Subsistence Whale Deferral (see Map 2) consist of 26 whole or partial blocks, approximately 138,000 acres, about 1% of the Alternative I area. This option is being analyzed to estimate potential protection of Barrow subsistence-use zones and wildlife areas, particularly comprising an area in which whales have been taken (based on known whale-strike data). This option analyzes whether the deferral would provide increased protection to bowhead whales from potential noise and disturbance from exploration or development and production activities. The majority of the bowhead whale subsistence-hunting area near Barrow is in an area of the Chukchi Sea, which was already removed from leasing consideration in the proposed final 5-Year Offshore Oil and Gas Leasing Program for 2002-2007.

D.4. Alternative IV (Nuiqsut Subsistence Whale Deferral)

This alternative would offer for leasing all of the area described for Alternative I except for a subarea located off of Cross Island. Alternative IV would offer 1,847 whole or partial blocks, comprising 9,608,000 acres (about 3,888,000 hectares). The areas that would be removed by the Nuiqsut Subsistence Whale Deferral (see Map 2) consist of 30 whole or partial blocks, approximately 162,000 acres, about 2 % of the Alternative I area. This option is being analyzed to assess the effectiveness of potential protection of Nuiqsut subsistence-use zones and wildlife areas where whales have been taken (based on known whale-strike data). Requests for such possible protection were made by the AEWC, the Native Village of Nuiqsut, and the NSB.

D.5. Alternative V (Kaktovik Subsistence Whale Deferral)

This alternative would offer for leasing all of the area described for Alternative I except for a subarea located off of Barter Island. Alternative V would offer 1,849 whole or partial blocks comprising 9,649,000 acres (about 3,905,000 hectares). The area that would be removed by the Kaktovik Subsistence Whale Deferral (see Map 2) consists of 28 whole or partial blocks, approximately 121,000 acres, about 1% of the Alternative I area. This area is being considered for deferral in response to a request by the Native Village of Kaktovik because of the potential disturbance to Kaktovik's traditional known subsistence-whaling areas. The area was delineated using whale-strike maps provided by the AEWC.

D.6. Alternative VI (Eastern Deferral)

This alternative would offer for leasing all of the area described for Alternative I except for a subarea located east of Kaktovik. Alternative VI would offer 1,817 whole or partial blocks, comprising 9,487,000 acres (about 3,839,000 hectares). The area that would be removed by the Eastern Deferral (see Map 2) consists of 60 whole or partial blocks, approximately 283,000 acres, about 3 % of the Alternative I area. It adjoins an area that the State of Alaska has deferred in recent state sales. This option evaluates the need for protection of this area as requested by the Native Village of Kaktovik, the AEWC, and the North Slope Borough regarding the possible importance of the area to bowhead whales and other general concerns about the environment there.

E. Alternatives Not Selected for Inclusion in the EIS

Four general areas in the Beaufort Sea were recommended for deferral in comments to the September 19, 2001, Call and NOI and in the October and November 2001 scoping meetings. These were areas east of Barrow, areas around and to the east of Cross Island, areas near Kaktovik, and areas off the Arctic National Wildlife Refuge the deferrals analyzed in the draft EIS (see Section D of this Scoping Report) respond to some of the specific deferral recommendations. This section responds to the balance of the deferral recommendations. In the following, we first discuss areas recommended for deferral and our conclusions regarding those deferrals for specific parts of the Beaufort Sea. Then we look at other considerations relevant to these recommendations.

Finally, we provide the rationale for our conclusions, on which recommended deferrals are analyzed in the EIS and which are scoped out.

E.1. Areas from Barrow East to Harrison Bay

As indicated in Section B of Appendix E, in written comments, the State of Alaska supports all areas deferred from past sales, the Mayor of the North Slope Borough and the Sierra Club et al., recommended that such deferrals be removed permanently from leasing in the planning area. The Mayor also recommended that the spring-lead system and eastern Beaufort Sea should be deferred from all Beaufort Sea sales in the 2002-07 offshore leasing program. The AEWC recommended that areas used for the bowhead whale subsistence hunt be removed permanently from any future consideration for OCS leasing. Phillips Alaska Exploration opposed discretionary deferrals and arbitrary exclusions, Shell Oil supported leasing the entire nearshore area out to about 15 miles, and BPXA endorsed the sale schedule but did not comment on specific areas of the Beaufort Sea. In verbal comments at the Barrow meeting with the NSB and AEWC, those who spoke wanted MMS to permanently remove from leasing important subsistence-use areas, such as the spring-lead system and areas that might be used by bowhead whales for feeding. In the November meetings, the AEWC provided maps of potential deferral areas that were developed by the Barrow and Nuiqsut Whaling Captains, and ICAS stated their general opposition to all OCS drilling in the Beaufort Sea.

Although it is not the deferral area included in the Barrow Whaling Captains map, we are analyzing the Barrow Subsistence Whaling Deferral on the western edge of the planning area that, although much smaller (26 versus 588 whole or partial blocks), is based on whale-strike data provided by the AEWC. Also, in response to requests by Barrow residents, the NSB, and the AEWC, the Secretary removed other areas. Specifically, in her decision on the 5-Year proposed final program, she removed from leasing consideration portions of the subsistence-use area/spring-lead system to the west of this deferral area in the westernmost part of the Beaufort Sea Planning Area, and the subsistence-use area/spring-lead system in the Chukchi Sea.

Preliminary oil-field analysis of the Beaufort Sea Planning Area indicates that the 588 whole or partial blocks depicted as a candidate for deferral on the map submitted by the AEWC would reduce, by an estimated 18%, the opportunity of discovering and developing an economic oil field, if Alternative I were chosen for one of the three Beaufort Sea sales covered by this EIS. This compares to an estimated reduction of about 1% for the Barrow Subsistence Whaling Deferral.

E.2. Areas Around and East of Cross Island

In written scoping comments (see Section B.1 of Appendix E) applicable to Nuiqsut subsistence whaling, in addition to what appears for Barrow, the State of Alaska recommended that MMS apply a Cross Island Stipulation (No siting of Permanent Facilities within 10 Miles of Cross Island). The Mayor of the NSB believed this 10-mile distance is arbitrary and too small, and the area should be expanded to cover various aspects of the Nuiqsut traditional bowhead whale harvest and expanded more to the east to prevent the potential for whales to deflect due to production noise. The people of Nuiqsut want the Cross Island area permanently dropped from leasing consideration.

Although it is not the deferral recommended by the Nuiqsut Whaling Captains, we do include analysis of a smaller Nuiqsut Subsistence Whale Deferral (30 versus 94 whole and partial blocks) that is based on whale-strike data provided by the AEWC. This deferral option does include some blocks to the east of the 10-mile radius. We also analyze two versions of the no surface occupancy stipulation for Cross Island, one for seaward portions of the 10-mile radius area and one for shoreward portions. Furthermore, access to tracts in the vicinity of Cross Island may be needed, because the State has leased tracts in the adjacent State waters. Should oil be discovered on these State tracts, leasing of the adjacent Federal tracts would prevent drainage of Federal oil.

Regarding production noise from permanent industrial facilities on the OCS, companies will be required to demonstrate to the National Marine Fisheries Service that any such proposed facilities will be in compliance with the Marine Mammal Protection Act and Endangered Species Act as they seek to obtain incidental harassment authorizations and avoid conflicts with subsistence activities.

The 94 whole or partial blocks depicted as a candidate for deferral on the map developed by the Nuiqsut Whaling Captains would reduce, by an estimated 19%, the opportunity of discovering and developing an economic oil field. This compares to an estimated reduction of about 2% for the Nuiqsut Subsistence Whaling Deferral.

E.3. Areas Offshore from the Arctic National Wildlife Refuge

In scoping comments for this EIS, the Mayor of the NSB said that the eastern Beaufort Sea should be deferred from all three sales in the 2002-2007 leasing program. In comments on the 5-year offshore leasing program, the Mayor of the City of Kaktovik expressed a preference for onshore development, recommended that the area off of the Arctic National Wildlife Refuge be excluded from leasing until the Refuge is opened for development, and that all OCS blocks within 50 miles of the city be excluded. Citing these comments from Kaktovik, the Sierra Club et al. said in their scoping comments for this EIS that they supported the City of Kaktovik's request for a deferral area offshore from the Canning River to the Canadian border. This area includes 173 whole or partial blocks. Deferring it would reduce, by an estimated 23%, the opportunity of discovering and developing an economic oil field. The deferrals in Alternatives V (Kaktovik Subsistence Whaling Deferral) and VI (Eastern Deferral) cover 88 of these same blocks and run offshore of about 60% of the coastline of the Arctic National Wildlife Refuge. The selection of Alternatives V or VI would reduce (by an estimated 3% each) the opportunity of discovering and developing an economic oil field.

Although no prohibition on offshore leasing is included in the statutes governing the Arctic National Wildlife Refuge, its Comprehensive Management Plan restricts the use of the Refuge for infrastructure to support any offshore development. Also, any OCS activity or infrastructure (including pipelines to shore) would not be approved without thorough technical and environmental reviews and would have to meet the requirements of the Marine Mammals Protection Act, the Endangered Species Act, and other Federal and State statutes that help protect the natural resources of the area and environment.

The Kaktovik Whaling Captains did not submit a map but indicated that they wanted the area known as the "Barter Island" deferral from Sales 124 and 144 as a deferral for these three sales. The northern part of the "Barter Island" deferral from OCS Sale 144 is excluded from the proposed final 5-year offshore program. Alternative V, the Kaktovik Subsistence Whale Deferral, includes the Sale 144 deferral area plus a few extra blocks on the west side to more fully cover the area where AEWC data show whale strikes were made.

E.4. Other Considerations Relevant to Requests for Deferrals Off Barrow, Cross Island, and the Arctic National Wildlife Refuge

The five stipulations described (Section F) in Appendix E are included as part of all alternatives for Sales 186, 195, and 202. These are mitigating measures that will help protect the bowhead whale. The first four stipulations provide for specific protections, and the fifth is a mechanism to address unresolved conflicts between the oil and gas industry and subsistence activities. This mechanism has proven to be effective in protecting the whale hunt while allowing oil and gas activity to proceed. The mechanism can apply to whatever unreasonable subsistence-related conflicts are not resolved by other means. We also are including a possible addition to a notice of Information to Lessees (ITL 7 Information on the Availability of Bowhead Whales for Subsistence-Hunting Activities) indicating that for development plans, lessees are encouraged to consider noise-abatement methods if needed to reduce activity noise that may occur during and in the vicinity of the migration.

E.5. Rationale for Conclusions on These Three Recommended Deferrals

A primary objective of the OCS Lands Act is to make lands available for oil and gas leasing in an environmentally acceptable manner, taking into consideration protection of the marine, coastal, and human environments. An objective we undertake to meet NEPA requirements is to write an EIS that is as straightforward and as easy to understand as possible, given the inherent difficulty in estimating uncertain potential environmental effects of uncertain potential exploration and development activities based on projections of uncertain potential leasing results of planned future sales. Given the four deferral alternatives already included for analysis, these three deferral options would contribute little in the way of additional analysis to an EIS that must cover an already complicated set of issues.

We consider that the Barrow, Nuiqsut, and Kaktovik Subsistence Whaling Deferral alternatives, when combined with the other mitigating measures (stipulations and ITL's) to be analyzed in the EIS, would provide about the same level of protection of the environment as the preceding three recommended deferral areas, but they would allow at least some oil and gas exploration and development to proceed. Regarding the Arctic National Wildlife Refuge, we believe that the merits of including such a deferral option are in large part covered by analysis of Alternatives V and VI.

Furthermore, the analyses of six alternatives (proposal, no action, and four deferral alternatives), and the mitigation measures cited above for the bowhead whale subsistence hunting and other natural resources possibly affected by offshore exploration and development, meet NEPA requirements and provide alternatives that achieve the objectives of the OCS Lands Act.

F. Mitigation Measures

F.1. Proposed Mitigation Measures to be Evaluated in the EIS

The following mitigation measures (stipulations and Information to Lessees [ITLs]) will be considered as part of all alternatives for the Beaufort Sea multiple-sale EIS process (a copy of proposed Beaufort Sea multiple-sale stipulations and ITLs is attached [Attachment 2]). These measures were analyzed as part of the proposal in Sale 170, expanded and modified during Section 19 consultation, and subsequently adopted. Extensive consultation with affected groups, including the State, the NSB, AEWC, the villages of Nuiqsut and Kaktovik, industry, the Alaska Oil and Gas Association, and the National Marine Fisheries Service resulted in adoption of innovative mitigation and protection stipulations to ensure consultation and cooperation during exploration and development and production activities, for bowhead whale monitoring activities, and for protection of subsistence whaling and other activities. The State of Alaska, the NSB, the Villages of Nuiqsut and Kaktovik, and others recommended in their comments on the Call and through scoping that all measures adopted for Sale 170 be adopted for the proposed Beaufort Sea multiple-sale EIS.

F.1.a Stipulations Included in the Proposed Action

The following stipulations are considered part of all alternatives.

- No. 1 Protection of Biological Resources
- No. 2 Orientation Program
- No. 3 Transportation of Hydrocarbons
- No. 4 Industry Site-Specific Bowhead Whale-Monitoring Program
- No. 5 Subsistence Whaling and Other Subsistence-Harvesting Activities

No.1 Protection of Biological Resources: If biological populations or habitats that may require additional protection are identified in the lease area by the Regional Supervisor, Field Operations (RS/FO), the RS/FO may require the lessee to conduct biological surveys to determine the extent and composition of such biological populations or habitats. Based on any surveys that the RS/FO may require of the lessee or on other information available to the RS/FO on special biological resources, the RS/FO may require the lessee to modify operations to ensure that significant biological populations or habitats deserving protection are not adversely affected.

No. 2 Orientation Program: The lessee shall include in any exploration or development and production plans submitted under 30 CFR 250.33 and 250.34 a proposed orientation program for all personnel involved in exploration or development and production activities (including personnel of the lessee's agents, contractors, and subcontractors) for review and approval by the RS/FO. The program shall be designed in sufficient detail to inform individuals working on the project of specific types of environmental, social, and cultural concerns, including subsistence, that relate to the sale and adjacent areas.

No. 3 Transportation of Hydrocarbons: This measure requires the use of pipelines: (a) if pipeline rights-of-way can be determined and obtained; (b) if laying such pipelines is technologically feasible and environmentally preferable; and (c) if, in the opinion of the lessor, pipelines can be laid without net social loss, taking into account any incremental costs of pipelines over alternative methods of transportation and any incremental benefits in the form of increased environmental protection or reduced multiple-use conflicts.

No. 4 Industry Site-Specific Bowhead Whale-Monitoring Program: This stipulation mandates that lessees conduct a site-specific monitoring program during exploratory drilling activities, including seismic activities, to determine when bowhead whales are present in the vicinity of lease operations and the extent of behavioral effects on bowhead whales due to these activities. The stipulation requires a peer review of monitoring plans and the resulting draft reports. The monitoring plan must include provisions for recording and reporting information on sightings of other marine mammals and must provide an opportunity for an AEWC or NSB representative to participate in the monitoring program. No monitoring program will be required if the RS/FO, in consultation with the NSB and the AEWC, determines that a monitoring program is not necessary based on the size, timing, duration, and scope of the proposed operations.

No. 5 Subsistence Whaling and Other Subsistence-Harvesting Activities: This stipulation mandates that all exploration and development and production operations shall be conducted in a manner that prevents unreasonable conflicts between the oil and gas industry and all subsistence activities, particularly the subsistence bowhead whale hunt. It provides a mechanism to address unresolved conflicts between the oil and gas industry and subsistence activities. This stipulation also requires the lessee to show in its exploration or development and production plan how its activities, in combination with other activities in the area, will be scheduled and located to prevent unreasonable conflicts with subsistence areas. The protection provided by this stipulation could reduce potential conflicts between potential subsistence activities and offshore oil and gas operations and provide protection as an option in lieu of the subsistence deferral alternatives.

F.1.b Stipulations to be Evaluated in the EIS

MMS will evaluate the inclusion of other stipulations that will be developed during the EIS process.

This includes two stipulations (Stipulation 6a and 6b) regarding a No Siting of Permanent Facilities in the Vicinity of Cross Island provision. These potential stipulations may reduce effects. They will be evaluated as mitigation and as an option to the aforementioned deferral alternatives.

Sale 170 included a stipulation for No Siting of Permanent Facilities in the Vicinity of Cross Island, which is not included as part of the committed stipulation package at this time. that ITL has been divided into two parts, 6A and 6B. The EIS will develop and evaluate a similar stipulation to reduce potential impacts by potentially limiting permanent facilities in the area. Such a stipulation may reduce potential conflicts between proposed oil and gas operations and subsistence activities. The State of Alaska, the NSB, the Villages of Nuiqsut and Kaktovik, and others recommended its adoption in responses to the Call for Information. The NSB and AEWC also proposed the Nuiqsut Deferral Alternative. In response to similar comments, the MMS also developed the Nuiqsut Subsistence Whale Deferral Alternative for evaluation in the EIS. While the issue and concerns being addressed by these options are the same, the aerial extent covered by each option is different. All three of these options are being evaluated in the EIS as a means of reducing potential effects to subsistence activities. The decision about the best option(s) will be made later in the process.

F.1.c Information to Lessees Included in the Proposed Action

Items 1 through 16 apply to OCS activities in the Beaufort Sea area and are considered part of the all alternatives, including the proposed action. Sale 170 had 21 ITL clauses. Five of them were outdated or superceded by regulations. These 16 ITL clauses provide mitigation for offshore oil and gas activities. We also are considering a possible addition to a notice of Information to Lessees (ITL 7 Information on the Availability of Bowhead Whales for Subsistence-Hunting Activities) indicating that for development plans, lessees are encouraged to consider noise abatement methods if needed to reduce activity noise that may occur during and in the vicinity of the migration.

No. 1 – Information on Community Participation in Operations Planning
No. 2 – Information on Kaktovikmiut Guide *In this Place*

No. 3 – Information on Nuiqsutmiut Paper
No. 4 – Information on Bird and Marine Mammal Protection
No. 5 – Information to Lessees on River Deltas
No. 6 – Information on Endangered Whales and the MMS Monitoring Program
No. 7 – The Availability of Bowhead Whales for Subsistence-Hunting Activities
No. 8 – Information on High-Resolution Geological and Geophysical Survey Activity
No. 9 – Information on Polar Bear Interaction
No. 10 – Information on the Spectacled Eider and the Steller's Eider
No. 11 – Information on Sensitive Areas to be Considered in Oil-Spill-Contingency Plans
No. 12 – Information on Coastal Zone Management
No. 13 – Information on Navigational Safety
No. 14 – Information on Offshore Pipelines
No. 15 – Information on Discharge of Produced Waters
No. 16 – Information on Use of Existing Pads and Islands

No. 1 – Information on Community Participation in Operations Planning: This ITL encourages lessees to bring residents on the North Slope communities into their planning process. Local communities often have the best understanding of how oil and gas activities can be safely conducted in and around their area without harming the environment or interfering with community activities. Community representation on management teams that develop plans of operation and oil-spill-contingency plans that involve local community residents in the earliest stages of the planning process for proposed oil and gas activities can be beneficial to the industry.

No. 2 – Information on Kaktovikmiut Guide *In This Place*: the people of Kaktovik, the Kaktovikmiut, have compiled *A Guide for Those Wishing to Work in the Country of the Kaktovikmiut*. The guide's intent, in part, is to provide information that may promote a better understanding of their concerns. Lessees are encouraged to obtain copies of the guide and to incorporate it into their Orientation Program to assist in fostering sensitivity and understanding of personnel to community values, customs, and lifestyles in areas in which they will be operating.

No. 3 – Information on Nuiqsutmiut Paper: the people of Nuiqsut, the Nuiqsutmiut, have compiled a paper that provides information that may promote a better understanding of their concerns. Lessees are encouraged to obtain copies of this guide and to incorporate it into Orientation Programs to assist in fostering understanding and sensitivity to community values, customs, and lifestyles in areas in which they will be operating.

No. 4 – Information on Bird and Marine Mammal Protection: This ITL advises lessees that during the conduct of all activities related to leases issued as a result of this sale, the lessee and its agents, contractors, and subcontractors will be subject to the following laws, among others, the provisions of the Marine Mammal Protection Act (MMPA) of 1972, as amended (16 U.S.C. 1361 et seq.); the Endangered Species Act (ESA), as amended (16 U.S.C. 1531 et seq.); and applicable International Treaties.

No. 5 – Information to Lessees on River Deltas: Lessees are advised that certain river deltas of the Beaufort Sea coastal plain (such as the Kongakut, Canning, and Colville) have been identified by the FWS as special habitats for bird-nesting and fish-overwintering areas, as well as other forms of wildlife. Shore-based facilities in these river deltas may be prohibited by the permitting agency.

No. 6 – Information on Endangered Whales and MMS Monitoring Program: This ITL advises lessees that the MMS intends to continue its areawide endangered whale-monitoring program in the Beaufort Sea during exploration activities. The program will gather information on whale distribution and abundance patterns and will provide additional assistance to determine the extent, if any, of adverse effects to the species.

No. 7– The Availability of Bowhead Whales for Subsistence-Hunting Activities: Lessees are advised that the NMFS issues regulations for incidental take of marine mammals, including bowhead whales. Incidental-take regulations are promulgated only upon request, and the NMFS must be in receipt of a petition prior to initiating the regulatory process. Incidental takes of bowhead whales are allowed only if a Letter of Authorization (LOA) is obtained from the NMFS pursuant to the regulations in effect at the time. An LOA must be requested annually. In issuing an LOA, the NMFS must determine that proposed activities will not have an unmitigable adverse effect on the availability of the bowhead whale to meet subsistence needs by causing whales to abandon or avoid hunting areas, directly displacing subsistence users, or placing physical barriers between whales and subsistence users.

No. 8 – Information on High Resolution Geological and Geophysical Survey Activity: This ITL advises lessees of the potential effects of geological and geophysical (G&G) activity to bowhead whales and subsistence hunting activities, and reminds lessees of the specifics of the bowhead whale-monitoring program. This ITL also informs lessees that MMS intends to treat prelease G&G activities in a manner similar to the post lease G&G activities. The MMS may impose restrictions (including the timing of operations relative to open water) and other requirements (such as having a locally approved coordinator on board) on G&G surveys to minimize unreasonable conflicts between the G&G survey and subsistence whaling activities. Lessees will coordinate any proposed G&G activity with potentially affected subsistence communities, the NSB, and the AEWC to identify potential conflicts and develop plans to avoid these conflicts.

No. 9 – Information on Polar Bear Interaction: Lessees are advised that polar bears may be present in the area of operations, particularly during the solid-ice period. Lessees should conduct their activities in a manner that will limit potential encounters and interaction between lease operations and polar bears, particularly during the solid-ice period. Lessees should conduct their activities in a manner that will limit potential encounters and interaction between lease operations and polar bears. Lessees need to contact the FWS regarding proposed operations and actions that might be taken to minimize interactions with polar bears.

No. 10 – Information on Spectacled Eider and Steller's Eider: Lessees are advised that the spectacled eider (*Somateria fischeri*) and the Steller's eider (*Polysticta stelleri*) are listed as threatened endangered species by the FWS and are protected by the ESA of 1973, as amended, 16 U.S.C. 1531 et seq.

No. 11 – Information on Sensitive Areas to be Considered in the Oil-Spill Contingency Plans: Lessees are advised that certain areas are especially valuable for their concentrations of marine birds, marine mammals, fishes, or other biological resources or cultural resources and should be considered when developing oil-spill-contingency plans.

No. 12 – Information on Coastal Zone Management: Lessees are advised that the State of Alaska will review OCS plans through the review process for consistency with the Alaska Coastal Management Program. Oil-spill-contingency plans will be reviewed for compliance with State standards, the use of best available and safest technologies, and with State and regional contingency plans on a case-by-case basis.

No. 13 – Information on Navigational Safety: Operations on some of the blocks offered for lease may be restricted by designation of fairways, precautionary zones, Anchorage, safety zones, or traffic-separation schemes established by the USCG pursuant to the Ports and Waterways Safety Act (33 U.S.C. 1221 et seq.), as amended.

No. 14 – Information on Offshore Pipelines: This ITL advises lessees that the Department of the Interior and the Department of Transportation have entered into a Memorandum of Understanding, dated December 10, 1996, concerning the design, installation, operation, inspection, and maintenance of offshore pipelines. Bidders should consult both departments for regulations applicable to offshore pipelines.

No. 15 – Information on Discharge of Produced Waters: This ITL advises lessees that the State of Alaska prohibits discharges of produced waters on State tracts within the ten-meter depth contour. It informs lessees that discharges of produced waters into marine waters are subject to conditions of NPDES permits issued by the USEPA, and may also include a zero-discharge requirement on Federal tracts within the 10-meter depth contour.

No. 16 – Information on Use of Existing Pads and Islands: This ITL advises lessees that during the review and approval process for exploration and development and production plans, MMS will encourage lessees to use existing pads and islands wherever feasible.

F.1.d Mitigating Measures Not Recommended for Analysis in the EIS

There are no additional mitigating measures identified by commenters to be considered for analysis in the EIS during scoping.

APPENDIX F

EXPLORATION AND DEVELOPMENT SCENARIOS

Contents of Appendix F

EXPLORATION AND DEVELOPMENT SCENARIOS

Scenarios are conceptual views of the future. In this document, we offer scenarios regarding the timing and extent of future petroleum activities in the Beaufort Sea. The scenarios are based on economic factors, industry trends, and a large dose of professional judgment. The scenarios described here are plausible views of the future, although they project more activities than have occurred in the past in the Beaufort OCS.

Future activities primarily are scaled to assumptions of anticipated oil production. Future oil production will depend on many factors, the most important of which are access to prime areas for exploration, industry spending for leasing and exploration, and oil prices. Although seven lease sales have been held in the Beaufort Sea OCS since 1979, only a small fraction of the tracts offered (10,280 tracts) were leased by industry (692 leases). Thirty exploration wells tested 20 prospects and made 11 discoveries classified as "capable of producing in paying quantities." However, only one field including Federal acreage (Northstar) has begun production. A summary of historical OCS leasing in the Beaufort Sea is shown in Figure III.A.2 of the EIS.

Although oil production from the Beaufort OCS has fallen short of initial expectations, this offshore province is still considered as one of the most prospective areas in the U.S. Proven geologic plays extend offshore from some of the largest fields in North America on Alaska's North Slope (Figure III.A.1 of the EIS). The current MMS petroleum assessment indicates that recoverable oil resources could range from 3.6-11.8 billion barrels, of which 1.7-2.3 billion barrels could be economically viable at prices between $18 and $30 per barrel. Most government and industry analysts agree that this province could hold oil fields comparable in size to any frontier area in the world. Past exploration efforts have only partially tested the potential of the Beaufort shelf.

The economic potential of the Beaufort OCS has not yet been realized, because petroleum activities face a number of hurdles. These hurdles, outlined in the following, generally are not accounted for in resource-assessment models, which assume the entire area is available for exploration and funding is not a consideration. Any of the hurdles could stop the process of converting undiscovered resources to producing reserves. Because environmental and political hurdles are especially difficult to overcome in Alaska, it is important to recognize that estimates of anticipated production, and consequent effects, are likely to be overstated in environmental impact statements.

Leasing hurdles

- A lease sale is held (lease sales often are postponed).
- Industry has access to high-potential tracts (prime areas often are placed off-limits in deferrals).
- The tracts containing oil/gas resources are leased (only a small fraction of the offered tracts are leased).

Exploration hurdles

- Companies must drill to test for oil/gas pools (most leases are never drilled).
- Oil/gas pools are present in the prospects tested (most exploration wells are dry holes).
- Discoveries are large enough for commercial development (most discoveries are too small or costly).

Economic hurdles

- Oil and gas prices support commercial development (costs are high and future prices are uncertain).
- Technology is adequate for project location (new technologies may be required).
- Project meets the company's investment criteria (most companies have other worldwide opportunities).

Legal hurdles

- Necessary permits are approved in a timely manner (permitting delays are common).
- Environmental mitigation could impact project economics (mitigation usually adds to project costs).
- Project survives legal challenges (lawsuits are common).

The MMS resource-assessment model simulates the discovery and development of offshore fields but cannot define where or when production would occur from specific tracts. Each modeling trial is likely to simulate a different development project and set of pool characteristics among the numerous geologic plays. In the real world, future offshore development depends mostly on the effort and financial commitment by industry. The steps leading from leasing to production are complicated by many factors that cannot be accurately predicted such as oil prices, technology breakthroughs, and corporate strategies. For example, higher oil prices could lead to accelerated exploration and production activities. In contrast, low oil prices could prompt industry to abandon the area without a thorough exploration effort.

F.1. Multiple-Sale Methodology

A new approach is taken in this multiple-sale EIS with respect to exploration and development (E&D) scenarios. Although there is a need to base E&D activities using anticipated production, our knowledge of the location and timing of future development activities cannot be defined with accuracy. For purposes of environmental analysis, we assume that 20% of the total available economic resources could be converted to future production for each sale in the 2002-2007 program area. This would seem to imply that after five areawide sales, all of the economic resource base would be discovered. This conclusion is not necessarily true. All of the oil resources would not be discovered in a few lease sales, because new play concepts would emerge from new discoveries. Exploration success would cause future resource estimates to be revised higher. Also, the expansion of infrastructure would lower the costs for remote, marginally uneconomic pools, perhaps allowing them to become viable.

One subjective view of future exploration and development scenarios is summarized in Table F-1. This table lists activities associated with leasing and development for a three-sale schedule in the Beaufort OCS. The table is organized around three geographic zones and three representative sale scenarios. The geographic zones are defined by proximity to the existing North Slope infrastructure and water depths (see Figure III.A.2 in the EIS), with proximity being the primary factor. Water-depth zones were picked mainly on the platform types used for development, and are broadly defined as less than 15 meters (gravel islands), 15-35 meters (bottom-founded platforms), and greater than 35 meters (subsea wells).

The percentages given for leasing and exploration are estimates of temporary activities, such as permit-related studies, seismic surveys, and exploration-well drilling. We expect that leasing would be concentrated in the Near Zone for all three sales, with activities expanding into remote areas in later sales. For example, if a total of 30 leases were issued in the first sale, 21 of these leases are expected to be in the Near Zone, 6 leases would be in the Midrange Zone, and 3 leases would be in the Far Zone. These percentages simply represent possible trends; no one can accurately foresee future leasing patterns, because each participating company could have a different strategy.

Estimates for development projects also are grouped by both sale and location. Development projects are associated with long-term disturbances and potentially higher environmental effects, because these projects last for decades. General implications for long-term activities are indicated by Table F-1. For example, in the third sale, 40% of the leasing could occur in the Near Zone, but the only commercial discovery resulting from this sale is expected to occur on tracts leased in the Far Zone. Note that areas of both shallow and medium water depths occur in remote (far) zones, and the development characteristics could be transitional between adjacent zones.

One important conclusion from this analysis is that tracts could be leased anywhere in the Beaufort Sea Planning Area in each areawide sale. Although both exploration and development are expected to be concentrated in areas near existing infrastructure (Near Zone), activities are likely to expand into more remote zones after opportunities are exhausted in easily accessible areas. This scenario does not mean that only large discoveries would be made in the Midrange and Far zones. Small discoveries could be made in remote areas, but they would be too small for commercial development. Discoveries near existing infrastructure are likely to be developed sooner, because development costs are lower. Oil pools in more remote locations must be larger to support higher development and transportation costs.

F.2. Individual Sale Scenarios

The following is a broad overview of the development scenario for the Beaufort Sea. Oil produced through offshore facilities on manmade gravel islands or bottom-founded platforms is carried by subsea pipelines buried in trenches to the onshore pipeline network connecting to the Trans-Alaska Pipeline System (TAPS). The pipeline carries oil to Valdez and marine tankers carry oil to West Coast refineries.

Associated and solution gas recovered with oil production is used as fuel for facilities or is reinjected to enhance oil recovery. After the oil reservoirs are depleted (decades), reinjected gas could be recovered through oil facilities.

Future gas production from the North Slope to outside markets would be delayed until a transportation system is constructed. Various proposals are being studied at present with no clear favorite or firm timetable for completion. Therefore, large-scale production of natural gas is not likely within the timeframe considered.

For the first Beaufort sale in the multiple-sale program, we assume the discovery/development of smaller fields in the central part of the program area. Some satellite pools could be produced by wells drilled from existing facilities, while others could require new offshore platforms. Generally, these fields would have shorter subsea pipelines through shallow water. The second sale would result in fewer, but somewhat larger, fields located outside the core area. Production from the third sale would come from a single large field in a more remote location (perhaps in deeper water). This remote field would have a longer, larger diameter offshore pipeline and require a new onshore pipeline to connect to the North Slope gathering system. A summary of the new infrastructure estimated for the three-sale program is given in Table F-2. Production profiles for all three sales are given in Figure F-1. More detailed E&D schedules are generated for each OCS sale.

One basic assumption is that the TAPS would remain operable as the regional transportation system. Studies generally have concluded that mechanical limits will be encountered at rates below 200,000 barrels per day. Throughput rates lower than 300,000 barrels per day will require modifications to the pipeline and pump stations. The lower limit for profitable operations is perhaps 400,000 barrels per day to cover the costs of administration, personnel, and continuing maintenance/repairs. Production from North Slope fields has declined since 1988 and, at the present rate of decline, the TAPS could reach an operational limit in the next 10-20 years. Production from new fields is necessary to maintain minimum flow rates through this vital transportation link now carrying approximately 20% of U.S. daily oil production. If the TAPS were to shut down, future oil production would have to rely on tanker transportation to southern markets. It is unlikely that remaining fields in northern Alaska would be able to support this transportation scenario. For purposes of analysis, we assume that the TAPS would continue to carry oil from northern Alaska.

The development scenarios assume adequate funding and effort by industry and no regulatory delays. We acknowledge that the activity schedules are more aggressive than past experience in the Beaufort OCS. If the present economic and regulatory climate continues, the assumed production and associated environmental impacts for the 2002-2007 leasing program probably are overstated.

As previously discussed, the level of activities associated with oil exploration and development is largely dependent on the market price for oil. Because of the many uncertainties associated with generating resource estimates, oil volumes are best represented by a range of possible volumes. In our resource assessment models, the benchmark prices of $18 and $30 per barrel (in 2000$) are linked to production volumes ranging between 340 million barrels and 570 million barrels for each sale. If long-term prices remain below the $18 benchmark, exploration in the Beaufort OCS is expected to be minimal and discoveries may not be developed. This low-price “exploration-only” scenario represents conditions where discoveries are too small or costly for commercial development.

Because most of the potential impacts are not very different for these two resource levels, we use a single production volume of 460 million barrels for each sale. Although the same production volumes are assumed for each sale, there would be differences in activities for the series of lease sales. The working assumption is that activities would progressively expand away from the core infrastructure area (near the existing Prudhoe Bay complex).

F.2.a. Sale 186

F.2.a(1) Exploration Activities

Exploration activity (seismic surveys and drilling) is assumed to begin in the year following Sale 186 (to be held in 2003) and continue at a rate of one exploration well per year for a total of six exploration wells (Table F-3). Our optimistic assumption is that three commercial discoveries would be made (a 50% success rate). When a discovery is made, delineation wells would use the same drilling rig and continue over a 2-year period. Two delineation wells may be drilled in a single season, as rig mobilization has already taken place. Artificial ice islands grounded on the sea bed are likely to be used as drilling platforms in shallow water (less than 10 meters deep), and nearshore operations would be supported by ice roads over the landfast ice. It is unlikely that gravel islands would be constructed to drill exploration wells in OCS waters, although older artificial islands or natural shoals could be used as a base for gravel or ice islands. Bottom-founded platforms (placed on the seafloor or on berms) could be used to drill prospects in water depths of 10-20 meters, and drillships would be used to drill prospects deeper than 20 meters. Because mobile ice conditions make ice roads unfeasible, deeper water operations would take place during the summer open-water season and would be supported by icebreakers and supply boats.

F.2.a(2) Development Activities

The development schedule (Table F-3) assumes that the first commercial discovery would be made 2 years (in 2005) after Sale 186. We assume that three new fields ranging in size from 120-220 million barrels would be discovered in alternate years. Assuming no delays in permitting, production platforms could be installed in 4 years following the discovery well. Because of their relatively small size, fields would be developed by one production platform, perhaps as a satellite with minimal onsite processing facilities. Each platform would contain one rig for development-well drilling and well-workover operations. Gravel islands would be the favored design for production facilities in water depths less than approximately 15 meters, and bottom-founded platforms would be used for production facilities in water depths to 35 meters. It is possible that some oil would be produced from extended-reach wells drilled from existing production islands. However, the volumes of oil developed by extended-reach drilling are likely to represent a minor proportion of the total production from the three new fields.

The route selection and installation of offshore pipelines would take 1-2 years and could occur either in the summer open-water season or during mid- to late winter when landfast ice has stabilized. New onshore pipeline sections would take 1 year to complete, with construction activities taking place simultaneously with the offshore pipeline installation. We assume that offshore pipelines would be trenched as a protective measure against damage by ice in all water depths less than 50 meters. At coastal landfalls, pipelines would be elevated on short, gravel causeways to protect them against shoreline processes. Onshore pipelines would be elevated 2 meters on vertical support members. The onshore pipeline corridor and shore facility construction would be concurrent with the offshore platform installation.

Because of their relatively small size, new offshore projects would use the existing infrastructure (processing facilities and pipeline-gathering systems) wherever possible. Produced oil would be gathered by existing pipeline systems within the Prudhoe Bay/Kuparuk field areas and transported to Pump Station 1 of the TAPS. We assume that Oliktok Point (using the Kuparuk or Milne Point field infrastructure), the Northstar pipeline landfall, West Dock (using the Prudhoe Bay field infrastructure), and the Badami field would be the primary landfalls.

Production rates would quickly ramp up to peak production rates for 3 years before declining. A typical field cycle from discovery to abandonment is 21 years, or approximately 5 years from discovery to startup, A 15-year production life, and 1 year for abandonment. Considering staggered discovery times of the three fields, activities resulting from Sale 186 could last until the year 2033 (Figure F-2).

F.2.b. Sale 195

F.2.b(1) Exploration Activities

Exploration seismic surveys could begin the year after the sale, and drilling is assumed to begin in the second year following Sale 195, which is scheduled for 2005 (Table F-4). We assume one or two exploration wells would be drilled in alternating years for a total of six exploration prospects tested. Our optimistic assumption is that two commercial discoveries would be made (a 33% success rate). Because of operating limitations, it is likely that only one exploration well would be drilled at each site in a year. If a discovery is made, two delineation wells would be drilled in the following season. Artificial ice islands grounded on the seabed are likely to be used as drilling platforms in water depths less than 10 meters. These operations would be supported by ice roads over the landfast-ice zone. It is unlikely that gravel islands would be constructed to drill exploration wells in OCS waters, although older artificial islands or natural shoals could be used to construct short-term exploration islands. Bottom-founded platforms of various designs could be used to drill prospects in water depths of 10-20 meters, and drillships would be used to test prospects in water depths greater than 20 meters. Because of mobile ice conditions, operations in deeper water would be supported by icebreakers and supply boats during the summer open-water season.

F.2.b(2) Development Activities

The development schedule assumes that the first commercial discovery would be made 3 years (in 2008) after Sale 195 (Table F-4). A total of two new fields ranging in size from 120-240 million barrels would be developed on tracts leased in this sale. Assuming no delays in permit approvals, production platforms could be installed in 4-5 years following the discovery well. Each field would be developed by one or two production platforms with full processing facilities. Each platform would contain one rig to drill development wells and would remain on the platform for well-workover operations. Gravel islands probably would be constructed for production facilities in water depths less than approximately 15 meters. From water depths of 15-35 meters, bottom-founded platforms would be used for production facilities and ice management strategies (spray-ice berms) would be used to control ice forces.

The installation of offshore pipelines between production platforms and onshore facilities would take 1-2 years and could occur either in the summer open-water season or during mid- to late winter when landfast ice has stabilized. New onshore pipeline sections would take 1-2 years to complete, with construction activities taking place simultaneously with the offshore pipeline installation. We assume that offshore pipelines would be trenched and buried in the seafloor as a protective measure against damage by ice in water depths less than 50 meters. At coastal landfalls, pipelines would be elevated on short gravel causeways to protect them against shoreline erosion processes. Booster stations may be required at the landfalls to maintain pressure in the onshore oil pipeline sections. Onshore, pipelines would be elevated on vertical support members. Shore facility construction would be concurrent with installation of the offshore platforms.

New offshore projects would tie into existing onshore pipeline-gathering systems at the nearest possible points. Produced oil would be gathered by existing pipeline systems to Pump Station 1 of the TAPS. We assume that landfalls would be Oliktok Point, Northstar pipeline, West Dock, and Bullen Point (A new facility to support development in the Point Thomson unit).

Production would ramp up over several years before peak production rates are achieved. The overall field life from discovery to abandonment is assumed to be 25 years, or approximately 6 years from discovery to startup, an 18-year production life, and 1 year for abandonment. Considering the staggered discovery and startup of several offshore fields, activities related to Sale 195 could last to the year 2036 (Figure F-3).

F.2.c. Sale 202

F.2.c(1) Exploration Activities

Exploration seismic surveys could begin the year after Sale 202 scheduled for 2007 (Table F-5), and drilling is assumed to begin in the third open-water season. We assume that drilling would occur at a rate of one exploration well in each 3-year period. Because of limited operating times, it is likely that only one exploration well would be drilled in a year. We assume that six prospects would be tested by drilling, resulting in the discovery of one commercial-size field (a success rate of 17%). If a discovery is made, delineation wells would be drilled at the rate of two per year. The reservoir beneath each platform site would be evaluated by two or three delineation wells. The type of exploration equipment selected would depend on water depth. Artificial ice islands grounded on the seabed are likely to be employed as drilling platforms in water depths less than 10 meters, and these operations would be supported largely by ice roads over the landfast-ice zone. It is unlikely that gravel islands would be constructed to drill exploration wells, although artificial islands or natural shoals could be used to construct short-term exploration islands. Bottom-founded platforms could be used to drill prospects in water depths of 10-20 meters. Because of mobile ice conditions, these operations would be supported by supply boats during the open-water season. For water depths greater than 20 meters, floating drilling rigs (drillships or floating platforms) would be used in the summer, and these operations would be supported by icebreakers.

F.2.c(2) Development Activities

The development schedule assumes that the discovery of one field of approximately 460 million barrels would be made 5 years (in 2012) after the sale (Table F-5). Assuming no delays in permitting, production platforms could be installed 6-7 years after the discovery well. This large field would be developed from two production platforms with processing facilities on one of the platforms. Each platform would hold one rig that would drill development wells and remain on the platform for well-workover operations. Production facilities in water depths less than 15 meters would be based on artificial gravel islands. In water depths ranging from 15-35 meters, production structures would be contained on bottom-founded platforms designed for pack-ice conditions. Active ice-management strategies (spray-ice berms) and icebreaker support ships also would be required. Oil pools in deeper water (greater than 35 meters) could be tapped by a combination of extended-reach drilled wells or subsea wells tied back to the main production platform. Subsea production technology is well-established in difficult operation areas (very deep water and extreme sea-state conditions) and represents another method of deepwater production in arctic pack-ice conditions.

Installation of offshore pipelines between production platforms and onshore facilities would take 2-4 years, considering that route surveys, trenching, and pipeline laying would take place in the relatively short open-water season. New onshore pipeline sections would take 2-4 years to complete, with construction activities taking place simultaneously with the offshore pipeline installation. We assume that offshore pipelines would be trenched as a protective measure against damage by ice in all water depths less than 50 meters. At coastal landfalls, pipelines would be elevated on short gravel causeways to protect them against shoreline erosion processes. Booster stations at the landfalls would be required to maintain pressure in the long pipeline segments. Onshore, pipelines would be elevated on vertical support members. Construction of the onshore pipeline and shore facility would be concurrent with installation of the offshore platforms.

Because this project is in a remote location, new onshore pipelines would be required to reach the existing North Slope gathering system connecting to Pump Station 1 of the TAPS. Depending on the location of the field, a new landfall would be constructed in Smith Bay (a discovery in the western Beaufort) and traverse south of Teshekpuk Lake through the National Petroleum Reserve-Alaska to the Kuparuk field infrastructure. Existing field infrastructure in the central Beaufort (Oliktok, Northstar, Endicott, Badami) could be used for oil production from deepwater areas offshore from the central Beaufort coastline. If the new field is found in the eastern Beaufort, a new landfall and facility expansion in the Point Thomson area would be constructed. Because only one remote field is expected, there would be only one landfall.

The installation of several platforms and drilling by one rig on each platform would result in a ramp-up period of several years before peak production rates are achieved. The overall field life from discovery to abandonment is 30 years, or approximately 8 years from discovery to production startup, a 20-year production life, and a 2-year abandonment period. Considering the long lead times for exploration and development at remote sites, activities resulting from Sale 202 could last until 2039 (Figure F-4).

F.3. Estimates of Muds and Cuttings for Sales 186, 195, and 202

Geologic studies indicate that exploration and delineation wells generally would test prospects from 3,000-15,000 feet in the subsurface. Based on the characteristics of geologic plays with economic resources, we assume that a representative exploration well depth is 7,000 feet. Also based on economic plays, production wells are assumed to average 10,000 feet (drilled depth), because they would include a mix of near-vertical and lateral-extended wells. We assume that one-third of the total wells would be injection wells (production:injection well ratio of 2:1). Injection wells are used for subsurface waste disposal and to optimize oil recovery (waterflood, gas-cycling, and pressure maintenance).

For these assumed drilling depths, a typical exploration well would use 425 tons (ton = 2,000 pounds) of dry mud and produce 525 tons of dry rock cuttings. We assume that 80% of the drilling mud would be recycled and, therefore, 85 tons of "spent mud" would be discharged at the exploration site. All of the cuttings (525 tons per well) would be discharged at the exploration site. A typical production well would use approximately 650 tons of dry mud and produce approximately 825 tons of rock cuttings. We assume that 80% of the drilling mud would be recycled in the multiple-well program and, therefore, 130 tons per well would be waste. Waste drilling mud, rock cuttings, and produced water would be disposed of in the subsurface by service wells on the production platform. If required, waste products could be transported to land facilities for treatment and subsurface disposal.

Spent drilling mud discharged offshore could have this typical composition:

Component	Weight %
Bentonite	6.5
Lignosulfonate	2.0
Lignite	1.4
Caustic	0.7
Lime	0.3
Barite	75.0
Drilled solids	13.0
Soda ash/Sodium Bicarbonate	0.4
Cellulose Polymer	0.7
Seawater/Freshwater	as needed
Total	100.0

Source: EPA Type 2, Lignosulfonate Mud

F.4. Changes in Activities Because of Area Deferrals

The petroleum resource assessment of the Beaufort OCS is based on geologic and engineering analysis of the entire planning area. As previously discussed, all mapped and inferred prospects are grouped into 14 geologic plays extending over broad areas of the Beaufort shelf. The results of the economic modeling indicate that only 3 or 4 of the 14 geologic plays could contain economically recoverable oil at prices ranging from $18-$30 per barrel. The play areas with economic oil resources (Appendix B, Figures B-1, B-2, B-3, and B-4) broadly define the maximum limits of the play; however, specific portions of each play area could lack any commercial potential (no petroleum traps, reservoirs are too deep, ice conditions too severe, technology is inadequate).

It is impossible to accurately define future production from specific parts of the planning area because (1) the locations of commercial-sized pools are unknown and cannot be determined without drilling; (2) future industry efforts to lease and drill specific tracts cannot be accurately predicted; and (3) commercial oil pools are not uniformly distributed over the broad play areas.

In a frontier area such as the Beaufort OCS, a simple concept often holds true: "area equals opportunity." Removing areas from leasing certainly would eliminate the chance that commercial production would occur in that area. However, deferring one area could redirect exploration effort into remaining open areas. If excessively large areas are excluded, industry would abandon the Beaufort OCS program area and pursue other worldwide options.

Another important point is that merely leasing tracts in an OCS sale does not mean that commercial discoveries would be made on these tracts. Most tracts leased are never drilled, and many discoveries would be too small to support commercial development. Exploration activities (seismic surveys, exploration well drilling) could cause temporary disturbances, whereas long-term impacts would occur only if a commercial field is present over several decades.

Because commercial oil resources are not uniformly distributed, oil pools covered by only a few tracts could contain all of the economically recoverable reserves in the sale area. The remainder of the area could either lack the geology to produce large oil pools or have environmental conditions that would preclude commercially viability. It is important to note that this analysis reflects MMS's current data and knowledge. Industry groups could have a much different view of the oil potential in the Beaufort OCS. Future leasing patterns may reflect different industry views regarding the possible location of commercial-sized fields in the program area.

Given the inherent uncertainties for the location of future commercial discoveries, we must subjectively rank areas based on the petroleum resource assessment. This method is based primarily on the identification of geologic plays with economic potential and the projection of historical exploration trends. Table II.A-3 provides probabilities for four deferral areas under consideration. The "opportunity index" represents the probability that commercial fields would be leased, drilled, discovered, and developed in a specific deferral area.

Using the Opportunity Index for the deferral areas indicates that if all of these areas were removed from leasing, only 88% of the original petroleum potential would be available to industry. This restriction on exploration opportunity in a high-cost frontier province would affect leasing revenues and the chance for future commercial production.

Table F-1
Representation of Possible Sale-Related Activities

	Near Zone		Midrange Zone		Far Zone		
	Leasing & Exploration	Development Projects	Leasing & Exploration	Development Projects	Leasing & Exploration	Development Projects	Total Projects
Sale 1	70%	2	20%	1	10%	0	3
Sale 2	50%	1	30%	1	20%	0	2
Sale 3	40%	0	30%	0	30%	1	1
Total	53%	3	27%	2	20%	1	6

Notes:
Development zones are broadly defined by distance from the core Prudhoe Bay infrastructure and by water depths.
The Near Zone is less than 50 miles away in water depths less than 15 meters. The Midrange Zone is between 50 and 100 miles away in water depths less than 35 meters. The Far Zone is more than 100 miles away or in water depths greater than 35 meters.

Table F-2
Infrastructure Associated with the Beaufort Sea Sales 186, 195, and 202

Activity	First Sale (2003)	Second Sale (2005)	Third Sale (2007)	Sum of 3 Sales
Oil Production (BBO)	0.46	0.46	0.46	1.38
Gas Production (TCFG)	N/A	N/A	N/A	N/A
Period of Activity	2004-2034	2006-2037	2008-2039	35 years
Number of Fields	3	2	1	6
Number of Platforms	3	3	2	8
Exploration and Delineation Wells	12	12	11	35
Production Wells	69	69	68	206
Injection Wells	33	33	34	100
Offshore Pipelines (miles)	40	40	35	115
New Landfalls	0	1	1	2
New Shore Bases	0	0	1	1
New Processing Facilities	0	1	1	2

Notes:
Exploration success: Sale 186 (3 wet/6 wildcat = .50); Sale 195 (2 wet/6 wildcat = 0.33); Sale 202 (1 wet/6 wildcat = 0.17). We assume each sale will be followed by 6 wildcat tests. Assume 2-3 wet exploration-/delineation wells for each platform. Assume 1/3 of development wells are injection (2:1 production/injection). Average platform holds 34 development wells. Some wells in the third-sale scenario could be subsea wells with flowline tiebacks to production platforms in shallow water or onshore. Offshore pipelines include infield flowlines (less than 10 inches) and sales oil line (greater than 10 inches) shortest distance to landfall. Landfalls include staging areas and pump stations and are likely to be collocated with onshore processing facilities. Shore bases are temporary logistical centers associated with exploration and construction. Shore bases might be expanded to include pipeline landfalls and processing facilities associated with production operations. Abandonment begins in the last year of production and finishes the year following shutdown.

Table F-3
Representative Development Schedule for Sale 186

Year	Exploration Wells	Delineation Wells	Exploration Drilling Rigs	Production Platforms	Production Wells	Injection Wells	Production Drilling Rigs	Offshore Pipelines (miles)	New Shorebases	Field #1 Oil Production (MMbbl)	Field #2 Oil Production (MMbbl)	Field #3 Oil Production (MMbbl)	Combined Oil Production (MMbbl)	Cumulative Oil Production (MMbbl)
2003	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2004	1	—	1	—	—	—	—	—	—	—	—	—	—	—
2005	1	—	1	—	—	—	—	—	—	—	—	—	—	—
2006	1	2	2	—	—	—	—	—	—	—	—	—	—	—
2007	1	—	1	—	—	—	—	—	—	—	—	—	—	—
2008	1	2	2	—	—	—	—	—	—	—	—	—	—	—
2009	1	—	1	1	3	3	1	10	—	—	—	—	—	—
2010	—	2	1	—	10	4	1	—	—	7.9	—	—	7.9	7.9
2011	—	—	—	1	13	7	2	10	—	15.7	—	—	15.7	23.6
2012	—	—	—	—	10	4	1	—	—	15.7	7.9	—	23.6	47.2
2013	—	—	—	—	10	4	1	—	—	15.7	15.7	—	31.5	78.7
2014	—	—	—	1	3	3	1	20	—	13.0	15.7	—	28.7	107.4
2015	—	—	—	—	10	4	1	—	—	10.7	15.7	13.2	39.6	147.0
2016	—	—	—	—	10	4	1	—	—	8.8	13.0	22.0	43.8	190.8
2017	—	—	—	—	—	—	—	—	—	7.3	10.7	22.0	40.0	230.8
2018	—	—	—	—	—	—	—	—	—	6.0	8.8	22.0	36.8	267.6
2019	—	—	—	—	—	—	—	—	—	5.0	7.3	22.0	34.2	301.9
2020	—	—	—	—	—	—	—	—	—	4.1	6.0	18.9	29.0	330.9
2021	—	—	—	—	—	—	—	—	—	3.4	5.0	16.3	24.6	355.5
2022	—	—	—	—	—	—	—	—	—	2.8	4.1	14.0	20.9	376.4
2023	—	—	—	—	—	—	—	—	—	2.3	3.4	12.0	17.7	394.1
2024	—	—	—	—	—	—	—	—	—	1.9	2.8	10.3	15.0	409.1
2025	—	—	—	—	—	—	—	—	—	—	2.3	8.9	11.2	420.3
2026	—	—	—	—	—	—	—	—	—	—	1.9	7.7	9.5	429.9
2027	—	—	—	—	—	—	—	—	—	—	—	6.6	6.6	436.5
2028	—	—	—	—	—	—	—	—	—	—	—	5.7	5.7	442.1
2029	—	—	—	—	—	—	—	—	—	—	—	4.9	4.9	447.0
2030	—	—	—	—	—	—	—	—	—	—	—	4.2	4.2	451.2
2031	—	—	—	—	—	—	—	—	—	—	—	3.6	3.6	454.8
2032	—	—	—	—	—	—	—	—	—	—	—	3.1	3.1	457.9
2033	—	—	—	—	—	—	—	—	—	—	—	2.7	2.7	460.5
—	**6**	**6**	**—**	**3**	**69**	**33**	**—**	**40**	**—**	**120**	**120**	**220**	**460.5**	**—**

Table F-4
Representative Development Schedule for Sale 195

Year	Exploration Wells	Delineation Wells	Exploration Drilling Rigs	Production Platforms	Production Wells	Injection Wells	Production Drilling Rigs	Offshore Pipelines (miles)	New Shore Bases	Field #1 Oil Production (Mbbll)	Field #2 Oil Production (MMbbl)	Combined Oil Production (MMbbl)	Year
2003	—	—	—	—	—	—	—	—	—	—	—	—	2003
2004	—	—	—	—	—	—	—	—	—	—	—	—	2004
2005	—	—	—	—	—	—	—	—	—	—	—	—	2005
2006	—	—	—	—	—	—	—	—	—	—	—	—	2006
2007	1	—	1	—	—	—	—	—	—	—	—	—	2007
2008	1	—	1	—	—	—	—	—	—	—	—	—	2008
2009	—	2	1	—	—	—	—	—	—	—	—	—	2009
2010	1	—	1	—	—	—	—	—	—	—	—	—	2010
2011	—	—	—	—	—	—	—	—	—	—	—	—	2011
2012	2	—	2	1	3	3	1	10	—	—	—	—	2012
2013	1	2	2	—	10	4	1	—	—	7.9	—	7.9	2013
2014	—	2	1	—	10	4	1	—	—	15.7	—	15.7	2014
2015	—	—	—	—	—	—	—	—	—	15.7	—	15.7	2015
2016	—	—	—	1	3	3	1	30	—	15.7	—	15.7	2016
2017	—	—	—	1	13	7	2	—	—	13.0	21.5	34.5	2017
2018	—	—	—	—	20	8	2	—	—	10.7	28.6	39.4	2018
2019	—	—	—	—	10	4	1	—	—	8.8	28.6	37.5	2019
2020	—	—	—	—	—	—	—	—	—	7.3	28.6	35.9	2020
2021	—	—	—	—	—	—	—	—	—	6.0	28.6	34.7	2021
2022	—	—	—	—	—	—	—	—	—	5.0	28.6	33.6	2022
2023	—	—	—	—	—	—	—	—	—	4.1	25.2	29.3	2023
2024	—	—	—	—	—	—	—	—	—	3.4	22.2	25.6	2024
2025	—	—	—	—	—	—	—	—	—	2.8	19.5	22.3	2025
2026	—	—	—	—	—	—	—	—	—	2.3	17.2	19.5	2026
2027	—	—	—	—	—	—	—	—	—	1.9	15.1	17.0	2027
2028	—	—	—	—	—	—	—	—	—	—	13.3	13.3	2028
2029	—	—	—	—	—	—	—	—	—	—	11.7	11.7	2029
2030	—	—	—	—	—	—	—	—	—	—	10.3	10.3	2030
2031	—	—	—	—	—	—	—	—	—	—	9.1	9.1	2031
2032	—	—	—	—	—	—	—	—	—	—	8.0	8.0	2032
2033	—	—	—	—	—	—	—	—	—	—	7.0	7.0	2033
2034	—	—	—	—	—	—	—	—	—	—	6.2	6.2	2034
2035	—	—	—	—	—	—	—	—	—	—	5.4	5.4	2035
2036	—	—	—	—	—	—	—	—	—	—	4.8	4.8	2036
2037	—	—	—	—	—	—	—	—	—	—	—	—	2037
—	6	6	—	3	69	33	—	40	—	120	340	460	—

Table F-5
Representative Development Schedule for Sale 202

Year	Exploration Wells	Delineation Wells	Exploration Drilling Rigs	Production Platforms	Production Wells	Injection Wells	Production Drilling Rigs	Offshore Pipelines (miles)	New Shorebases	Field #1 Oil Production (MMbbl)	Cumulative Oil Production (MMbbl)
2003	—	—	—	—	—	—	—	—	—	—	—
2004	—	—	—	—	—	—	—	—	—	—	—
2005	—	—	—	—	—	—	—	—	—	—	—
2006	—	—	—	—	—	—	—	—	—	—	—
2007	—	—	—	—	—	—	—	—	—	—	—
2008	—	—	—	—	—	—	—	—	—	—	—
2009	—	—	—	—	—	—	—	—	—	—	—
2010	1	—	1	—	—	—	—	—	—	—	—
2011	—	—	—	—	—	—	—	—	—	—	—
2012	1	—	1	—	—	—	—	—	—	—	—
2013	1	1	1	—	—	—	—	—	—	—	—
2014		2	1	—	—	—	—	—	—	—	—
2015	1	2	1	—	—	—	—	—	1	—	—
2016	—	—	—	—	—	—	—	—	—	—	—
2017	1	—	1	—	—	—	—	—	—	—	—
2018	1	—	1	1	4	4	1	35	—	—	—
2019	—	—	—	1	14	8	2	—	—	30.8	30.8
2020	—	—	—	—	20	8	2	—	—	38.6	69.4
2021	—	—	—	—	20	9	2	—	—	38.6	108.0
2022	—	—	—	—	10	5	1	—	—	38.6	146.6
2023	—	—	—	—	—	—	—	—	—	38.6	185.2
2024	—	—	—	—	—	—	—	—	—	38.6	223.8
2025	—	—	—	—	—	—	—	—	—	34.0	257.8
2026	—	—	—	—	—	—	—	—	—	29.9	287.7
2027	—	—	—	—	—	—	—	—	—	26.3	314.0
2028	—	—	—	—	—	—	—	—	—	23.2	337.2
2029	—	—	—	—	—	—	—	—	—	20.4	357.6
2030	—	—	—	—	—	—	—	—	—	17.9	375.5
2031	—	—	—	—	—	—	—	—	—	15.8	391.3
2032	—	—	—	—	—	—	—	—	—	13.9	405.2
2033	—	—	—	—	—	—	—	—	—	12.2	417.4
2034	—	—	—	—	—	—	—	—	—	10.8	428.2
2035	—	—	—	—	—	—	—	—	—	9.5	437.7
2036	—	—	—	—	—	—	—	—	—	8.3	446.0
2037	—	—	—	—	—	—	—	—	—	7.3	453.3
2038	—	—	—	—	—	—	—	—	—	6.7	460.0
2039	—	—	—	—	—	—	—	—	—	—	—
—	**6**	**5**	—	**2**	**68**	**34**	—	**35**	**1**	**460.0**	—

APPENDIX G

ESSENTIAL FISH HABITAT
CONSULTATION
AND
COORDINATION

List of Items in Appendix G

MMS letter dated June 20, 2002 to NMFS requesting consultation for Essential Fish Habitat (EFH) for Amendment 5 to the Fishery Management Plan for the Salmon Fisheries in the Environmental Economic Zone (EEZ) off the Coast of Alaska.

NOAA letter dated September 6, 2002 to MMS forwarding comments on the Draft EIS. EFH comment on bottom of page 3, top of page 4.

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Alaska Outer Continental Shelf Region
949 East 36th Avenue, Suite 300
Anchorage, Alaska 99508-4363

JUN 20 2002

Dr. Jim Balsiger
Regional Administrator
National Marine Fisheries Service
709 West 9th Street
P.O. Box 21668
Juneau, Alaska 99802

Dear Dr. Balsiger:

The Magnuson-Stevens Fishery Conservation and Management Act requires a Federal Agency to consult on any activity that may adversely affect essential fish habitat (EFH). The Minerals Management Service requests a programmatic consultation for EFH identified in the Environmental Assessment (EA) for Amendment 5 to the Fishery Management Plan for the Salmon Fisheries in the EEZ off the Coast of Alaska. The proposed actions we are consulting on include activities associated with leasing and exploration for oil and gas from proposed Lease Sales 186, 195 and 202 as well as exploration associated with all other existing leases in the Beaufort Sea. This programmatic consultation does not encompass the development and production activities.

Implementing regulations at 50 CFR 600.920(a)(ii) provide for consultation to be conducted programmatically when the National Marine Fisheries Service (NMFS) determines that adverse effects on EFH can be addressed for all projects at a program level. Programmatic consultations provide a mechanism to minimize or reduce the need for numerous project-specific consultations.

The Essential Fish Habitat regulations at 50 CFR 600.920(f) enable NMFS to make a finding that an existing consultation or environmental review procedure can be used to satisfy the Magnuson-Stevens Act consultation requirements.

On March 12, 2002, National Marine Fisheries Service issued a Letter of Finding allowing MMS to incorporate EFH consultations into the NEPA process. MMS may submit to NMFS a lease sale or project specific environmental impact statement (EIS) or EA, as appropriate, in lieu of a stand alone EFH assessment.

As one of the preferred methods indicated in the EFH Final Regulations published at 67 FR 2243-2383 (Federal Register, January 17, 2002), our EFH Assessment is integrated into the enclosed NEPA document (Draft EIS Beaufort Sea Multi-Sale Planning Area Oil and Gas Lease

Sale). The document includes descriptions of the nature of the programs subject to this request, an analysis of the effects of consultation-related activities on EFH and federally managed fisheries, views of the MMS regarding those effects, and identification of existing measures to mitigate potential adverse impacts.

This documentation provides the EFH assessment information as required under 50 CFR 600.920(g). If you have any questions or wish to discuss specific issues, please contact Ms. Kate Wedemeyer at 907-271-6424.

Sincerely,

John Goll

John Goll
Regional Director

Enclosures

cc: Larry Peltz
Habitat Conservation Division
National Marine Fisheries Service
222 West 7th Street
P.O. Box 43
Anchorage, AK 99513

UNITED STATES DEPARTMENT OF COMMERCE
Office of the Assistant Secretary for
Oceans and Atmosphere
Washington, D.C. 20230

September 6, 2002

RECEIVED
SEP 16 2002
REGIONAL DIRECTOR, ALASKA OCS
Minerals Management Service
ANCHORAGE, ALASKA

Regional Director
Minerals Management Service (MMS)
Alaska OCS Region
949 East 36th Avenue
Anchorage, Alaska 99508

Dear Sir:

Enclosed are comments from the National Oceanic and Atmospheric Administration (NOAA) on the Outer Continental Shelf Oil and Gas Lease Sales 186, 195, and 2002 in the Beaufort Sea, Alaska. We hope our comments will assist you. Thank you for giving us an opportunity to review the document.

Sincerely,

for/ James P. Burgess, III
NEPA Coordinator

Enclosure

cc: Director, Minerals Management Service
Department of the Interior
Mail Stop 4230
1849 C Street, NW
Washington, DC 20240

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

September 3, 2002

MEMORANDUM FOR: Steven Kokkinakis
Office of Strategic Planning

FROM: James W. Balsiger
Administrator, Alaska Region

SUBJECT: DEIS for Beaufort Sea Planning Area: Comments

The Alaska Region has reviewed the June 2002 Draft Environmental Impact Statement (DEIS) prepared by the Minerals Management Service (MMS) Alaska Outer Continental Shelf Region for Lease Sales 186, 195, and 202 in the Beaufort Sea. Please refer any questions to Brad Smith or Jeanne Hanson in our Anchorage office at (907) 271-5006.

General Comments

Seven (7) previous oil and gas lease sales have occurred in this area. Past sales have resulted in the drilling of 30 exploration wells. One development and production facility has been approved and is now operational (Northstar). The Minerals Management Service's proposed action (also described here as Alternative I) consists of offering 1,877 whole or partial blocks for lease, covering 9,770,000 acres of the Beaufort Sea planning area off Alaska. These blocks would be offered through three (3)individual sales which would occur sequentially between 2003 and 2007. Water depths in the sale area range up to 120 feet. Resource estimates indicate the range of potential oil here to be between 340 and 570 million barrels per sale. The DEIS projects 23 exploration and delineation wells would be drilled for these lease sales. The DEIS assumes a total of six new fields would be developed under these sales.

The DEIS offers five (5) additional alternatives; the no action alternative and four (4) alternative deferral areas. While it is not clear whether the DEIS intends for these alternatives to be mutually exclusive, we are recommending the adoption of Alternatives III, IV, V, and VI. These alternatives present small, but potentially valuable, improvements from the proposed action. Alternative III would reduce potential conflicts between bowhead whale subsistence hunters and offshore oil and gas operations by removing an area of 138,000 acres in waters east of the Point Barrow (one percent of the sale area). The deferral area is used by bowhead whales for migration and possibly feeding, and is within the traditional hunting areas of the village of Barrow. The MMS projects this alternative(and the others)would reduce potential effects to subsistence harvest patterns when compared to the proposed plan. While exploratory activities adjacent to the deferral area would continue and may present many of the same impacts expected in the proposed plan, Alternative III offers meaningful benefit to the protection of fish and wildlife and to locally important socio-cultural values (subsistence). We believe support for this alternative is justified. The actual area proposed for this (and all) deferrals may not fully represent the area in which bowhead whales are traditionally hunted, or in which disturbance to these whales may impact subsistence hunting. The recommendations of the AEWC and the North Slope Borough should be considered in refining the boundaries for these deferrals.

Alternative IV would reduce potential conflicts between bowhead whale subsistence hunters and offshore oil and gas operations by removing an area of 200,000 acres in waters near Cross Island (two percent of the sale area). The deferral area is used by bowhead whales for migration and possibly feeding, and is within the traditional hunting areas of the village of Nuiqsut.

Alternatives V and VI would reduce potential conflicts between bowhead whale subsistence hunters and offshore oil and gas operations by removing an area of 400,000 acres in waters north and east of the Kaktovik (four percent of the sale area). The deferral area is used by bowhead whales for migration and feeding, and is within the traditional hunting areas of the village of Kaktovik.

We remain concerned over the individual and cumulative effects of oil and gas activity on the Western Arctic population of bowhead whales. The MMS has responded to these concerns in its environmental studies program; researching many issues and providing decision makers with important data. NMFS, through the Marine Mammal Protection Act, has required comprehensive monitoring of oil and gas activities which result in the incidental take by harassment of bowhead whales and other marine mammals. The issue of industrial noise and its impact on marine mammals, especially bowhead whales, remains a subject of debate and concern. Traditional Native experience has found bowhead whales react strongly to such noise, avoiding seismic sources at distances up to 35 miles. However, research into this matter has provided data which do not suggest avoidance reactions are strong enough to yield population-level impacts to bowheads. Despite problematical limitations in these studies and their relatively brief duration, we feel they support a decision to allow OCS lease sales in the Beaufort Sea, supported by a comprehensive monitoring effort. Both MMS and NMFS (through the small take authorization program) have interests here and we are hopeful future monitoring will extend the information gathered through past research.

This is the first time MMS has written a multi-sale EIS for the Alaskan Outer Continental Shelf. NMFS believes meeting NEPA requirements through this approach is reasonable, although the Environmental Assessments for future sales in the Beaufort Sea must be written carefully and fully document individual and cumulative impacts. One of the most contentious, and potentially harmful, activities associated with leasing of the Beaufort Sea OCS has been marine geophysical (seismic) exploration. These high-energy, low-resolution surveys employ multiple vessels operating an energy source which introduces very high noise levels into the water. NMFS has worked extensively with industry, MMS, the North Slope Borough of Alaska, the Alaska Eskimo Whaling Commission, and the communities of the North Slope of Alaska in the processing of incidental take permits under the Marine Mammal Protection Act for these seismic actions. The potential for seismic activity to disturb (harass) bowhead whales has now been demonstrated through research and monitoring. Displacement of migrating bowhead whales or heightened sensitivity to noise may, in turn, adversely impact traditional subsistence use of these whales by Alaska Natives. While these effects are discussed to a degree in the DEIS (e.g., under the effects of noise on bowhead whales section), geophysical exploration through low-resolution seismic is not specifically documented as one of the actions associated with these lease sales. We believe it is necessary to provide additional detail on this activity, particularly as it concerns the cumulative effects of OCS leases in the Beaufort Sea and any impacts to marine mammals. Just as the DEIS provides projections of the number of exploration wells, production fields, and production platforms for each sale, it should also provide similar information as to geophysical seismic research.

In accordance with the procedures outlined in the May 12, 2002, letter from Rolland A. Schmitten, Director of the Office of Habitat Conservation for NMFS to Thomas A. Readinger, Associate Director for Offshore Minerals Management, MMS has provided information on Essential Fish Habitat (EFH). The DEIS never clearly states whether or not the actions proposed would adversely affect EFH. The trigger for EFH consultation is a Federal action agency's determination that an action may adversely affect EFH. If a Federal action agency determines that an action will not adversely affect EFH, no consultation is required, and the Federal action agency is not required to contact NMFS about their determination. NMFS believes that while the exploration, development and production scenarios generated by MMS are plausible, possible adverse effects to EFH should be identified on a project specific basis. Therefore, no further EFH consultation is necessary at this time. The need for additional EFH consultation should be determined as specific projects are designed.

Specific Comments

Pg I-10, I.C.2.b(1). The second paragraph here indicates the Secretary has previously removed from leasing sections of the Beaufort Sea OCS west of the Barrow deferral area (Alt. III). This represents a positive action by the MMS which responds to concerns over bowhead whales and traditional hunting practices. We believe, then, the area mentioned should be identified in Map 3 and included in the discussion of deferrals.

Pg. I-10, I.C.2.b(2). This defends the need to lease blocks near Cross Island based, apparently, on preventing adjacent State of Alaska tracts from draining oil reserves from Federal OCS areas. This matter should be adjudicated through the courts, and does not seem to be justification for leasing.

Pg.II-11. II.H.1.c. The DEIS does not adequately assess the potential impacts of additional causeways. Therefore, we would consider the DEIS deficient if the proposed activities include additional causeways.

The individual and cumulative effects of causeways on coastal fisheries has long been the focus of controversy. The debate centers on fish passage around the structures and possible adverse changes to habitat which may impact population productivity. Changes to habitat (i.e. changes in temperature and salinity regimes) have been documented to occur as a result of causeway induced deflections of currents and entrained waters away from the coast.[1]

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[1]. Thorsteinson, L.K., L.E. Jarvela, and D.A. Hale. November 1990. Arctic Fish Habitat Use Investigations: Nearshore Studies in the Alaskan Beaufort Sea, Summer 1988. U.S. Dept. of Commerce and U.S. Dept. of Interior, OCSEAP Final Report, 71: 349-485.

Regardless of whether or not these changes have biological significance, there is implicit agreement that preserving the integrity of the warmer, brackish coastal boundary layer during summer months is crucial in sustaining the biota of the region. We consider the brackish nearshore corridor critical to the success of marine and anadromous fish stocks. In addition, freshwater flows from coastal rivers and streams are important to the creation of the brackish warm zone, and it is essential to sustain natural flows to avoid impacts.

Therefore, we believe that Stipulation No. 3, Transportation of Hydocarbons, should be modified to reflect the MMS's position regarding causeways. This would clarify that no new causeways would be constructed. Extensive causeways have many undesirable impacts on nearshore processes and resources and should be prohibited outright.

Pg.II-12. II.H.1.d. We recommend the third sentence in the second paragraph here, beginning with "Scientific studies" be replaced with the following statement: Monitoring studies of 3-D seismic exploration (6-18 airguns totaling 560-1500 c.i.) in the nearshore Beaufort Sea during 1996-1998 have demonstrated that nearly all bowhead whales will avoid an area within 20 km of an active seismic source, while deflection may begin at distances up to 35 km.

Pg. II-15. II.H.2.a. Stipulations 6a and 6b provide that permanent facilities within 10 miles of Cross Island should not preclude "reasonable subsistence access" to whales. Earlier in the DEIS we learn that noise from such facilities must comport with the small take authorization program under the MMPA. The regulations for that program require these takes "will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses." We recommend that Stipulations 6a and 6b adopt this language in order to bring consistency among these efforts and to clarify intent.

Pg. III-37. III.B.4a(1). The first paragraph on this page mentions the possibility that bowhead whales may occupy the northeastern portion of the Chukchi Sea more often than previously thought, and that these whales may occur regularly along the northwestern coast during summer. Monitoring during the towing of the Steel Drilling Caisson drill rig during summer of 2002 recorded five bowhead whales off Point Barrow on July 21, further supporting these findings.

Pg. III-40. III.B.4.a(1) It is more than unfortunate the final report of the bowhead whale feeding study is not included within this discussion, or available for planning purposes. This multi-year effort represents a comprehensive research effort intended to identify and characterize the use of the eastern Beaufort Sea as feeding habitat for bowhead whales, and to place some perspective on the importance of that habitat. NMFS personnel participated in the Scientific Review Board for this work, and a draft final report on the study was released in December of 2001. We strongly encourage MMS to complete this important work and incorporate its conclusions and data into the final NEPA document.

Pg. IV-4. IV.A.1. The significance threshold described here for threatened or endangered species should be considered further. We believe it is unreasonable to limit this to effects lasting a generation or more; particularly for long-lived animals such as the bowhead whale with a life span possibly exceeding 100 years. Would an activity that displaces bowheads from a traditional feeding area for 50 years then be considered insignificant?

Pg. IV-5. IV.A.2.B. The projections are that a maximum of two drilling rigs would operate at any time under Sale 195 (and one for Sale 202). Are these estimates specific to those sales, or is this an absolute maximum? In other words, could we see two rigs drilling on Sale 195 tracts, and another drilling a Sale 202 tract?

Pg. IV-6. IV.A.2.b(1)(a). As previously stated, we recommend the final EIS present additional discussion on geophysical seismic research, in addition to the site survey seismic work described here.

Pg. IV-13. IV.A.4.a. The spill modeling assumes the oil will be similar to Alaska North Slope crude oil. How typical is this? We understand that Northstar crude is markedly different than that from the Prudhoe Bay field. Is it logical to assume offshore oil from newly developed reservoirs would be more similar to North Slope crude?

Page IV-10. IV.A.2.b(3). Information on the impacts of dredging needs to be included or referenced in this section. While suspended sediments per se have very low direct toxicity values, the composition of sediments should be tested prior to assessing the potential impacts from dredging. In Norton Sound, for example, nearshore sediments contain high background levels of mercury and other metals. Dredging activities may resuspend such materials and make them available to aquatic organisms, with resultant adverse effects.

Page IV-13. IV.A.4.a. On page IV-3, the DEIS states the analyses presented consider whether the mitigation that is proposed as part of the project can reduce or eliminate all or part of the potential adverse effects. Here, however, the analysis of large oil spills assumes there is no clean up or containment. This seems illogical, as oil spill response and preparedness are very much part of the mitigative measures directed at OCS activities.

Page IV-15. IV.A.6. This section should also include a description of dispersants and any considerations or restrictions on their use in the Beaufort Sea.

Page IV-16. IV.A.6.a. Please provide further description of the experience(s) of using the described small-vessel skimming system "successfully" in Cook Inlet amid broken ice.

Page. IV-16. IV.A.6.c. The stated response technology for a spill occurring during late fall freeze-up is to allow the spill to freeze in place, then mining the oil from the pack ice. Is there any reasonable prediction of the efficiency of this technology, or examples of its testing or actual use?

Page IV-21. IV.C.1.a(1). The DEIS states that trace metals would be added to the water by drilling muds and cuttings. It further states that the Environmental Protection Agency (EPA) prohibits the discharge of drilling muds and cuttings in less than 5 meters. Additional discussion regarding the dispersion of these pollutants and the ability to meet water quality criteria at the edge of mixing zones seemingly dismiss the possible impacts from these pollutants. What would be the impact if these pollutants from exploratory activity were re-suspended during activities such as dredging for subsea pipelines? MMS should consider putting this information in their "Information to Lessees" and encourage lessees to discharge of such materials downhole whenever possible.

Page IV-22-23. IV.C.1.a(3). This section discusses the effects of permitted discharges of produced waters. While it is noted that to date for exploration, the EPA has prohibited the discharge of formation waters into waters of less than 10 meters, the section does provide information on the maximum amount of oil and grease in produced waters over the next 21 years. The document goes on to state that if produced waters were discharged for a project, "the effect on water quality would be local, but would last over the life of the field." What would be the cumulative impacts for all the proposed exploration and development projects for all three leases? Also, what kind of impacts could be expected inside the "mixing zone"? By contrast an entire section is spent describing the probable effects of an accidental oil spill on various resources. Should an oil spill occur, presumably it would be a one time event. A discharge of production waters would occur on a consistent basis. What would this mean to resources and habitat?

Page IV-144. IV.C.11.b(3). NMFS is supportive of Stipulation 4, and believe such monitoring is necessary to fully assess the effects of OCS actions on bowhead whales. However, we feel the first sentence on this page (This stipulation helps to reduce effects to subsistence-harvest patterns and to the overall socio-cultural systems which place special value on the bowhead whale harvest and the sharing of this harvest with other members of the community) overstates the benefits of this monitoring. The statement that this stipulation is considered to be a positive action by he Native community under environmental justice should be referenced.

It is not clear why Stipulation 6 is presented in two parts, a and b. Would both apply?

Page IV-146. IV.C.11.c(1)(a). The DEIS states in the second paragraph that potential disturbances to bowhead whales from seismic operations would be limited to areas west of Cross Island, because of the provisions of (past and existing) conflict avoidance agreements. The DEIS should consider that these agreements are primarily for the protection of the subsistence hunt. These agreements often allow for seismic work to proceed once a village has reached its quota, after which the potential for seismic to disturb these whales may be very high.

Page IV-219. IV.I.2.k(1). In describing the potential effects of an oil spill on subsistence uses, this analysis very correctly states that there would be long term effects, often based in part on the perception that a marine mammal could be tainted. This analysis may be somewhat flawed in basing discussions on the results of the oil spill model, which estimates the chance of an oil spill contacting a particular environmental resource, such as Point Barrow. This approach may not fully account for seals and whales which move among these resource areas. If a seal became oiled near Cross Island, and was harvested near Barrow some time later, subsistence use of the area would certainly be affected even though no oil had contacted that resource area.

Page V-1. V. Cumulative Effects. This section seems to confine its analysis to other oil and gas projects, rather than the cumulative impacts of the lease sales when added to <u>all</u> other past, present, and foreseeable future actions.

Page V-5. V.A.7. We believe that repeated exposure of migrating bowhead whales to noise sources may be an example of synergistic impact. While whales may avoid a source by moving further offshore before resuming their normal course, and may make such avoidance movements around several sources (additive impact), there may be a point at which the whales remain offshore after exposure to multiple sources, even once the source is no longer present. Given the many potential noise sources associated with exploration, development, and production on the Beaufort Sea OCS, Natives and scientists have considered this a real possibility.

Page V-28. V.C.5.a(1)(b). The FEIS should present an expanded discussion of development and exploration within the Canadian Beaufort, particularly off the McKenzie delta, as well as vessel movement into and out of Canadian waters necessary to support activities within the Alaskan Beaufort Sea OCS. Expansion of the Canadian fleet to support U.S. development would present several concerns with respect to bowhead whales and subsistence hunting, as late season traffic in the eastern Beaufort Sea would be most likely to encounter, and harass, these whales.

APPENDIX H

FR NOTICE OF JUNE 19, 2002
COMMENTS TO DEIS
AND
LISTING OF E-MAIL

List of Items in Appendix H

Federal Register Notice of June 19, 2002

Comment Letters Received

DEIS Public Hearing Attendees

Information about E-Mail Comments Received to the Draft EIS.

DATES: The meeting will take place June 20, 2002, from 9:00 am to 4:45 pm ET, and June 21, 2002, from 8:30 am to 11:45 am ET.

ADDRESSES: Ritz-Carlton Washington, DC, 1150 22nd Street, NW., Washington, DC 20037.

PUBLIC COMMENTS: The meeting agenda will be posted at *http://www.bioethics.gov.* Written statements may be submitted by members of the public for the Council's records. Please submit statements to Ms. Diane Gianelli (tel. 202/296–4669 or e-mail info@bioethics.gov). Persons wishing to comment in person may do so during the hour set aside for this purpose beginning at 3:45 p.m. ET on Thursday, June 20, 2002. Comments will be limited to no more than five minutes per speaker or organization. Please give advance notice of such statements to Ms. Gianelli at the phone number given above and be sure to include name, affiliation, and a brief description of the topic or nature of the statement.

FOR FURTHER INFORMATION CONTACT: Diane Gianelli, 202/296–4669, or visit our website at *http://www.bioethics.gov.*

Dated: June 11, 2002.

Dean Clancy,

Executive Director, The President's Council on Bioethics.

[FR Doc. 02–15350 Filed 6–18–02; 8:45 am]

BILLING CODE 4110–60–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Administration for Children and Families

[Program Announcement No. OCS–2002–10]

Request for Applications Under the Office of Community Services' Fiscal Year 2002 Community Economic Development Program

AGENCY: Office of Community Services (OCS), Administration for Children and Families Department of Health and Human Services.

ACTION: Correction and Clarification.

SUMMARY: This document clarifies and corrects the notice that was published in the **Federal Register** on Tuesday, May 28, 2002, Part IV (67 FR 37274). It corrects a telephone number and the spelling of a street name address. It clarifies the notice by removing subsection points for Criterion VI: Project Evaluation. Also, it clarifies that references to Sub-priority Areas 1.5 and 1.6 in Attachment K, "Guidelines for a Business Plan" do not apply to any Priority Areas for this announcement.

FOR FURTHER INFORMATION CONTACT: Karren Turner at (202) 260–5683 or the OCS Operation Center at 1–800–281–9519 for referral to the appropriate contact person in OCS for programmatic questions or send an e-mail to *OCS@lcgnet.com.*

Corrections

In the **Federal Register** issue of May 28, 2002 (67 FR 37274), on page 37274, third column, remove "FOR GENERAL QUESTIONS ON THE ANNOUNCEMENT, CONTACT: Mr. Ros Relaford, Technical Assistance Manager, OCS Operations Center, Call: 1–800–281–9516, or E-mail: *OCS@lcgnet.com*" and add: "FOR GENERAL QUESTIONS ON THE ANNOUNCEMENT, CONTACT:" Mr. Ros Relaford, Technical Assistance Manager, OCS Operations Center, Call: 1–800–281–9519, or E-mail: *OCS@lcgnet.com*".

Also, in the **Federal Register** issue of May 28, 2002 (67 FR 37274), on page 37274, in the first column, under "Application Submission", *Mailing and Delivery Address*:, 4th line, in the second column, 2nd paragraph, 8th line, under *Submission Instructions*; and in the 3rd column, under "For A Copy Of Announcement, Contact:" 2nd line, remove "Fort Meyer Drive", and replace with "Fort Myer Drive".

Clarifications

In the **Federal Register** issue of May 28, 2002 (67 FR 37274), on page 37285, remove all the points under the subsections (1–4) as found under "Criterion VI; Project Evaluation"; that is column 2, end of 2nd paragraph of subsection (1), remove "(0–2 points)"; end of subsection (2), remove "(0–2 points)"; column 2, end of paragraph 1, subsection (3), removed "(0–2 points)"; and column 3, end of subsection (4), remove "(0–2 points)".

In the **Federal Register** issue of May 28, 2002 (67 FR 37274), under Attachment K, "Guidelines for a Business Plan," on page 37307, beginning of the second paragraph of the third column and ending on page 37308, end of third column, sections that reads "Applicable to Sub-priority Area 1.5 Only," "Applicable to Sub-priority Area 1.6 only", "Applicable to Sub-priority 2.1" and "e. Significant Beneficial Impact and Other Criteria," do not apply to any Priority Area in this notice.

Dated: June 9, 2002.

Clarence Carter,

Director, Office of Community Services.

[FR Doc. 02–15390 Filed 6–18–02; 8:45 am]

BILLING CODE 4184–01–M

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Food and Drug Administration

Food Advisory Committee Meeting; Cancellation

AGENCY: Food and Drug Administration, HHS.

ACTION: Notice.

SUMMARY: The Food and Drug Administration (FDA) is canceling the meeting of the Food Advisory Committee scheduled for June 20 and 21, 2002. This meeting was announced in the **Federal Register** of May 30, 2002 (67 FR 37844).

FOR FURTHER INFORMATION CONTACT: Constance J. Hardy, Center for Food Safety and Applied Nutrition (HFS–811), Food and Drug Administration, 5100 Paint Branch Pkwy., College Park, MD 20740, 301–436–1433, or FDA Advisory Committee Information Line, 1–800–741–8138 (301–443–0572 in the Washington, DC area), code 10564.

Dated: June 13, 2002.

William K. Hubbard,

Senior Associate Commissioner for Policy, Planning, and Legislation.

[FR Doc. 02–15488 Filed 6–14–02; 4:15 pm]

BILLING CODE 4160–01–S

DEPARTMENT OF THE INTERIOR

Minerals Management Service (MMS)

Outer Continental Shelf (OCS), Alaska OCS Region

AGENCY: Minerals Management Service, Interior.

ACTION: Notice of Availability of the Draft Environmental Impact Statement (EIS) for the Proposed Oil and Gas Lease Sales in the Beaufort Sea, Alaska.

SUMMARY: MMS announces the availability of the draft EIS prepared by MMS for the Proposed OCS Lease Sales 186 (2003), 195 (2005), and 202 (2007) offshore Beaufort Sea, Alaska.

DATES: Comments on the draft EIS are due September 20, 2002. Public hearings will be held in Alaska: Barrow, July 22, 2002; Nuiqsut, July 24, 2002; Kaktovik, July 26; 2002; and Anchorage, July 30, 2002.

FOR FURTHER INFORMATION CONTACT: Minerals Management Service, Alaska OCS Region, 949 East 36th Avenue, Anchorage, Alaska 99508–4363, Atttention: Mr. Paul Lowry, telephone: (907) 271–6574 or toll free 1–800–764–2627.

SUPPLEMENTARY INFORMATION: This draft EIS assesses three lease sales in the Proposed Final 2002–2007 5-Year Oil and Gas Leasing Program for the Beaufort Sea OCS Planning Area. Sale 186 is scheduled for 2003; Sale 195 for 2005; and Sale 202 for 2007. Federal Regulations (40 CFR 1502.4) suggest analyzing similar or like proposals in a single EIS. The proposal for each sale is to offer 1,877 whole or partial lease blocks in the Beaufort Sea Planning Area, covering about 9.8 million acres (3.95 million hectares) for leasing. The proposed sale area is seaward up to 60 miles offshore of the State of Alaska submerged land boundary in the Beaufort Sea. It extends from the Canadian border on the east to near Barrow, Alaska, on the west.

EIS Availability: Persons interested in reviewing the Draft EIS "OCS EIS/EA, MMS 2002–29" (Volumes I and II) can contact the MMS Alaska OCS Region. The documents are available for public inspection between the hours of 8 a.m. and 4 p.m., Monday through Friday at: Minerals Management Service, Alaska OCS Region, Resource Center, 949 East 36th Avenue, Room 330, Anchorage, Alaska 99508–4363, telephone: (907) 271–6070, or (907) 271–6621, or toll free at 1–800–764–2627. Requests may also be sent to MMS at *akwebmaster@mms.gov*. You may obtain single copies of the draft EIS, or a CD/ROM version, or the Executive Summary from the same address. The Executive Summary (MMS 2002–30) is available in English or Native Inupiat languages.

You may look at copies of the draft EIS in the following libraries:

Alaska Pacific University, Academic Support Center Library, 4101 University Drive, Anchorage, Alaska;
Alaska Resources Library and Information Service, U.S. Department of the Interior, 3150 C Street, Suite 100, Anchorage, Alaska;
Alaska State Library, Government Publications, State Office Building, 333 Willoughby, Juneau, Alaska;
Canadian Joint Secretariat Librarian, Inuvikon Northwest Territories, Canada;
Department of Indian and Northern Affairs, Yellowknife, Northwest Territories, Canada;
Fairbanks North Star Borough, Noel Wien Library, 1215 Cowles Street, Fairbanks, Alaska;
George Francis Memorial Library, Kotzebue, Alaska;
Ilisaavik Library, Shishmaref, Alaska;
Juneau Public Library, 292 Marine Way, Juneau, Alaska;
Kaveolook School Library, Kaktovik, Alaska;
Kegoyah Kozpa Public Library, Nome, Alaska;
North Slope Borough School District, Library/Media Center, Barrow, Alaska;
Northern Alaska Environmental Center Library, 218 Driveway, Fairbanks, Alaska;
Tikigaq Library, Point Hope, Alaska;
Tuzzy Consortium Library, Barrow, Alaska;
University of Alaska Anchorage, Consortium Library, 3211 Providence Drive, Anchorage, Alaska;
University of Alaska Fairbanks, Elmer E. Rasmuson Library, Government Documents, 310 Tanana Drive, Fairbanks, Alaska;
University of Alaska Fairbanks, Geophysical Institute, Government Documents, Fairbanks, Alaska;
University of Alaska Fairbanks, Institute of Arctic Biology, 311 Irving Building, Fairbanks, Alaska;
University of Alaska, Southeast, 11120 Glacier Highway, Juneau, Alaska;
U.S. Army Corps of Engineers Library, U.S. Department of Defense, Elmendorf Air Force Base, Anchorage, Alaska;
U.S. Fish and Wildlife Service Library, 1011 East Tudor Road, Anchorage, Alaska;
Valdez Consortium Library, 200 Fairbanks Street, Valdez, Alaska;
Z.J. Loussac Library, 3600 Denali Street, Anchorage, Alaska.

Public Hearings Public hearings on the draft EIS will be held at the following locations on the dates and times listed:

Barrow, Alaska, Monday, July 22, 2002, Inupiat Heritage Center, Multipurpose Room, 7–9 p.m.
Nuiqsut, Alaska, Wednesday, July 24, 2002, Kisik Community Center, 7–9 p.m.
Kaktovik, Alaska, Friday, July 26, 2002, Quargi Community Center, 7–9 p.m.
Anchorage, Alaska, Tuesday, July 30, 2002, 949 East 36th Avenue, 3rd Floor 4–7 p.m.

An Inupiat translator will be available at the public hearings held in Barrow, Kaktovik, and Nuiqsut.

Oral and written comments on the draft EIS will be addressed in the final EIS. If you wish to testify at a hearing, you may register prior to the hearing to schedule a preferred time by contacting the Alaska OCS Region at the above address or Mr. Paul Lowry at (907) 271–6574 or toll free 1–800–764–2627 not later than 5 days prior to the hearing date. Every effort will be made to accommodate individuals who have not pre-registered to testify. Time limitations may make it necessary to limit the length of oral statements to 10 minutes. You may supplement an oral statement with a more complete written statement and submit it to a hearing official at the hearing or by mail until September 20, 2002. Each hearing will recess when all speakers have had an opportunity to testify. If, after the recess, there are no additional speakers, we will adjourn the hearing immediately after the recess. Written statements submitted at a hearing will be considered part of the hearing record. If you cannot attend the hearings, or if you prefer, you may submit your comments in writing to the address below.

Written Comments MMS requests interested parties to submit their written comments on this draft EIS to the Regional Director, Alaska OCS Region, Minerals Management Service, 949 East 36th Avenue, Room 308, Anchorage, Alaska 99508–4363. Our practice is to make comments, including the names and home addresses of respondents, available for public review. An individual commenter may ask that we withhold their name, home address, or both from the public record, and we will honor such a request to the extent allowable by law. If you submit comments and wish us to withhold such information, you must state so prominently at the beginning of your submission. We will not consider anonymous comments, and we will make available for inspection in their entirety all comments submitted by organizations or businesses or by individuals identifying themselves as representatives of organizations or businesses. The comment period ends on September 20, 2002.

Dated: May 29, 2002.

Thomas A. Readinger,

Associate Director for Offshore Minerals Management.

Dated: May 30, 2002.

Terrence N. Martin

Acting Director, Office of Environmental Policy and Compliance.

[FR Doc. 02–15392 Filed 6–18–02; 8:45 am]

BILLING CODE 4310–MR–P

DEPARTMENT OF THE INTERIOR

National Park Service

Application Guidelines for the Rivers, Trails, and Conservation Assistance Program

AGENCY: National Park Service, Department of the Interior.

ACTION: Guidelines for States, local governments and non-profit organizations wishing to receive National Park Service assistance for

Comment Letters Received

Log #	Commentor	Dated	From
L-0001	Mayor, NSB	7/22/02	Barrow, AK
L-0002	Executive Director, AEWC	7/22/02	Barrow, AK
L-0003	No. AK Environmental Ctr.	7/30/02	Fairbanks, AK
L-0004	The Ocean Conservancy	7/26/02	Anchorage, AK
L-0005	Ben Kostival	8/2/02	Rockland, ME
L-0006	ICAS, J. Q. Patkotak	undated	Barrow, AK
L-0007	Pam and Wallace Taylor	8/18/02	Marion, IA
L-0008	William L. Risser	8/26/02	Houston, TX
L-0009	Reggie Joule	9/4/02	Juneau, AK
L-0010	Kathleen Roberts	9/9/02	Chestertown, NY
L-0011	Kimberly Donovan/Bruce Hazen	9/12/02	Ellwood City, PA
L-0012	John Strasenburgh	9/12/02	Talkeetna, AK
L-0013	Terry Cummings	9/16/02	Anchorage, AK
L-0014	K. A. Havlena	9/14/02	Baywood Park, CA
L-0015	K. A. Beckwith	9/14/02	Los Alamitos, CA
L-0016	Jim Havlena	9/14/02	Los Osos, CA
L-0017	Manika Schultz, + others	9/19/02	Indianapolis, IN
L-0018	Jenny Jacobs	9/15/02	Dundee, FL
L-0019	Amy and Chris Gulick	9/15/02	North Bend, WA
L-0020	Alaska Oil & Gas Assc. (FAX)	9/20/02	Anchorage, AK
L-0021	The Ocean Conservancy	9/20/02	Anchorage, AK
L-0022	Greenpeace	9/20/02	Anchorage, AK
L-0023	National Marine Fisheries Service	9/6/02	Washington, DC
L-0024	State of Alaska, DGC	9/20/02	Juneau, AK
L-0025	Pam A. Miller	9/20/02	Anchorage, AK
L-0026	Environmental Defense	9/18/02	Oakland, CA
L-0027	Nancy & Sebastian Sommer	9/18/02	Wenston-Sallem, NC
L-0028	Elizabeth MacGoway	9/18/02	San Francisco, CA
L-0029	The Ocean Conservancy	9/23/02	Anchorage, AK
L-0030	Alexandra Howells	9/17/02	Berkeley, CA
L-0031	George L. Pettit	9/19/02	San Jose, CA
L-0032	Sierra Club, Alaska Task Force	9/17/02	San Francisco, CA
L-0033	Alaska Oil and Gas Assc.(ltr.)	9/20/02	Anchorage, AK
L-0034	Executive Director, AEWC	9/20/02	Barrow, AK
L-0035	Mayor, NSB	9/20/02	Barrow, AK
L-0036	John Van Syoc, Sr.	9/25/02	Grants Pass, OR
L-0037	Fish and Wildlife Service	9/30/02	Anchorage, AK
L-0038	EPA	10/3/02	Seattle, WA
L-0039	Carol Ampel	9/10/02	Medford, OR
L-0040	Robert Franz	9/2/02	Plymouth Mtg., PA

Actual comment letters received and MMS responses are found in Section VII.

DEIS Public Hearing Attendees

* indicates if testified

Nuiqsut, July 24, 2002
Lloyd Ipalook, Sr.
Lloyd Ahvakana
Lucy S. Ahvakana
Jaeb Woods
J. K. Thomas Ahtuangaruak
Lucy Nukapigak
Clyde Sielak
Chris Long
Sarah Helms*
Donald Taleak
David Kasak, Sr.*
Lorraine Akpik
David Kasak, Jr.
Paul Kittick
Lucy Ericklook
Hattie Long
Emily Wilson
James Taalak
Eli Nukapigak*
Ruth Nukapigak*
Frank K. Long, Jr.*
Abraham Woods
Rosie Kaigelak
Willie Sielak, Jr.
Joseph Akpik*
Emily Panigeo
Isaac Nukapigak
Geoff Carroll*
Kenneth Taleak
Sarah Kunaknana*
Susie Kunaknana
Alice Ipalook

Kaktovik, July 26, 2002
Isaac Akootchook*
Susie Akootchook*
Lillian Akootchook*
Daniel Akootchook
Merylin Traynor*
Millie Aishanna

Kaktovik, July 26, 2002 (Continued)
Robert Thompson*
Lon Sonsalla*
Roy Akootchook, Sr.
George Akootchook

Anchorage, July 30, 2002
Bob Weienhold*
Jeremy Miller*
Jim Sykes*
Jessica Cochran
Pam A. Miller*
Jim Tate
Rose Ragsdale
Jenna App*
T. N. Obermeyer*
John Goll
Kate Wedemeyer
Jim Lima
Dick Newman
Frank Wendling

Barrow, August 1, 2002
Diana Gish
Charles Hopson*
Alfrieda Lord*
Tom Browich
Loretta Kenton
Murrell Niashoalod
Mary Lou Leavits
Bertha Leavits
May Akpik*
Todd O'Hara*
Robert Snydam*
Neil Bjornsted*
Bill Tegoseak*
Margaret Tegoseak
Walter Akpik, Jr.
Ralph Davis
Thomas Brower, III*

Information about E-Mail Comments Received to the Draft EIS

Representative copies of e-mail comments received are found in VII.F.

Log #	Name	Location
	8/1/02	
E-0001	Mr. and Mrs. J. L. Denison	Long Beach, CA
E-0002	Rodney E. Parlee	Bolton, CT
	8/2/02	
E-0003	Sergio Monteiro	Los Angeles, CA
	8/4/02	
E-0004	William B. Upholt	West Hartford, CT
	8/5/02	
E-0005	Peter and Naomi Rimbos	Maple Valley, WA
	8/25/02	
E-0006	Elissa Broekema	Anchorage, AK
	9/9/02	
E-0007	Marie Antobenedetto	Natick, MA
E-0008	Frank & Ellen Gallagher	unknown
E-0009	Susan Petersen	Eureka, CA
	9/10/02	
E-0010	Kathleen Roberts	Chestertown, NY
E-0011	James Bender	OR
E-0012	Steven E. Slap	Springfield, MA
	9/12/02	
E-0013	Steven Paulson	Sagle, ID
	9/13/02	
E-0014	Paul M. Konrad	Kulm, ND
E-0015	Scott J. Hed	Sioux Falls, SD
E-0016	Helaine Lerner	New York, NY
E-0017	Tina Herowitz	Philadelphia, PA
E-0018	Patrick Raitt	Silver Spring, MD
E-0019	Chris Krackeler	Arlington, VA
E-0020	Jayne Goocher	Pensacola, FL
E-0021	Craig Pendleton	Kingston, WA
E-0022	Partick Raitt	Takoma Park, MD
E-0023	Mike Stephen	St Joe, AR
E-0024	Sufi Williams	West Linn, OR
E-0025	Melissa Mutter	Dayton, OH
E-0026	Eric Walter	Seattle, WA
E-0027	Jeremy Pearl	Soquel, CA
E-0028	Tonatiuh Trejo	Marina, CA
E-0029	Ken Wanderman	Marina, CA
E-0030	Lucy Joyce	Brooklyn, NY
E-0031	Michael Buist	Denver, CO

Log #	Name	Location
E-0032	Jason Ulrich	St. Paul, MN
E-0033	Steve Jones	Kansas City, MO
E-0034	Robert Anthony	Grand Junction, CO
E-0035	Sharon O'Hara	Greenfield, WI
E-0036	Santiago Munne	Hoboken, NJ
E-0037	Terry Palin	Staten Island, NY
E-0038	Julie Dennis	Santa Cruz, CA
E-0039	Jon Riendeux	Ventura, CA
E-0040	Donald Niren	Whittier, CA
E-0041	David Rouleau	Lakewood, CO
E-0042	Liza DiMartino	Harwood Heights, IL
E-0043	Suzanne Serio	Fair Lawn, NJ
E-0044	Deanna Wiener	St. Paul, MN
E-0045	Erika Sevetson	Madison, WI
E-0046	Carlos Florido	Petaluma, CA
E-0047	Barbara Kurtz	Lexington, IL
E-0048	Michelle Walker	Capitola, CA
E-0049	Lisa Onaga	Arlington, VA
E-0050	Suzanne Lipkin	Philadelphia, PA
E-0051	Rebecca Sutton	Berkeley, CA
E-0052	Keplin Schwick	Yreka, CA
E-0053	Susan Burns	Sausalito, CA
E-0054	Eleanor Burian-Mohr	Los Angeles, CA
E-0055	Lois White	Grants Pass, OR
E-0056	E. Karsten Smelser	Minneapolis, MN
E-0057	Trish Woodard	Shawnee, OK
E-0058	Shawn Nordell	St. Louis, MO
E-0059	Rhett Lawrence	Portland, OR
E-0060	Leah Jones	Reno, NV
E-0061	Benjamin Urquhart	Brooklyn, NY
E-0062	Gregg Schulze	San Francisco, CA
E-0063	Deb Barmichael	Phoenix, AZ
E-0064	Mark Aspelin	Las Cruces, NM
E-0065	Ron Thigpen	Releigh, NC
E-0066	Jen Motley	Womelsdorf, PA
E-0067	Lila Rogers	Hermosa Beach, CA
E-0068	Mary Fleury	Minneapolis, MN
E-0069	Mitsy Silva	Crestline, CA
E-0070	Ilona Gebhard	Albuquerque, NM
E-0071	Maria Scianna	San Jose, CA

Log #	Name	Location
E-0072	Pilar Garofalo	Los Angeles, CA
E-0073	Kathy Gillmore	Maumelle, AR
E-0074	Judith Hallberg	Middletown, NJ
E-0075	Laura Driscoll	Indianapolis, IN
E-0076	Giselle Smith	Fruita, CO
E-0077	Meva Armstrong	Bellingham, WA
E-0078	Janine Wengert	Newbury Park, CA
E-0079	Heidi Sevillano	Palmdale, CA
E-0080	Simone Morton	Aromas, CA
E-0081	Carol Norton	Glendale, AZ
E-0082	Nina Wouk	Menlo Park, CA
E-0083	Meredith Hariton	Missoula, MT
E-0084	Cheryl Rosenfeld	Columbia, MI
E-0085	Jonathan Beck	Portland, OR
E-0086	Tonya Newton	Falls Church, VA
E-0087	Eben Rosenberger	San Diego, CA
E-0088	Lori King	Nuevo, CA
E-0089	Doug Lagally	Madison, WI
E-0090	Nicholas Cymbol	Cockeysville, MD
E-0091	Jane Ball	Minnetonka, MI
E-0092	Susan McIntyre	Derby-Line, VT
E-0093	Susan Kendall	Patchogue, NY
E-0094	Maileen Chaparro	Queens Village, NY
E-0095	Michael Cunningham	Watsonville, CA
E-0096	Althea Thacher	Hagerstown, MD
E-0097	Betty Van Wicklen	Waterviet, NY
E-0098	Ronna Hills	Des Moines, IA
E-0099	Sandra Castro-Nguyen	Milpitas, CA
E-0100	Tom Ballard	Santee, CA
E-0101	JJ Eck	Chandler, AZ
E-0102	Jim Schaefer	New York, NY
E-0103	Laurie Brown	Powder Springs, GA
E-0104	Nick Lavely	Apple Valley, MI
E-0105	L. M. Stevens	Chicago, IL
E-0106	Steve Ulan	Maspeth, NY
E-0107	Gila Wdowinski	Laguna Beach, CA
E-0108	Michael Laird	New York, NY
E-0109	Renee Flower	Santa Cruz, CA
E-0110	June Muller	New York, NY
E-0111	Michelle Risley	Woodstock, GA
E-0112	Dale Anania	Berkeley, CA
E-0113	Bill Evans	Asheville, NC
E-0114	Amy Brzeczek	Tujunga, CA
E-0115	Rebecca Duerr	Davis, CA

Log #	Name	Location
E-0116	Joan Exum	OH
E-0117	Katharina Branch	Salem, OR
E-0118	Shaun Smakal	Byron, MI
E-0119	Sharon Wiebe	Evergreen Park, IL
E-0120	Mark Mauer	Los Angeles, CA
E-0121	Holly Hendrickson	Cambridge Springs, PA
E-0122	Erin Rasmussen	Portland, OR
E-0123	Darlene Sarver	Cincinnati, OH
E-0124	Cordelia Clancy	Santa Cruz, CA
E-0125	Cynthia Beckert	Studio City, CA
E-0126	Zoe Laird	New York, NY
E-0127	Sarah Downey	Des Moines, IA
E-0128	Kristin Reed	San Francisco, CA
E-0129	Ellen Spencer	Brooklyn, NY
E-0130	Lois Evron	Cedarhurst, NY
E-0131	Ernest Goitein	Atherton, CA
E-0132	Celeste Picco	New York, NY
E-0133	Rick Wilson	Aliso Viejo, CA
E-0134	Gina Ferrante	Phoenix, AZ
E-0135	Darcie Sinciline	Oakdale, PA
E-0136	Charles De Paola	Westbrookville, NY
E-0137	Irene Mills	Portland, OR
E-0138	Gustavo Sandoval	San Mateo, CA
E-0139	Sloan Matthews	Menlo Park, CA
E-0140	Beth Horwitz	Glenview, IL
E-0141	Richard DeBadts	Buffalo, NY
E-0142	Michele Di Candia	Pleasanton, CA
E-0143	Andrew Murawa	Claremont, CA
E-0144	Pierre Thavong	Elgin, IL
E-0145	Celeste Johanson	Redmond, WA
E-0146	Bonnie Barclay	Hollywood, CA
E-0147	Yvonne Langnese	San Jose, CA
E-0148	Deborah Verga	Saugas, CA
E-0149	Michael Lavely	White Bear Township, MN
E-0150	Saundra Pendleton	Kingston, WA
E-0151	Gwynne Bauer	Castle Rock, CO
E-0152	James Reid	Lexington, IL
E-0153	Kim Siebert	San Jose, CA
E-0154	Patrick Partridge	Nome, AK
E-0155	Bridget Manley	Los Angeles, CA
E-0156	Diane Dulmage	San Jose, CA
E-0157	Ingrid Leypoldt	Morrison, CO
E-0158	Suzy Wells	Owensboro, KY
E-0159	Joseph Morrissey	Vestal, NY

Log #	Name	Location
E-0160	Charlotte Brody	Chappaqua, NY
E-0161	Karin Moran	San Clemente, CA
E-0162	Sarah Medley	East Windsor, NJ
E-0163	Mercy Drake	Mesa, AZ
E-0164	Barney Schlinger	Los Angeles, CA
E-0165	Harriet Stucke	Philadelphia, PA
E-0166	Jenneffer Prajapati	San Jose, CA
E-0167	Donna Huffer	Columbus, OH
E-0168	Lynn Barris	Durham, CA
E-0169	John Gallo	Otega, NY
E-0170	Beth Couture	Chicago, IL
E-0171	David Athey	Brentwood, MD
E-0172	Phillip Gooch	Quantico, VA
E-0173	Linda Bescript	Tucson, AZ
E-0174	Kim Hunt	Napa, CA
E-0175	Rebecca Hewitt	Washington, DC
E-0176	Tamara Lischka	Portland, OR
E-0177	Jessica Manthey	Indio, CA
E-0178	Tenchi Hamaki	New York, NY
E-0179	Kellie Geldreich	Encinitas, CA
E-0180	Joanna Welch	Bryce Canyon, UT
E-0181	Kim Okamura	Los Angeles, CA
E-0182	Ellen Anderson	Anaheim, CA
E-0183	Laura Herndon	Burbank, CA
E-0184	Barbara Smith	Los Angeles, CA
E-0185	Jason Kramer	Philadelphia, PA
E-0186	Ben Pink	Oakland, CA
E-0187	Jennifer Monahan	San Francisco, CA
E-0188	Kaitilin Gaffney	Santa Cruz, CA
E-0189	Joanne Cooper	Bellevue, WA
E-0190	Chris Han	New York, NY
E-0191	Cory Champagne	Santa Rosa, CA
E-0192	Chunyan Chen	Jamestown, NC
E-0193	Margit Nusser	Poughkeepsie, NY
E-0194	Aaron Turner	Renton, WA
E-0195	Jillian Johnson	La Crescenta, CA
E-0196	Darlene Lendino	Sparks, NV
E-0197	Virginia Brown	Organ, NM
E-0198	Aghaghia Rahimzadeh	Trinidad, CA
E-0199	Jeanette Corsini	Prospect Park, NJ
E-0200	Linda Webb	Denver, NY
E-0201	Bob Mauritsen	Seattle, WA
E-0202	Jacquelyn Baetz	Albany, NY
E-0203	Barbara Cornett	Madisonville, TN

Log #	Name	Location
E-0204	Michael Tackett	Indianapolis, IN
E-0205	Stacy Gustyn	Rochester, NY
E-0206	Andrea Christy	Minneapolis, MN
E-0207	Holly Shellner	Denver, CO
E-0208	Val Huston	IL
E-0209	Lally Saucedo	Sacramento, CA
E-0210	Layah Soiferman	West Hills, CA
E-0211	Dagny SanMiguel	San Diego, CA
E-0212	Angela McKinney	Greenboro, NC
E-0213	David Matsuno	Anchorage, AK
E-0214	Matthew Whilcomb	Thornton, CO
E-0215	Amie Kraus	Petoskey, MI
E-0216	LuAnne Breeden	Leslie, MO
E-0217	Lorie Jean Barnes	Redding, CA
E-0218	John Mohler, III	Catonsville, MD
E-0219	Sheri Murphy	Lynnwood, WA
E-0220	July Kunz	San Francisco, CA
E-0221	Nancy Sullivan	Ft. Thomas, KY
E-0222	Eric Pihl	Arlington Heights, IL
E-0223	Diane Sklensky	Syracuse, NY
E-0224	Erika Shamo	Chicago, IL
E-0225	Margaret Schlicter	Medford, NJ
E-0226	Mim McNulty	Pacifica, CA
E-0227	Jesse Chastain	Thomasville, GA
E-0228	Dean Goodwin	San Francisco, CA
E-0229	Earl Lane	Hannibal, MO
E-0230	Greg Koch	Redding, PA
E-0231	Jason Koopman	East Lansing, MI
E-0232	Kathleen Huse	Van Nuys, CA
E-0233	Pat Testa	Kings Park, NY
E-0234	Nanette Mellgren	Apple Valley, MI
E-0235	Jason Yeager	Guerneville, CA
E-0236	Barb Pruett	Muncie, IN
E-0237	Sandra Mays	Lancaster, PA
E-0238	James O'Connor	Englewood, CO
E-0239	Gerald Marshall	Arvada, CO
E-0240	Alex Saunders	Danviile, CA
E-0241	Donelle Moewes	Seattle, WA
E-0242	Galen Galler	Tuscon, AZ
E-0243	Kerry O'Brien	Oakland, CA
E-0244	Jas Cheshire	Clementon, NJ
E-0246	Linda Nolte	San Diego, CA
E-0247	Richard Gabriel	Eugene, OR
E-0248	Brent Reitze	Fairfax, VA

Log #	Name	Location
E-0249	Lawrence Crowley	Louisville, CO
E-0250	Linda Bartlett	Crystal Lake, IL
E-0251	Jeremy Tabor	Westland, MI
E-0252	Laura Girardeau	Honolulu, HI
E-0253	Frederick Shenkman	Bronx, NY
E-0254	Eleanor Wireman	Richland, WA
E-0255	Sheri Archey	Salem, OR
E-0256	E. Harris	Carrboro, NC
E-0257	Sherry Carr	Arnold, CA
E-0258	Cynthia Reyes	Eureka, CA
E-0259	Shirley Biscotti	Bodega Bay, CA
E-0260	Briana Madden	CA
E-0261	Vinnie Zoccolante	Honolulu, HI
E-0262	Amy Hayes	Maryville, TN
E-0263	Paul Tuff	Salinas, CA
E-0264	Johnny Asia	Phoenicia, NY
E-0265	Scott Nichols	East Palo Alto, CA
E-0266	Spring Manju	Makawao, HI
E-0267	Carla Murray	Canton, IL
E-0268	Stewart Wilber	Lilburn, CA
E-0269	Ariele Belo	Seattle, WA
E-0270	Guru Sadhana Khalsa	Espanola, NM
E-0271	Erin Murphy	Bellingham, WA
E-0272	Walter Pike	Lansing, MI
E-0273	Jenny Widmer	Manhattan, KS
E-0274	Doris Reynolds	Oakland, CA
E-0275	Jennifer Joy Smith	San Francisco, CA
E-0276	Adam Massey	Boulder, CO
E-0277	Betty Combs	Londonderry, OH
E-0278	Patricia Maddox	Chicago, IL
E-0279	Richard Ormos	Marietta, GA
E-0280	Nancy Loeser	Bel Air, MD
E-0281	Shyla Raghav	Irvine, CA
E-0282	Sherry Arnold	Jackson, NJ
E-0283	Tara Byrne	Troy, MI
E-0284	Todd Broeker	Phoenix, AZ
E-0285	Caress Kiere	Redding, CA
E-0286	Barney McComas	San Diego, CA
E-0287	Bryan Thompson	Lisle, IL
E-0288	Debbie Baier	Clive, Iowa
E-0289	Shelia Wilson	South Pittsburg, TN
E-0290	Carole Sue Hess	Gaylord, MI
E-0291	Indra Zuno	Sherman Oaks, CA
E-0292	Vira Confectioner	Sunol, CA
E-0293	Delana Darrow	Ardmore, OK
E-0294	Sandra Cutter	Martinez, CA
E-0295	Gail Rance	Woodbury, NY
E-0296	Alexandra West	Bend, OR
E-0297	Linda Hes	Olmsted Twp., OH
E-0298	Stephanie West	Costa Mesa, CA
E-0299	Veronica Eckley	UT
E-0300	Bobbie Dee Flowers	New York, NY
E-0301	Kristofer Young	Oak View, CA
E-0302	Caroline Spitzka	Danville, CA
E-0303	Charity Prater	Portland, OR
E-0304	Sarah Hunnewell	Water Mill, NY
E-0305	Kristin Mayer	Ann Arbor, MI
E-0306	Paul Andrade	Berkeley, CA
E-0307	Lynn Styles	Santa Rosa, CA
E-0308	Fred Pospisil	Oak park, IL
E-0309	Myrna Caceres	New York, NY
E-0310	Elizabeth Roberts	Winnetka, IL
E-0311	Elizabeth Fleming	Washington, DC
E-0312	Dawn Wallace	Fair Oaks, CA
E-0313	Cheryl Kucsera	Silver Spring, MD
E-0314	Sue Avey	Gilroy, CA
E-0315	Steven Mercatante	Walled Lake, MI
E-0316	Mapel Howell	Holy Ridge, NC
E-0317	Cynthia H. P. Kennedy	Kailua-Kona, HI
E-0318	Laurie Polivy	Pacificia, CA
E-0319	Larry Smith	Laguna Hills, CA
E-0320	Amber Gaia	San Diego, CA
E-0321	Joseph Grather	Morris Plains
E-0322	June Keil	Escondido, CA
E-0323	Mary Tracy Slusser	Elmwood Park, IL
E-0324	Greg Woodruff	Radford, VA
E-0325	April Thompson	San Francisco, CA
E-0326	Julianna Krolak	Port Hueneme, CA
E-0327	Alan Olander	Nevis, MN
E-0328	Gary Barton	OH
E-0329	Elijah Woolery	Pacific Grove, CA
E-0330	Patricia Mackura	South Euclid, OH
E-0331	John Peterson	Thousand Oaks, CA
E-0332	Sheri Adler	Evanston, IL
E-0333	Neysa Linzer	Staten Island, NY
E-0334	Natalia Morales	Jackson Heights, NY
E-0335	LeAnn Hale	Goodlettsville, TN
E-0336	Mark Reif	Winchester, VA

Log #	Name	Location
E-0337	Ken & Dawn Mettler	Rockbridge, OH
E-0338	Barbara Gregorio	San Diego, CA
E-0339	Matthew Van Den Broeke	Valparaiso, IN
E-0340	Tina Johnson	Sacramento, CA
E-0341	Monika McDole	Bend, OR
E-0342	Elana Allen	Englewood, NJ
E-0343	Stefanie Collins	Norman, OK
E-0344	Martin Schreiber	Lake Oswego, OR
E-0345	Dan Perkins	Kingsford, MI
E-0346	Lulu Yu	Renton, VA
E-0347	Dan Samek	Albuqueraque, NM
E-0348	Roger Zimmerman	Santa Maria, CA
E-0349	Murguerite Lovett	Long Beach, CA
E-0350	Morgen Raney	Lawton, OK
E-0351	Pamela A. Taylor	North Ferrisburgh, VT
E-0352	Janine Perlman	Alexander, AR
E-0353	Tamara Daugherty	York, PA
E-0354	Nancy Miller	Prescott, AZ
E-0355	Matt Walker	Atlanta, GA
E-0356	Robert Field	Santa Cruz, CA
E-0357	Kristen Allbritton	Fayetteville, AR
E-0358	Christina Fullard	Waycross, GA
E-0359	Marie Walz	Olney, MD
E-0360	Jennifer Harding	Boulder, CO
E-0361	Christine Georgiou	Bronx, NY
E-0362	Louise Anne	Clinton Township, MI
E-0363	Brett Cloud	Denver, CO
E-0364	Penny Fry	Carrollton, GA
E-0365	James McDill	Sacramento, CA
E-0366	Anita Vasquez	Victor, MT
E-0367	Diana Carroccia	Lake Ronkonkoma, NY
E-0368	Jennifer Stone	Galveston, TX
E-0369	Tracy Hensley	West Chester, OH
E-0370	Susan Greene	Felton, CA
E-0371	Gregory Wilcox	Candler, NC
E-0372	Christopher Lyons	Henderson, NV
E-0373	Vince Slevin	Petaluma, CA
E-0374	Azalia Aragon	New York, NY
E-0375	Anne Allen	Millsboro, DE
E-0376	Judith Hildenbrand	Lexington, KY
E-0377	Patricia Kubisiak	New Berlin, WI
E-0378	Melani Bolyai	Riverdale, NJ
E-0379	Grady Pettigrew	Cols, OH
E-0380	Lenn Lee	Wheeling, IL
E-0381	Deb Kavaler	New York, NY
E-0382	Kathy Corcoran	Pasadena, CA
E-0383	Sarah Dugan	Brunswick, OH
E-0384	Merle Neidell	St. James, NY
E-0385	Eileen Bevacqui	Tinton Falls, NJ
E-0386	Gregory Hall	South Pasadena, CA
E-0387	Arthur Kindred	Springfield, IL
E-0388	Margaret Wagguner	Silver Point, TN
E-0389	Lark Kirkwood	Oklahoma City, OK
E-0390	Maxine Griesert	Minneapolis, MN
E-0391	Charles Alvarez	Woodhaven, NY
E-0392	Mary Lou Peltier	Olympia, WA
E-0393	Barbara Levine	Hoffman Estates, IL
E-0394	Sandra Gritz	Mableton, GA
E-0395	Elizabeth Chipman	St. James, MO
E-0396	Lisette Valdes	Signal Hill, CA
E-0397	Dale Krewson	Lebanon, OR
E-0398	Corey Fischer	Mill Valley, CA
E-0399	Sharyn Morris	Urbana, OH
E-0400	Karryn Hart	DeGraff, OH
E-0401	Eugene Williamson	Manning, OR
E-0402	Joe Chasse	Ocean Park, WA
E-0403	Billy Rickards	Waikoloa, HI
E-0404	Greg Zajac	Palmyra, VA
E-0405	Donna Neighbors	Edmonds, WA
E-0406	Kathy Barton	Scharleston, W. VA
E-0407	Betty Jean Herner	Strongsville, OH
E-0408	Pris Thomas	Ukiah, CA
E-0409	Kelly Baldwell	Naperville, IL
E-0410	Joann Barbee	Johannesburg, CA
E-0411	Valery Lavine	Rochester, NY
E-0412	Julie Kucera	Eden Prairie, MN
E-0413	Diane Gonzales	Calimesa, CA
E-0414	Laura Traynham	Fairfax, VA
E-0415	Tammy Robinson	Asheboro, NC
E-0416	Kasey Canton	Christiansted, VI
E-0417	Jay & Sandy Lynch	Bremerton, WA
E-0418	Della Dempsey	San Diego, CA
E-0419	John Boeschen	San Rafael, CA
E-0420	Evelyn Babb	Hibbing, MN
E-0421	Bob Caletti	Menlo Park, CA
E-0422	Rick Brenke	Phoenix, AZ
E-0423	Tristan Raymond	San Diego, CA
E-0424	Steve Callahan	Valatie, NY

Log #	Name	Location
E-0425	Mark Rauscher	San Clemente, CA
E-0426	Jennifer Johnson	Sunnyvale, CA
E-0427	Veronique Cuvillers	Santa Fe, NM
E-0428	Michael Moore	El Cerrito, CA
E-0429	Alexandra Lee	Rhinecliff, NY
E-0430	Ruth Yeomans	Seattle, WA
E-0431	Don Cooney	Westminister, VT
E-0432	Lani J. Adams	Palmdale, CA
E-0433	Cyndi Baumgardner	Seattle, WA
E-0434	Kristine Hansen	Madison, WI
E-0435	Dalton Howland	Spartanburg, NC
E-0436	Mary Bachman/Bill Downing	Belvedere, CA
E-0437	Joan Marlatt	Boise, ID
E-0438	Susan Trivisonno	San Jose, CA
E-0439	Berton Harrah	Marysville, OH
E-0440	Mary Blake	Scarsdale, NY
E-0441	Marguerite Nicholson-Schenk	Philadelphia, PA
E-0442	Audrey Lareau	Redwood City, CA
E-0443	Wallace Berg	Annandale, VA
E-0444	Sandi Fults	Conifer, CO
E-0445	Kimberly Tyda	Sacramento, CA
E-0446	Karen Carroll	Mooresville, IN
E-0447	Cindy Gawne	Gladstone, MI
E-0448	Carlita Matias	Huntington Beach, CA
E-0449	Phil & Susie Kaplan	Soquel, CA
E-0450	Gina Candelori	Bramwell, WV
E-0451	Amber Strangstalien	Baraboo, WI
E-0452	Ann Carranza	Healdsburg, CA
E-0453	Jasmine Bascom	Boulder, CO
E-0454	Lois Pesce	Ridgefield, NJ
E-0455	Sara Kowalke	Baraboo, WI
E-0456	Randi Perkins	Atascadero, CA
E-0457	Tiffany Woznicki	La Mesa, CA
E-0458	Lawrence Bavier	Dearborn, MI
E-0459	Bonnie Mandell-Rice	Lafayette, CO
E-0460	Lisa Poser	Redwood Falls, MI
E-0461	Vera Snyder	Pasadena, CA
E-0462	Gail Cheeseman	Saratoga, CA
E-0463	Vanessa Martino	Vista, CA
E-0464	Tom Lehner	Fond du lac, WI
E-0465	Dee Dunseith	Albuquerque, NM
E-0466	Rayan Manro	Las Vegas, NV
E-0467	Craig Lee Asbury	Springfield, MO
E-0468	David Paz	Brooklyn, NY

Log #	Name	Location
E-0469	Randy Centner	Montgomery, OH
E-0470	Renae Anub	Antelope, CA
E-0471	Gary Boren	San Francisco, CA
E-0472	Jean Blackwood	Carthage, MO
E-0473	Deborah Wininger	Clarksville, IN
E-0474	Paul Vatistas	Tahoe City, CA
E-0475	Kai Poon	Los Angeles, CA
E-0476	Warren West	Bend, OR
E-0477	Catherine Amador-Locher	Kailua Kona, HI
E-0478	Marion Garms	Woodinville, WA
E-0479	David Fannin	Olive Hill, KY
E-0480	Jana Siciliano	Metuchen, NJ
E-0481	Nancy Evans	Los Osos, CA
E-0482	John Pedersen	Nampa, ID
E-0483	Jeff Bridges	Littleton, CO
E-0484	Stephanie Berry	Fort Bragg, CA
E-0485	Kathy Warner	Astoria, NY
E-0486	Karen Kortsch	Lake Bluff, IL
E-0487	Gwen Nolte	Barstow, CA
E-0488	Karla Linn Merrifield	Kent, NY
E-0489	Sophia Roberts	Carmel Valley, CA
E-0490	Kimmi Short	Phoenix, AZ
E-0491	Stacy Hughes	Graham, NC
E-0492	Diane Barnes	Rochester, NY
E-0493	Kate Steele	Burbank, CA
E-0494	Kim Merville	Pittsburgh, PA
E-0495	Kerri Barnhart	Norco, CA
E-0496	Janet Chafe	Canton, OH
E-0497	Taylor Marshall	Atlanta, GA
E-0498	Julie Burkes	Tucson, AZ
E-0499	Sunny Walter	Issaquah, WA
E-0500	Michael Woodsome	Hermosa Beach, CA
E-0501	Sheryl Dunn	San Diego, CA
E-0502	Eric Thompson	Houston, PA
E-0503	B. Jay	Santa Monica, CA
E-0504	Nancy Oliver	Los Angeles, CA
E-0505	Eric Rossman	Poughkeepsie, NY
E-0506	Karen Sewick	Downers Grove, IL
E-0507	David Avrahamson	Independence, MO
E-0508	Barry Abrams	New York, NY
E-0509	Dorothy Batten	Springfield, OR
E-0510	William Shuman	Fayetteville, AR
E-0511	Mariana Yanez	West Covina, CA
E-0512	Lou Detwiler	Pahrump, NV

Log #	Name	Location
E-0513	Sina McGriff	Trabuco Canyon, CA
E-0514	Travis Hylton	Kailua, HI
E-0515	Potter Karen	Elk Grove, CA
E-0516	Pauline Farmer	Euclid, OH
E-0517	Lewis H. Ellmer, Sr.	Virginia Beach, VA
E-0518	Gail Morehead	Reno, NV
E-0519	Andrea Todd	Temecula, CA
E-0520	Jacqueline Gallina	Howell, NJ
E-0521	Erin Fortier	Seattle, WA
E-0522	Robin Colna	Mantua, NJ
E-0523	Terry Barber	San Jose, CA
E-0524	L.B. Ho	San Francisco, CA
E-0525	Sherry Tessensohn	Spokane, WA
E-0526	Melissa Roberts	Seattle, WA
E-0527	Kim Nutting	Oak Creek, WI
E-0528	Ruth Vellensky	Princeton Junction. NJ
E-0529	Paul Greenbaum	Marina Del Ray, CA
E-0530	T. Girardi	Alexandria, VA
E-0531	Kim White	Vallejo, CA
E-0532	Norton and Saran Kirschbaum	Los Angeles, CA
E-0533	Tara Cook	Seattle, WA
E-0534	Julie Starr	So. Francisco, CA
E-0535	Kristov Fir	Hillsboro, OR
E-0536	Charlotte Stahl	Gresham, OR
E-0537	Uschi Gerschner	Portland, OR
E-0538	Alison Kohn	Chicago, IL
E-0539	Kristina Juarez	Ventura, CA
E-0540	Jean Melom	Minneapolis, MN
E-0541	Leslie Nicholson	Bend, OR
E-0542	Mary Sier	Manhattan, KS
E-0543	Cassandra Meyer	Minneapolis, MN
E-0544	Jane Drews	Arlington Hts., IL
E-0545	Mike Sexton	Junction City, KS
E-0546	Thadeus Dziekonski	Buffalo, NY
E-0547	Linda Hendrickson	Canby, MN
E-0548	Hy Libby	Aptus, CA
E-0549	Frank Wheeler	San Diego, CA
E-0550	Durelle Smith	Anchorage, AK
E-0551	Mary and John Harte	Berkeley, CA
E-0552	Tracy Smith	Cumming, GA
E-0553	Doreen Adams	Malibu, CA
E-0554	Jennifer Joray	Superior, CO
E-0555	David Kancsar	Las Vegas, NV
E-0556	Dianna Perrotto	Lexington, NC

Log #	Name	Location
E-0557	Sara King	Kent, WA
E-0558	Evelyne-Valerie D’Arnal	Valley Village, CA
E-0559	Steve Robey	Solana Beach, CA
E-0560	Dane Nance	Asheboro, NC
E-0561	Katherine Pierce	Albuquerque, NM
E-0562	Monica Willett	Harrisburg, PA
E-0563	Denee Caterson	Davis, CA
E-0564	James Pluta	Valley Village, CA
E-0565	Rob Seltzer	Beverly Hills, CA
E-0566	Christine Mikalson	Farmington, WA
E-0567	Patrick Hodge	Tulsa, OK
E-0568	Maureen Zeiss	New York, NY
E-0569	Margaret Kent	Lancaster, PA
E-0570	Pamela Dugan	Pikesville, MD
E-0571	Frances Smith	Charlotte, NC
E-0572	Jill Komoto	Santa Barbara, CA
E-0573	Luiz Perez	East Hampton, NY
E-0574	Maya Moiseyev	Palo Alto, CA
E-0575	Laura Murphy	Irvine, CA
E-0576	Steven M. Schroeder	West Bend, WI
E-0577	Sheila Balch	Brattleboro, VT
E-0578	Debbie Maynard	Monroe, OR
E-0579	Stephanie Schalz	Tucson, AZ
E-0580	Charliese Peck	Levittown, NY
E-0581	David Brown	Charlotte, NC
E-0582	James McLennan	Tocoma, WA
E-0583	Jane Olson	Sidney, MT
E-0584	Shirley Vincent	Montclair, NJ
E-0585	Sam E. Asseff, Jr.	Colorado Springs, CO
E-0586	Shelley Gladwin	Ann Arbor, MI
E-0587	William Whitworth	Bryn Mawr, PA
E-0588	Daniel Hatfield	Portland, OR
E-0589	John Beck	Manahawkin, NJ
E-0590	Jed Holtzman	San Francisco, CA
E-0591	Dick Scheible	Palo Alto, CA
E-0592	Deanna Allen	Laguna Niguel, CA
E-0593	Lisa Gunter	El Granada, CA
E-0594	John Melnick	Oakland, CA
E-0595	Reeta Roo	Sebastopol, CA
E-0596	Brett Pohanka	Maryville, TN
E-0597	Jim Gerlach	Winston-Salem, NC
E-0598	Sharon Becker	Osceola, IA
E-0599	Darynne Jessler	Valley Village, CA
E-0600	Philip H. De Felice	Oceanside, NY

Log #	**Name**	**Location**
E-0601	Jennifer Grace	Pleasant Hill, CA
E-0602	Lea Harper	Oakdale, PA
E-0603	Andrea Patterson	Vallejo, CA
E-0604	Linda Noriega	Huntington Beach, CA
E-0605	Corinne Jung	Chicago, IL
E-0606	Jeanette Galloway	El Cajon, CA
E-0607	Connie Crusha	El Cajon, CA
E-0608	Sherilyn Jackson	Chatsworth, CA
E-0609	Kristen Weiss	Thousand Oaks, CA
E-0610	Barbara L. Smith	Sweet Home, OR
E-0611	Bennett Callow	Columbia, MD
E-0612	Alice Turney	San Jose, CA
E-0613	Mary O'Connell	Guerneville, CA
E-0614	Sue Zimmerman	Hornell, NY
E-0615	Melissa Santucci	North Hollywood, CA
E-0616	Mary La Rosa	Garden City South, NY
E-0617	John Kuehn	Mayville, WI
E-0618	Lewis-Harris Jacquelyn	St. Louis, MO
E-0619	Dr. Todd Walker	South Milwaukee, WI
E-0620	Lynnette Stewart	Champaign, IL
E-0621	Norma Cumbow	Moreno Valley, CA
E-0622	Abby Harms	Topeka, KS
E-0623	Paul Katan	Long Beach, CA
E-0624	Wendy Lochner	Sayville, NY
E-0625	Charidy Bean	Bauxite, AR
E-0626	Patrick Garnett	Lexington, KY
E-0627	Mary Shaffer	Boyne Falls, MI
E-0628	Susie Weigman	Weston, MO
E-0629	Art Zernis	Rego Park, NY
E-0630	Laura Pakaln	Nyack, NY
E-0631	Priscilla Cloud	Stevensville, MD
E-0632	Michael Crosson	San Rafael, CA
E-0633	Shana Lack	Erlanger, KY
E-0634	Carol Smith	Winnetka, CA
E-0635	Laura Pinedo	El Monte, CA
E-0636	Susan Richards	Del Mar, CA
E-0637	Haley Champion	Palo Alto, CA
E-0638	Elizabeth Johnstan	Denver, CO
E-0639	Jason Trout	St. Paul, MN
E-0640	Robert Dufour	Martinsburg, WV
E-0641	Dianne Grenland	Vacaville, CA
E-0642	Robert Sventy	Edison, NJ
E-0643	Patricia Youngson	Boulder, CO
E-0644	Ed Scerbo	Peekskill, NY

Log #	**Name**	**Location**
E-0645	Jason Lewis	Toms River, NJ
E-0646	David Judge	Iowa City, IA
E-0647	Jodee Chizever	North Brunswick, NJ
E-0648	Susan and Larry Mudrey	Castleton, NY
E-0649	Benjamin Boorman	Memphis, TN
E-0650	D. William Sinnett	Maryland Heights, MO
E-0651	Keir Mussen	Annandale, VA
E-0652	Margaret Rhoat	Laurel, DE
E-0653	Heather Morrow	Richmond, KY
E-0654	Elaine Dunbar	Crossville, TN
E-0655	Lawrence Chleboski	Los Angeles, CA
E-0656	Rob Croskey	Lawrenceville, NJ
E-0657	Christy Metzner	Marquette, MI
E-0658	Adam Miller	Seattle, WA
E-0659	Jay Gassman	Medford, NY
E-0660	John Kerr	East Hampton, NY
E-0661	Kim Johnson	Livonia, MI
E-0662	David Sorensen	Flushing, NY
E-0663	Mike Pratt	South Woodstock, VT
E-0664	Elizabeth Bradford	St. Louis, MO
E-0665	Heather Allen	Saginaw, MI
E-0666	C. Johnson	Chickasha, OK
E-0667	Rebecca Saunders	Reedsport, OR
E-0668	Susan Goldin	Canaan, NY
E-0669	Michelle Hurd	Coeburn, VA
E-0670	Linda Rubick	CO
E-0671	Susan Silber	San Francisco, CA
E-0672	Arlene Kalinowski	Smithton, PA
E-0673	Nicole Safin	Irvine, CA
E-0674	Celine Nahas	Venice, CA
E-0675	Shawn Rorke-Davis	Phoenix, AZ
E-0676	Rose Wayman	Scotts Valley, CA
E-0677	Wesley Herrin	Boulder, CO
E-0678	Carol Liberatore	Fredericktown, PA
E-0679	Ryan Burkett	Mercer Island, WA
E-0680	Carlos Steffey	Hickory, NC
E-0681	Sharon Rivers	Rockville, MD
E-0682	Faye Krygsheld	Bolingbrook, IL
E-0683	Nancy Booth	West New York, NJ
E-0684	Bob Greenwood, Jr.	Independence, KS
E-0685	Greg Hofmann	San Jose, CA
E-0686	Charlene Root	Whittier, CA
E-0687	Suzanne Westgaard	Boulder, CO
E-0688	Eileen Conner	Gillett, PA

Log #	Name	Location
E-0689	Coralie Benton	Albany, OR
E-0690	Jane Viselli	San Mateo, CA
E-0691	Joan Mc Bride	Washington Township, NJ
E-0692	Maureen Gagnon	Hilton, NY
E-0693	Mary Baumer	Forked River, NJ
E-0694	Mary L. Flores	Milwaukeem WI
E-0695	Joe Rogers	Strafford, MO
E-0696	Annette Yerkovich	Citrus Hgts., CA
E-0697	Daniel Hinds	Indianapolis, IN
E-0698	Paul Belz	Oakland, CA
E-0699	Libby McQuiston	San Rafael, CA
E-0700	Huyen Nguyen	Lawrenceville, GA
E-0701	Daniel Watson	Hillsborough, NC
E-0702	Nancy Jenseth-Walter	Seattle, WA
E-0703	Joan Meijer	Los Angeles, CA
E-0704	Myran Denham	Center Line, MI
E-0705	Rebecca Urban	Vestal, NY
E-0706	Perry Davis	Princeton, NJ
E-0707	Esther M. Petty	San Jose, CA
E-0708	Carolyn Nickels	Gwynedd Valley, PA
E-0709	Pandora George	Manchester, MO
E-0710	Emily Monroe	Columbia, MO
E-0711	Jen Possa	Morgan Hill, CA
E-0712	Cory Brusseau	Sherman Oaks, CA
E-0713	Carrie Kube	Watertown, WI
E-0714	Debra Brinker	Dublin, OH
E-0715	Adrienne Brooks	GA
E-0716	Kanit Cottrell	St. Thomas, VI
E-0717	Judith Owen	Etna, CA
E-0718	Karen Lasher	Salida, CO
E-0719	Gwen Wolverton-Diggs	Williamsberg, VA
E-0720	Linda McElroy	Benicia, CA
E-0721	Erica Jayne Walsh	Perrysburg, OH
E-0722	Shawn Radcliffe	Philadelphia, PA
E-0723	Sarah Jane Hall	Burbank, CA
E-0724	Judy Estrada	Camarillo, CA
E-0725	Jonathan Schwartz	Pickerel, WI
E-0726	Claire Mikalson	Farmington, WA
E-0727	Robert Rinker	Oakland, CA
E-0728	Cathryn Robbins	Columbus, OH
E-0729	Charmaine Clapp	Rosemead, CA
E-0730	Carmen Miner	Medford, NJ
E-0731	Barbara Brown	Goodyear, AZ
E-0732	Catherine Knollmeyer	St. Louis, MO
E-0733	Sam Ronick	Marietta, GA
E-0734	Shannon Cummins	New Castle, PA
E-0735	Roxann Shadrick	Decatur, IL
E-0736	Diana Wendt	Oakland, CA
E-0737	Terry O'Neal	Virginia Beach, VA
E-0738	A. Delgallo	Monaca, PA
E-0739	Nancy Schafer	Louisa, VA
E-0740	Ellen Hazzard	Seattle, WA
E-0741	David Myers	Mattatuck, NY
E-0742	Adam Triplett	Montpelier, VT
E-0743	Steven Buchman	Red Bank, NJ
E-0744	Eda Da Silva	Sacramento, CA
E-0745	Nandita Shah	Silver Spring, MD
E-0746	Laurent Pacalin	Menlo Park, CA
E-0747	Candida Corbin	Lakeview, MI
E-0748	Susinn Macmerchys	Everett, WA
E-0749	Capt. Honk	Pillar Point, NY
E-0750	David Foster	San Francisco, CA
E-0751	Mara Pina	Seattle, WA
E-0752	Russell Cusick	Garrison, NY
E-0753	Jeanne Marie Wasilik	Brooklyn, NY
E-0754	Steven Loria	Garrison, NY
E-0755	Angela Richards Dona	Brooklyn, NY
E-0756	William DuSold	Arnold, MD
E-0757	Liane Chan	Buena Park, CA
E-0758	Mary Kalil	St. Louis Park, MI
E-0759	Stacey Citraro	Abingdon, MD
E-0760	Sonja Hannon	Albuquerque, NM
E-0761	Garrit Crouse, PhD	Nyack, NY
E-0762	Kayta Tracey	Taos, NM
E-0763	Teresa Wong	San Gabriel, CA
E-0764	Shawn Dicken	Beaverton, MI
E-0765	Kyle Lin	Arcata, CA
E-0766	Judy Stufflebeam	Oregon City, OR
E-0767	Maria Lynn Therese	Lincolnwood, IL
E-0768	Jenny Cappe	Baltimore, MD
E-0769	Ernesto De La Rosa	Chicago, IL
E-0770	Donna Campbell	San Rafael, CA
E-0771	Tukiko Nagayama	Irvine, CA
E-0772	Anita Smallwood	Gladstone, MO
E-0773	Brian Lutenegger	Madison, WI
E-0774	Marc Weber	New City, NY
E-0775	Deb McKinzie	Fort Collins, CO
E-0776	Shayla Paris	Anchorage, AK

Log #	Name	Location
E-0777	Debra Havill	Indianapolis, IN
E-0778	Monty Ellman	Morro Bay, CA
E-0779	Philippa Bergmann	Madison, WI
E-0780	Barbara Hogan	San Francisco, CA
E-0781	Kimberly Christensen	Seattle, WA
E-0782	Anne Warren	University Park, MD
E-0783	Steven Stocker	Germantown, MD
E-0784	Lance Biggers	Claremont, CA
E-0785	Terri Katz	Tuscon, AZ
E-0786	Paul Richard	Fairfax, CA
E-0787	Alice Bullard	Topeka, KS
E-0788	Alesia Vassallo	West Point, PA
E-0789	Susan Johnson	Helena, MT
E-0790	Ruth Jones	Ripon, WI
E-0791	Nelson E. Baumer	Ossining, NY
E-0792	Sylvia Cardella	Hydesville, CA
E-0793	Jonathan Markowitz	Lanaska, PA
E-0794	Nicolette Pawlowski	Chicago, IL
E-0795	Dante Joseph	Mesa, AZ
E-0796	Belinda Masse	Upland, CA
E-0797	John Fischer	Pacific Grove, CA
E-0798	Cathryn Bramble	Encino, CA
E-0799	Roberta Dempsey	Novi, MI
E-0800	Samantha Zabel	Waldorf, MD
E-0801	Linda Rethwisch	San Diego, CA
E-0802	Laura Dame	San Francisco, CA
E-0803	Vicky Ludwig	Lewiston, ID
E-0804	Chrissy Smart	IN
E-0805	Jane Jacobs	Shelton, WA
E-0806	Mark Bender	Indianapolis, IN
E-0807	Carl Pratt	Portland, OR
E-0808	Luana Kyle	Indio, CA
E-0809	Brian Fink	Brooklyn, NY
E-0810	Jessica Ma	Princeton, NJ
E-0811	Pat Guman	Lake Ariel, PA
E-0812	Mary Hope	Harrisburg, PA
E-0813	Michael Kovacs	SeaTac, WA
E-0814	Bettye Binder	Culver City, CA
E-0815	Tannis Phillips	Bartlesville, OK
E-0816	David Carr	El Cerritos, CA
E-0817	Patricia George	Camp Verde, AZ
E-0818	M. Davis	Marshall, VA
E-0819	Melissa Grimm	San Jose, CA
E-0820	Barbara Green	Clatskanie, OR
E-0821	Matthew Lebrato	San Francisco, CA
E-0822	Romona Lione	Fremont, CA
E-0823	Michael McCarty	Plain City, OH
E-0824	Michelle Clark	Nehalem, OR
E-0825	Marleen Dutra	Santa Cruz, CA
E-0826	Deborah Potirala	Chicago, IL
E-0827	Sande Greene	Kihei, HI
E-0828	Peter Tiffany	Fallon, NV
E-0829	Kyle Woodring	Rancho Santa Margarita, CA
E-0830	Jennifer Burkett	Chatham, IL
E-0831	Kristin Kirby	Seattle, WA
E-0832	Laura Harris	Murphy, NC
E-0833	Alan DaKak	Yorba Linda, CA
E-0834	Kathy Rakestraw	Gainesville, GA
E-0835	Jack Dwyer	Saugerties, NY
E-0836	Margarite DeAngelo	Glendale, CA
E-0837	Rebecca Megill	Hightstown, NJ
E-0838	Laura Anderson	Moses Lake, WA
E-0839	Dennis Clark	Escondido, CA
E-0840	S. Dooner	Bensalem, PA
E-0841	Carinne de Ciofalo-Guell	San Francisco, CA
E-0842	Doug Kufus	Palos Verdes, CA
E-0843	Alisa Kosheleff	Yellow Springs, OH
E-0844	Sherri Pickel	Ontario, CA
E-0845	Carrie Lynn Moylan	Springfield, OR
E-0846	Dennis Sweitzer	Coatesville, PA
E-0847	Glenn McGrew, II	Lakewood, CO
E-0848	Suzanne Michalski	Wausau, WI
E-0849	R. Walczyk, Jr.	Mt. Clemens, MI
E-0850	Ruth Bramall	Lake Stevens, WA
E-0851	Gail Harmon	Lima, OH
E-0852	Tom Jackson	Denver, CO
E-0853	William Burgess	Las Cruces, NM
E-0854	Honey Grodt	Des Moines, IO
E-0855	Holly Carpenter	Boise, ID
E-0856	Pat Duf	Chicago, IL
E-0857	Rick Ensminger	Apple Valley, MI
E-0858	John Newton	Carbondale, IL
E-0859	Renene Butler	Sharon, PA
E-0860	Marsha Coleman	Chapin, SC
E-0861	David Adams	Kansas City, MO
E-0862	Debbie Ebersold	Las Angeles, CA
E-0863	Virginia Salvin	Chippewa Falls, WI
E-0864	Steven Dennis	Carmel, CA

Log #	Name	Location
E-0865	Kristin Davis	Pleasanton, CA
E-0866	Linda C. Leghart	Jacobs Creek, PA
E-0867	Kevin Bayhouse	Boise, ID
E-0868	Mel Henshaw	San Diego, CA
E-0869	Jennifer Moffett	Columbus, OH
E-0870	Kym Buchholz	Grand Rapids, MI
E-0871	Shoshanah McKnight	Irvine, CA
E-0872	Emily Church	Louisville, KY
E-0873	Gene & Doris Peters	Mitchell, SD
E-0874	Grant Vecera	Indianapolis, IN
E-0875	Ellen Sweet	Lincoln, NE
E-0876	C. Maxwell, Jr.	Lenoir City, TN
E-0877	Elaine Burton	East Peoria, IL
E-0878	Meghan Mitzel	York, PA
E-0879	Kristina B.	Green Bay, WI
E-0880	Shawn Dugan	Ephrata, PA
E-0881	Matt Moore	Miller Place, NY
E-0882	Karen McAnnally	Bloomfield Heights, MI
E-0883	Patrick Trippany	Albany, NY
E-0884	Amanda Thomas	Hiram, OH
E-0885	Nan Leaman	Oak Harbor, WA
E-0886	April Burns	Michigan City, IN
E-0887	Deborah Engisch-Platt	Point Pleasant, PA
E-0888	Pec Indman	San Jose, CA
E-0889	Charles Mies	Elgin, IL
E-0890	Joel Coons	Redmond, WA
E-0891	Tabatha Scheinost	Oceanside, CA
E-0892	Christa Fairbrother	Langley, WA
E-0893	Glen Wilburn	Burbank, CA
E-0894	Joel Elio	Shirley, NY
E-0895	Cordelia Bowlus	Marina, CA
E-0896	Diane Ostheimer	Sandusky, OH
E-0897	James DeGray	Willowick, OH
E-0898	Norm Cohen	Linwood, NJ
E-0899	Ryan Oldfield	Fullerton, CA
E-0900	Susan Zaborsky	Warren, OH
E-0901	Lee Dillon	Minneapolis, MN
E-0902	Maria Dann	Moravia, NY
E-0903	Robert Blyman	Ronkonkoma, NY
E-0904	Wayne Tustin	Santa Barbara, CA
E-0905	Jennifer Wallace	Seattle, WA
E-0906	Jeff Whitty	La Mesa, CA
E-0907	Ivona Xiezopolski	Kaneohe, HI
E-0908	B. Geary	Tulsa, OK

Log #	Name	Location
E-0909	Angela Schaab	Boulder, CO
E-0910	Timothy Marsh	Walnut, CA
E-0911	D. L. Bostaph	Erie, PA
E-0912	Charlotte Cornwell	Venice, CA
E-0913	Joli Forth	San Leandro, CA
E-0914	Deborah Davenport	Tracy, CA
E-0915	Ulla Sarmiento	Moorpark, CA
E-0916	Jodi Burns	Arvada, CO
E-0917	Edwin & Helen Waerner	Topeka, KS
E-0918	Gina Altamura	Napa, CA
E-0919	Robert M. Lowen, MD	Palo Alto, CA
E-0920	Katy Simmons	Omaha, NE
E-0921	Alfred Gramstedt	Lodi, NJ
E-0922	George Priola	Staten Island, NY
E-0923	Michael Tichenor	Portland, OR
E-0924	Mira Ghoshal	Beacon, NY
E-0925	Debby Bradford	Hopland, CA
E-0926	Sara Jones	Hoboken, NJ
E-0927	Kali Rowe	Tuscon, AZ
E-0928	N. Wicks	Wayne, NJ
E-0929	Mike Ware	Whitestone, NY
E-0930	Jon Wallace	Langley, WA
E-0931	Donna Zoll	CA
E-0932	Janice Foss	Oakland, CA
E-0933	Michael Filipiak	Milwaukee, WI
E-0934	Sherry Strashensky	Johnstown, PA
E-0935	Kzena Ross	Ely, MN
E-0936	Claire Watson	Antioch, CA
E-0937	Maggie Lakota-Ryan	Chicago Heights, IL
E-0938	Connie Schnepp	Van Wert, OH
E-0939	Timothy Johnston	Marina, CA
E-0940	Susanna Isbell	Oneonta, NY
E-0941	Brian Walter	St. Louis, MO
E-0942	John Seider	Oneonta, NY
E-0943	Diann Simmons	Covelo, CA
E-0944	Beth & Carl Gwinn	Goleta, CA
E-0945	Terri Jordan	Bloomington, IN
E-0946	Denise Cronin	Imperial, MO
E-0947	Emily Sharron Thomas	Ukiah, CA
E-0948	Donna Lewalski	AZ
E-0949	Julie Arfsten	Petaluma, CA
E-0950	Kathy Manning	Woodbridge, VA
E-0951	Sharon Shadbolt	Tahuya, WA
E-0952	Ryan Tauber	Eureka, CA

Log #	Name	Location
E-0953	Dennis J. Lenz	Massapequa, NY
E-0954	Anisha, Hyers	Blackbear, GA
E-0955	Denise Lalime	Chester, VA
E-0956	Lauren Ragsac	San Diego, CA
E-0957	Patricia Chang	Indianapolis, IN
E-0958	Mary South	Huntington, WA
E-0959	Jennifer Hickman	Springfield, MO
E-0960	Jeanne Schieferstein	Smithtown, NY
E-0961	Marie Gutkowski	Ridgewood, NY
E-0962	Donna Macro	Auburn, NY
E-0963	Lawrence A. Krantz	Bemidji, MN
E-0964	Pamela Murphy	Ojai, CA
E-0965	Summer Starr	Makawao, HI
E-0966	Glen Zorn	Everett, WA
E-0967	Christopher Pelham	Brooklyn, NY
E-0968	Elyse Coulson	Santa Rosa, CA
E-0969	Louise Morris	Holly, MI
E-0970	Samantha Derr	Sierra Vista, AZ
E-0971	Anita Baekey	Fountain Hills, AZ
E-0972	John Yost	Vallecito, CA
E-0973	Alex Kozubov	Campbell, CA
E-0974	Karine Kerns	Spanaway, WA
E-0975	Danielle Leslie	Rio Grande, NJ
E-0976	Marilyn Rajokovich	San Francisco, CA
E-0977	Beth Yocam	West Linn, OR
E-0978	Karen Bollaert	Brooklyn, NY
E-0979	Jessica Amos	Cambridge, OH
E-0980	Shelley Rothwell	Ypsilanti, MI
E-0981	George David	Claremont, CA
E-0982	Jan Lochner	Sebastopol, CA
E-0983	Tyra Taylor-Bell	Chicago, IL
E-0984	David Dewenter	Keaau, HI
E-0985	Amy Lokensgard	MN
E-0986	Joyce Stenberg	Irvine, CA
E-0987	Brian Camp	Rhododendron, OR
E-0988	Patricia Meyer	San Mateo, CA
E-0989	Erika Miller	Oronogo, MO
E-0990	Richard Artley	Grangeville, ID
E-0991	Patricia Evans	Las Vegas, NV
E-0992	Charles Chun	Bloomington, IL
E-0993	Mikasa Moss	Douglasville, GA
E-0994	Frances M. Pashalian	Washington, MI
E-0995	John Ucciferri	Goleta, CA
E-0996	Rick Esmay	Overland Park, KS
E-0997	Edwina Ekstrom	Belvidere, NJ
E-0998	Joshua Valecnia	Hemet, CA
E-0999	Lisa Rothweiler	Millersville, PA
E-1000	Stephen Jacobs	Los Angeles, CA
E-1001	Linda Bost	Escondido, CA
E-1002	Kathi Skidmore	North Highlands, CA
E-1003	Teresa McAllister	Burlington, IA
E-1004	Gabriele Lavermicocca	San Diego, CA
E-1005	Nicole Auten	Granada Hills, CA
E-1006	Mohan Attar	Eugene, OR
E-1007	Melanie Sherwinski	Schererville, IN
E-1008	Diana Sonne	Seattle, WA
E-1009	Geoff Kelley	Seattle, WA
E-1010	Joyce Wippler	San Diego, CA
E-1011	Peter Kutra	Vienna, VA
E-1012	Brandon Ballengee	New York, NY
E-1013	L. Daniels	North Little Rock, AR
E-1014	Jim Lethbridge	Seattle, WA
E-1015	Sarah Bexell	Atlanta, GA
E-1016	Carol Mulder	Scottsdale, AZ
E-1017	Linda Linderman	Phoenix, AZ
E-1018	Alan Stewart, DVM	Oakland, CA
E-1019	Jessica Lasky	North Caldwell, NJ
E-1020	Lyn Reed	Corralitos, CA
E-1021	Justine Shaffer	Pleasanton, CA
E-1022	Cheryl Costigan	Athol, ID
E-1023	Shannon, Edwards	Desloge, MO
E-1024	William Linas	San Diego, CA
E-1025	Andy Christenson	Dayton, OH
E-1026	Warren Fieldhouse	San Jacinto, CA
E-1027	Brett Davis	Minneapolis, MN
E-1028	Nana Sato	Long Beach, CA
E-1029	Candace Collins	Chula Vista, CA
E-1030	Andrew Yu	Atlanta, GA
E-1031	Eli Ellsworth	San Jose, CA
E-1032	Audrey Johnson	Azusa, CA
E-1033	Beverly Miller	Lebanon, OR
E-1034	Kate Gervits	Bronx, NY
E-1035	Lisa Choquette	Kailua-Kona, HI
E-1036	Danielle Erwin	Mission Viejo, CA
E-1037	Leslie De Palo	Novato, CA
E-1038	Tony Griglock	Pittston, PA
	9-14-02	
E-1039	Tricia Smith	Eau Claire, WI

Log #	Name	Location
E-1040	Jim Steitz	Logan, UT
E-1041	Laura Derek	CA
E-1042	J. Pfaehler	Crestline, CA
E-1043	Lisa Morrison	Oakland, CA
E-1044	Harriet Helman	Ronkonkoma, NY
E-1045	Karin Leigh Barthold	Mountain Lake Terrace, WA
E-1046	Lauran Gangl	Palos Verdes, CA
E-1047	Alexandra Murray	Okalahoma City, OK
E-1048	Robert Janusko	West Milford, NJ
E-1049	Breana Wheeler	San Francisco, CA
E-1050	T. Monroe	RSM, CA
E-1051	Sheila Swigert	Staten Island, NY
E-1052	Amenounve Follykue	Lome, NY
E-1053	Tim Manring	WA
E-1054	Debbie Fray	Valparaiso, IN
E-1055	Timothy Bruck	Mentor, OH
E-1056	Judy Sandlin	Advance, NC
E-1057	Alexis Blaess	San Francisco, CA
E-1058	Jeannine Coleman	Easley, SC
E-1059	Ellen Perchonock	Haverford, PA
E-1060	Mary Cherry	Bronx, NY
E-1061	Robert E. Klemm	Binghamton, NY
E-1062	Michael McGath	Apple Valley, CA
E-1063	Carmen T. Santasania	State College, PA
E-1064	Jessica Mastrogiovanni	Bound Brook, NJ
E-1065	Ted Nemeth	Forest Hills, NY
E-1066	Cathy Arnett	Fairmont, WV
E-1067	Paul Moss	White Bear Lake, MN
E-1068	Cynthia Armour	Milton, DE
E-1069	Marlena Lange	Middletown, NY
E-1070	Penny Hart	Rio Grande, NJ
E-1071	Susan Musialowski	Big Bay, MI
E-1072	Lois Gorden	Winona, MN
E-1073	William Ryan	Ludlow, VT
E-1074	Barbara Fiedler	Lake Hiawatha, NJ
E-1075	Scott Diehl	South Burlington, VT
E-1076	Jo Vandiver	Lewes, DE
E-1077	Carolyn Sundstrom	PA
E-1078	Joy Loyd	Garner, NC
E-1079	Steven Mann	Lincoln Park, NJ
E-1080	Clare Petosa	Manasquan, NJ
E-1081	Stacy True	Leland, NC
E-1082	Lelia Cosimbescu	Rochester, NY
E-1083	Laura Lindemann	Bogota, NJ

Log #	Name	Location
E-1084	James R. Beilstein	Medford, NY
E-1085	Diana Wittenbreder	Flagstaff, AZ
E-1086	Tybee Collins	Winston Salem, NC
E-1087	Dean Hey, II	Lexington Park, MD
E-1088	Mary Haan	Ann Arbor, MI
E-1089	Tenja Daniels	La Crosse, WI
E-1090	Howard Hunt	Elmira, NY
E-1091	Deb Taylor	PA
E-1092	Scott Hoffman	Cincinnati, OH
E-1093	Chris Freitag	Amity Harbor, NY
E-1094	Kathy Klausing	Cincinnati, OH
E-1095	Diana Hess	Lafayette Hill, PA
E-1096	Cynthia Crouch	Culloden, WV
E-1097	Jeff Phillips	Fredericksburg, VA
E-1098	Melody Westlake	Trimble, OH
E-1099	Patricia Baldwin	Red Mountain, CA
E-1100	Meghan Hope	Falls Church, VA
E-1101	Evie Mendoza	New York, NY
E-1102	Benjamin Nowicki	Chicago, IL
E-1103	Bruce Noll	Blue Point, NY
E-1104	Kristine Norris	Ionia, MI
E-1105	Barbara Rufe	Alexandria, VA
E-1106	Julie Bru	Chevy Chase, MD
E-1107	Jane Adler	Santa Monica, CA
E-1108	Sharon Cairns	Tulsa, OK
E-1109	Eva Huston	New York, NY
E-1110	Diana Kaye	Elizabeth, IN
E-1111	Deborah Pflanz	Medford, OR
E-1112	Daniel Vice	Washington, DC
E-1113	Kelly Carnahan	Charlotte, NC
E-1114	Judy Kempthorn	Cuyahoga Falls, OH
E-1115	Ruth Steffey	Donalds, SC
E-1116	Jeanie Cook	Bettendorf, IA
E-1117	Pam Longobardi	Atlanta, GA
E-1118	Luke Shafnisky	Coplay, PA
E-1119	Janet Hutto	Tulsa, OK
E-1120	Bradley Higgins	Roslyn Heights, NY
E-1121	Glen Thiel	Oak Park, IL
E-1122	Diane Vigilante	Fair Haven, NJ
E-1123	Renee Dolney	Pittsburgh, PA
E-1124	John Commiskey	Ithaca, NY
E-1125	Jessie DeWeese	Columbus, IN
E-1126	Kathleen Moore	Buffalo, NY
E-1127	Venus Rose	Teaneck, NJ

Log #	Name	Location
E-1128	Debbi McMillan	Dillonvale, OH
E-1129	Peggy Witt	Toronto Ontario, Canada
E-1130	Beth Rockwell	Erie, PA
E-1131	Jody Day	Dearborn Heights, MI
E-1132	Donald Slaiter	Pacific Grove, CA
E-1133	Pat Doran	Seattle, WA
E-1134	Brenda Seldin	New York, NY
E-1135	Pam Anderson	Rochester, NY
E-1136	Rita Bogolub	Berwyn, IL
E-1137	Tony Greiner	Stone Mountain, GA
E-1138	Robin Kissinger	Reisterstown, MD
E-1139	Georgia Evans	Pittsford, NY
E-1140	Barbara Stewart	Harrison, NY
E-1141	Michelle Owen	Indianapolis, IN
E-1142	Micheal Pacholski	Toledo, OH
E-1143	Jay Gilchrist	Nashville, TN
E-1144	Stephanie Stone	Kansas City, MO
E-1145	Connie Vakulich	Reno, NV
E-1146	Kim Tostenson	Evansville, MN
E-1147	Lady Terrah Rose Nelson	Marana, AZ
E-1148	Sandy Schepis	Atlanta, GA
E-1149	Jesse Armaline	Lakewood, OH
E-1150	Don Timmerman	Park Falls, WI
E-1151	Robert Korman	Madison, WI
E-1152	Gloria Chacon	Taylor, MI
E-1153	Barb Wilus	Versailles, MO
E-1154	Jeri Grant-Miller	Plymouth, MN
E-1155	Jeanine Clark	St. Charles, IL
E-1156	Elaine, Koplik	Albany, NY
E-1157	Tammy McDonald	Rock Island, IL
E-1158	Mark Koplik	Albany, NY
E-1159	Kathleen Adams	Hamilton, NJ
E-1160	Donna Fetty	Adena, OH
E-1161	Casey Clark	Wellfleet, MA
E-1162	Naima Shea	Grass Valley, CA
E-1163	Carla Madarena	Ashtabula, OH
E-1164	Ray Schraft	Angola, NY
E-1165	Brenda Exline	Green Valley, AZ
E-1166	Laura Hill	Port Jefferson, NY
E-1167	Helen Charbonneau	Marietta, SC
E-1168	Angela Cornelio	Chicago, IL
E-1169	Keith Fisher	Ardsley, PA
E-1170	Leanne Runnals	Burton, MI
E-1171	Sandi Gill	Charleston, WV

Log #	Name	Location
E-1172	Rafi Levavy	Maplewood, NJ
E-1173	Randall Collins	New York, NY
E-1174	Lois Kink	Castile, NY
E-1175	Mike Taylor	St. Paul, MN
E-1176	Barbara and Scott Snider	Buena Park, CA
E-1177	Ryan Sunshine	Blacksburg, VA
E-1178	Stephen Fuller	Norfolk, VA
E-1179	Georgina Mueller	Fairfield, CA
E-1180	Thomas Stephenson	St. George, UT
E-1181	Becky Fenske	Chokio, MN
E-1182	Bill Quinlan	Oyster Bay, NY
E-1183	Kathy Pearson	Santa Rosa, CA
E-1184	Sarah Dixon	Beaufort, NC
E-1185	Nancy Jensen Brown	Neenah, WI
E-1186	Elora Gabriel	Ashville, NC
E-1187	Jodi Fuchs	Santa Fe, NM
E-1188	Joy Keithline	New York, NY
E-1189	Martin Stevenson	Santa Barbara, CA
E-1190	M. Zawoyski	Pittsburgh, PA
E-1191	Anita Pesec	Mentor, OH
E-1192	Tera Gandy	Springfield, IL
E-1193	Jonathan Ernst	Oceanside, CA
E-1194	Nany Morgan	Walnut Creek, CA
E-1195	Chris Gargoyle	Atlanta, GA
E-1196	Korina Branson	Fordland, MO
E-1197	John Sullivan	Palo Alto, CA
E-1198	Maria DiFiore	Chicago, IL
E-1199	John van der Does	New York, NY
E-1200	Gina Fedon	Olathe, KS
E-1201	Holly Dyer	Troy, MI
E-1202	Gloria Miller	Sarnia, Canada
E-1203	Elza Behrens	Saluda, NC
E-1204	Jonathan Rigule	Rochester Hills, MI
E-1205	D. Timothy Shoup	San Diego, CA
E-1206	Mary Krane Derr	Chicago, IL
E-1207	Trisha Towanda	Olympia, WA
E-1208	Lauren Lawson	Richmond, KY
E-1209	Ashley Neece	Clinton, IA
E-1210	Jo Ann Van Meter	Topeka, KS
E-1211	Leon Trumpp	SE Dalia, MO
E-1212	Theresa Boedeker	St. Charles, MO
E-1213	Janet Pearson	Oneonta, NY
E-1214	Susan Evilsizer	Elyria, OH
E-1215	Cynthia Ortiz	Hackensack, NJ

Log #	Name	Location
E-1216	Lynn Kisinger	Arapaho, OK
E-1217	Holly Eaton	West Windsor, NJ
E-1218	Jim Mays	Load, KY
E-1219	Terrell Wexler	Aston, PA
E-1220	Jennifer Leano	Louisville, KY
E-1221	Eadie Kelly	Sewaren, NJ
E-1222	James Tinsley	Linn Creek, MO
E-1223	Janine Alderete	Beale AFB, CA
E-1224	Knute Horwitz	Chicago, IL
E-1225	James Salter	Minneapolis, MN
E-1226	Alfredo Kuba	Mt. View, CA
E-1227	Lenore Rodah	South Pasadena, CA
E-1228	Matt Kress	Laguna Beach, CA
E-1229	Kimberly Funk	Westminister, MD
E-1230	Rae Bauman	Boise, ID
E-1231	Maria Helscel	Massillon, OH
E-1232	Karl Hunting	Succasunna, NJ
E-1233	Yolanda Guevara	Jamaica, NY
E-1234	Ed Guevara	Jamaica, NY
E-1235	Rosalie Hewitt	Norwich, NY
E-1236	Rhiaman Shae	Toledo, OH
E-1237	Farrah Kusmin	Philadelphia, PA
E-1238	Mary Dyer	Troy, MI
E-1239	Andrew York	New York, NY
E-1240	Rebecca Weinschel	Norfolk, VA
E-1241	Ferdinand Kutheis	O'Fallon, MO
E-1242	Christina Ross	Beachwood, OH
E-1243	Emily Hoel	Libertyville, IL
E-1244	John Morgan	Charlottesville, VA
E-1245	Ron Pearson	Grayslake, IL
E-1246	Sarah Davis	Salton City, CA
E-1247	Emily van der Harten	Las Vegas, NV
E-1248	Dorothy Fersch	Lyndhurst, NJ
E-1249	Laura Andras	Strongsville, OH
E-1250	Gayle Eddy	Mount Holly, NJ
E-1251	Mark Ziff	New Hope, PA
E-1252	Katie Pritchett	Grand Junction, CO
E-1253	William Kellner	Valley Center, CA
E-1254	Jesse Counterman	Sioux City, IA
E-1255	Theresa Perenich	Athens, GA
E-1256	Catherine Barron	Ellisville, MO
E-1257	Ellen Bohles	Fairview, OR
E-1258	Alison Petretti	Jekyll Island, GA
E-1259	Jennifer Blair	Los Angeles, CA
E-1260	Sheryl Griffiths	Marietta, GA
E-1261	Lisette Rushing	Covington, GA
E-1262	Craig Peden	Redwood City, CA
E-1263	Holly Dyer	Troy, MI
E-1264	Jim Toth	Walton Hills, OH
E-1265	Sara Deyo	Nederland, CO
E-1266	Gloria Mason	Ferrum, VA
E-1267	Barbara Lau	San Francisco, CA
E-1268	Mark Bishton	Bloomfield, IN
E-1269	Kathleen Kelly-Hoffman	Green Bay, WI
E-1270	John Murphy	Great Falls, VA
E-1271	Sebastian Mork	Santa Barbara, CA
E-1272	Judith Springer	Exton, PA
E-1273	Clas Fiskerud	Edgewater, NJ
E-1274	Joan Kent	Sonoma, CA
E-1275	Richard Uniszkiewicz	Astoria, NY
E-1276	Paula Chihill	Greenville, SC
E-1277	Sandy Slichter	Mill Valley, CA
E-1278	Heidi Packard	Maple Shade, NJ
E-1279	Stephen Jones	Walkersville, MD
E-1280	Carlos Alberto Soria	Linden, NJ
E-1281	Michael Weintraub	Goleta, CA
E-1282	Dana Atnip	Oak Park, MI
E-1283	Steph English	Duke Center, PA
E-1284	Kristin Kiefer	Pacific Palisades, CA
E-1285	Sauwah Tsang	North Hollywood, CA
E-1286	Connie Boitano	Seattle, WA
E-1287	Peter Brunette	Walnut Creek, CA
E-1288	Katherine Babiak	New York, NY
E-1289	Kevin Sims	New York, NY
E-1290	Rachel Wolf	Santa Cruz, CA
E-1291	Albert Albanece	Chicago, IL
E-1292	Amy Prieskorn	Englewood, CO
E-1293	James & Cathryn Morrow	State College, PA
E-1294	Bobbie Murr	Portland, OR
E-1295	N. Ashton	Haddonfield, NJ
E-1296	Paula Flanagan	Hacienda Heights, CA
E-1297	Ann Drechsler	Halewia, HI
E-1298	Sharon Midcap	Dover, DE
E-1299	Jacqueline Mohan	Hillsborough, NC
E-1300	Heidi Holeman	Norman, OK
E-1301	Jorden Woods	San Jose, CA
E-1302	Alexandra Brenda Wing	WA
E-1303	Maria Ikola	Manassas, VA

Log #	Name	Location	Log #	Name	Location
E-1304	Sandy Gubin	North Bergen, NJ	E-1348	Adam Johnson	Ann Arbor, MI
E-1305	Hugh Harkins	Kent, WA	E-1349	Harmony Wilkins	Bethleham, PA
E-1306	Tina Schvejda	North Haledon, NJ	E-1350	Leslie Peckler	Wausau, WI
E-1307	Cynthia Merrow	Inkster, MI	E-1351	Rev. Debra Lippitt	Collingdale, PA
E-1308	George Kretschmer	Elgin, IL	E-1352	Tara Deutsch	Burlington, WA
E-1309	Pam Bixter	Chicago, IL	E-1353	Vivian Blevins	Silver Spring, MD
E-1310	Natasha & Noah Brenner	Jericho, NY	E-1354	Judy Maloy	Winston Salem, NC
E-1311	Emma Gib	White Plains, NY	E-1355	Mark Smith	Covina, CA
E-1312	Dirk van Putten	Half Moon Bay, CA	E-1356	Janet Feutz	Reston, VA
E-1313	Katharine Treap	Asheville, NC	E-1357	Stephen Baker	York, PA
E-1314	Maxine Jones	Barbourville, KY	E-1358	Gena Muller	Newport, MI
E-1315	Darryl Braun	Inkster, MI	E-1359	Janice Wilfing	Springfield, OH
E-1316	Matthew McGuire	Cheshire, CT	E-1360	Bernadette McNally	Columbia, NJ
E-1317	Elaine Matthews	Burbank, CA	E-1361	Nia Sopiwnik	Minneapolis, MI
E-1318	Kathy Kowalchick	Gaithersburg, MD	E-1362	Don Steinke	Franksville, WI
E-1319	Ann Fonfa	New York, NY	E-1363	Laura Seraso	La Crescenta, CA
E-1320	Ellen Kolasky	Ann Arbor, MI	E-1364	Steve Phillips	Napa, CA
E-1321	Jill Helwig	Denver, CO	E-1365	Nicholas Lubofsky	Highlands Ranch, CO
E-1322	Michael Meyers	Kawkawlin, MI	E-1366	Marilyn McDowall	East Lansing, MI
E-1323	Syd Southworth	Syracuse, NY	E-1367	Shawn Janzen	Carpentersville, IL
E-1324	Christine Lewis	KY	E-1368	Florence O'Brien	Issaquah, WA
E-1325	Ashley D'Angelo	Midway, PA	E-1369	Pattee Gregory	Keystone, SD
E-1326	Kat Cirelli	Bullhead City, AZ	E-1370	So Young Park	New York, New York
E-1327	Kent Wallace-Meggs	Los Angeles, CA	E-1371	Kate Watson	Wayne, PA
E-1328	Philip Meininger	New Brighton, MN	E-1372	Cynthia Hogan	Salem, OR
E-1329	Holly Schmidt	Machesney Park, IL	E-1373	Mary Baran	Oakland, CA
E-1330	Kristen Snyder	Depew, NY	E-1374	David Potter	Klamath Falls, OR
E-1331	Martine Ferguson	Laurel, MD	E-1375	Michael McFarland	Fresno, CA
E-1332	Jill Strawder-Bubala	Eugene, OR	E-1376	Stephen Sylvester	Chicago, IL
E-1333	Dorothy A. Roux	Magalia, CA	E-1377	Harry Quade	Baltimore, MD
E-1334	Kari Forrest	Chapel Hill, NC	E-1378	Carlin Howe	Ellicott City, MD
E-1335	Laura Callier	Denver, CO	E-1379	Amy Elbert	Castro Valley, CA
E-1336	Jan Major	New York, NY	E-1380	Jennifer Elrod	Buchanan, MI
E-1337	Julian Kesterson	Glasgow, VA	E-1381	Amy Bodmann	Washington, DC
E-1338	Christina Babst	West Hollywood, CA	E-1382	Susan Folsom	Lawndale, CA
E-1339	Rachael Manning	Mechanicsburg, PA	E-1383	Linda Wilson	Sitka, AK
E-1340	Frederic Noyes	Syracuse, NY	E-1384	Rita Ryan	Madison, TN
E-1341	Barb Wold	Albuquerque, NM	E-1385	Adam Smith	Norman, OK
E-1342	Andrew Vetter	Canon City, CO	E-1386	Kim LaBadie	East Stroudsburg, PA
E-1343	Kevin Brinkofski	Tecumseh, MO	E-1387	Victoria Velinski	Chicago, IL
E-1344	Mikki Chalker	Binghamton, NY	E-1388	Pam Allee	Portland, OR
E-1345	Bethany Sanders	Murray, KY	E-1389	Amber Stonik	Bellingham, WA
E-1346	Robert J. Parra	Lansdale, PA	E-1390	Ralph Holm	Seattle, WA
E-1347	Leah Hockenbrouch	Geneva Township, OH	E-1391	Angee Tigner	Columbus, OH

Log #	Name	Location
E-1392	Ted Kraynick	San Jose, CA
E-1393	Andrew Reich	Los Angeles, CA
E-1394	Jennifer Ball	Arcata, CA
E-1395	Victoria Bookstein	Davis, CA
E-1396	Whitney Helms	Woodbury, MN
E-1397	Martin Burwell	St. Clair Shores, MI
E-1398	Kathryn Morgan	Oak Creek, WI
E-1399	Matthew Schweitzer	Richland Center, WI
E-1400	Kerry Burkhardt	Kenmore, NY
E-1401	Robin DeWeese	Villas, NJ
E-1402	Beau Kayser	Capitola, CA
E-1403	Monnie Efross	Pinole, CA
E-1404	Haldane Morris	Santa Monica, CA
E-1405	Kathy C. Oppenhuizen	West Olive, MI
E-1406	Farid De La Ossa	Chicago, IL
E-1407	Jeff Pollack	Atlantic Beach, NC
E-1408	Mark Sweitzer	Louisville,CO
E-1409	Lana Graff	Roseburg, OR
E-1410	Russell Kamin	Toledo, OH
E-1411	Michelle Katja Werlich	Westlake Village, CA
E-1412	Heather Casssara	Huntington Beach, CA
E-1413	Kim Farris	Studio City, CA
E-1414	Kristin Stiff	Santa Barbara, CA
E-1415	Jay Walton	Arboles, CO
E-1416	Jeanne Minor	Gaithersburg, MD
E-1417	David Lester	Albuquerque, NM
E-1418	Arthur Moss	Honolulu, HI
E-1419	Tess Pillay	Minneapolis, MN
E-1420	Beth Long	Tuscon, AZ
E-1421	Paul Mirkarimi	Sunol, CA
E-1422	Holly Owen	Goleta, Ca
E-1423	Douglas Montgomery	San Francisco, CA
E-1424	Ellen Daugherty	Niagara Falls, NY
E-1425	Juliann Rule	Avon, MN
E-1426	Heidi Evans	La Center, WA
E-1427	Bill DeBoer	Jenison, MI
E-1428	Mr. & Mrs. James Denison	Long Beach, CA
E-1429	Suzanne Piper	Sevierville, TN
E-1430	Mark Rogers	Fort Collins, CO
E-1431	Pat Hickey	Raleigh, NC
E-1432	Jennifer Spence	CA
E-1433	Jackie Raven	New York, NY
E-1434	Kimberly Blake	Radford, VA
E-1435	Jo Ann Miller	East Lansing, MI
E-1436	V e-c	Chicago, IL
E-1437	Ross Ingram	Milwaukee, WI
E-1438	Pam Christie	North Ridgeville, OH
E-1439	Mizpah Thomas	Woodland Park, CO
E-1440	Jim Plezia	Cleveland, OH
E-1441	Destiny Browning	Hazel Crest, IL
E-1442	Azel Beckner	Bowling Green, KY
E-1443	Carole M. Johnson	Bridgewater, NJ
E-1444	Colin Burt	Odessa, MI-Canada
E-1445	Mike Axelrod	Fairport, NY
E-1446	Harriette Frank	Durham, NC
E-1447	B. Baumann	Washington, DC
E-1448	Mary Alicia	Wheeling, WV
E-1449	Marcei Renaud	Oka Qu, Canada
E-1450	Lisa Ann Berry	Pasadena, CA
E-1451	Teresa Doran	Batavia, NY
E-1452	Michelle Palladine	Palm Springs, CA
E-1453	Rachel Meltzer	New York, NY
E-1454	Marjorie Hass	Hartshorne, OK
E-1455	Brittany Scott	Oregon, OH
E-1456	Carrie Sweetnam	Manhattan Beach, CA
E-1457	Kristin Summerlin	Two Rivers, AK
E-1458	Michael Chihill	Greenville, SC
E-1459	Geraldine Huffer	Crestwood, MO
E-1460	Caitlin Higgins	Stone Harbor, NJ
E-1461	Patrick Moctezuma	Arlington, VA
E-1462	Andy Lynn	Douglasville, GA
E-1463	Jennifer Griffiths	Chittenongo, NY
E-1464	Jeanne Moskal	Syracuse, NY
E-1465	Kristen Lauzon	Seattle, WA
E-1466	Pamela A. Miller	Anchorage, AK
E-1467	Sue DiCara	El Paso, TX
E-1468	Thomas Aldridge	San Jose, CA
E-1469	Dwight Crandell	Town & Country, MO
E-1470	Virginia Crawford	Westminister, CO
E-1471	Nancy Smith	Folly Beach, SC
E-1472	Ashley Tekuelve	Georgetown, OH
E-1473	Jesalyn Eatchel	Carlsbad, CA
E-1474	Ar Nem	Portland, OR
E-1475	Alicia Gallego	Succasunna, NJ
E-1476	Judy D'Amore	Port Townsend, WA
E-1477	Carolina Diaz	Seattle, WA
E-1478	Kathie Opon	IL
E-1479	Sara Crosby	South Bend, IN

Log #	Name	Location
E-1480	Natalie Olivas	Pinole, CA
E-1481	Amanda Welch	Muncie, IN
E-1482	Gerald R. Brookman	Kenai, AK
E-1483	Jim & Susan Geear	Medford, OR
E-1484	Agatha Zurawska	Indianapolis, IN
E-1485	Kimberley Graham	Coronado, CA
E-1486	Dana Clark	Pomona, CA
E-1487	Ariel Nessel	West Bloomfield, MI
E-1488	Rae Ann Gustafson	Boise, ID
E-1489	Emily Rieber	Santa Rosa, CA
E-1490	M. K.	Toms River, NJ
E-1491	Marlene Roberts	Toledo, OH
E-1492	Edwenna Earnheart	Silver City, NM
E-1493	April Collier	Pacifica, CA
E-1494	Patricia LeBaron	Medford, OR
E-1495	Doug Jewell	Trout Lake, WA
E-1496	Rosanne Halliday	Webster City, IA
E-1497	Hanne J. Nielsen	New York, NY
E-1498	Brighton Flaus	Santa Cruz, CA
E-1499	Shasha Jhaveri	Irvine, CA
E-1500	Jen Owens	New York, NY
E-1501	James Miller	Westminster, MD
E-1502	Anne Glimpse	Alexandria, VA
E-1503	Kellie McGettigan	Winfield, WV
E-1504	Dr. Mha Atma S. Khalsa	Los Angeles, CA
E-1505	Joannehope Johnson	Tempe, AZ
E-1506	Stephanie Hazlett	Westerville, OH
E-1507	Judy Nill	Kent, WA
E-1508	Molly Hauck	Kensington, MD
E-1509	Dalisey Moore	Piedmont, OK
E-1510	Elandriel Martin	Littlerock, CA
E-1511	Lorrie Ogren	Minneapolis, MN
E-1512	William T. Atkins	Merlin, OR
E-1513	Kelley McAdon	Fairhaven, CA
E-1514	Cynthia Fabian	Prescott, AZ
E-1515	Anna Kaltenbach	Denver, CO
E-1516	Adam Kron	Portland, OR
E-1517	Ingrid Modaresi	Rock Hill, SC
E-1518	Erin Steurer	Hyattsville, MD
E-1519	Linda Sanders	Warsaw, IN
E-1520	Valentina Hecker	Los Angeles, CA
E-1521	Katherine Robertson	Durango, CO
E-1522	Van Vibber	Malibu, CA
E-1523	Miranda Leonard	Woodland Hills, CA

Log #	Name	Location
E-1524	Burnis Tuck	Fresno, CA
E-1525	Stephen Sloane	Washington, DC
E-1526	Regina Pilozzi	San Diego, CA
E-1527	Rita Stang	Waukegan, IL
E-1528	Vicki Johnson	Kansas City, MO
E-1529	Jennie Lopez	San Diego, CA
E-1530	Stacey Rice	Lindenhurst, NY
E-1531	Lindsey Ward	Rancho Palos Verdes, CA
E-1532	Betty Rice	Spencer, NC
E-1533	Peter Svensson	Santa Cruz, CA
E-1534	Paul Chasman	Waldport, OR
E-1535	Robyn Rhudy	Marriottsville, MD
E-1536	Mary Loretta Beier	Leavenworth, KS
E-1537	Debora Deschene	Kent, WA
E-1538	Jill Weinstein	New York, NY
E-1539	Sarah Slocum	San Mateo, CA
E-1540	Frances Cone	Marietta, GA
E-1541	Matt Chagnon	La Mesa, CA
E-1542	Sunny West	Sacramento, CA
E-1543	Demelza Costa	Sweet Home, OR
E-1544	Kevin Bond	Centreville, VA
E-1545	Michael Hansen	Deerfield, IL
E-1546	Wendy Knothe	Hatboro, PA
E-1547	Audrey Woodson	Herndon, VA
E-1548	Nan Dahringer	Lansing, MI
E-1549	Robin Halbert	Lawrence, KS
E-1550	Ruth Ann Dunn	Gaylord, MI
E-1551	Ezshwan Winding	Ashland, OR
E-1552	Kathy Lane	Vancouver, WA
E-1553	James Schley	New York, NY
E-1554	Summer Knowlton	Redlands, CA
E-1555	Josh Wittmer	Pittsburgh, PA
E-1556	Gary Carrao	Venice, CA
E-1557	Kimberly Peterson	Los Angeles, CA
E-1558	Peter Weiner	Burbank, CA
E-1559	Jeremy Schwartz	East Meadow, NY
E-1560	Barb Watts	Louisville, KY
E-1561	Rollin Dalpiaz	Carmichael, CA
E-1562	Susan Pemberton	Brooklyn, NY
E-1563	James Stephens	Hopeville, GA
E-1564	Mark Hull	Langlios, OR
E-1565	Christine Potts	CA
E-1566	Marie Ostrander	Fairview, NC
E-1567	Lorraine Mason	Oxford, PA

Log #	Name	Location
E-1568	Rowena Vaca	Kailua-Kona, HI
E-1569	Sherri Kaiser	Riverside, WA
E-1570	Aaron Roe	Rolla, MO
E-1571	Robert Robinson	Sacramento, CA
E-1572	Karen Dingmon	Everett, WA
E-1573	Troy Lester	Arcade, NY
E-1574	Dustin Sulak	Bloomington, IN
E-1575	Terresa Giacomini	Ashland, OR
E-1576	Earl Thomas	SC
E-1577	Robbie Heier	Brooklyn, NY
E-1578	Alana Disney	Mooresville, IN
E-1779	Sarah Webb	Durham, NC
E-1580	Angela McLeod	Midland, VA
E-1581	Tamara Cole	Belfast, NY
E-1582	Kristin Haley	Kettle Falls, WA
E-1583	Gwen Atkinson	East Olympia, WA
E-1584	Judy Hopper	Columbia, SC
E-1585	Scott Parmer	Santee, CA
E-1586	Fred Henke	York, PA
E-1587	Deborah Smith	Oklahoma City, OK
E-1588	D. Scanlon	Kansas City, MO
E-1589	Amy Ramsey	Edmond, OK
E-1590	Ann McGlashen	Green Valley, AZ
E-1591	Bruce Marsh	Madison, WI
E-1592	Arlene Gemmill	San Francisco, CA
E-1593	Linda Lirette	Eastpointe, MI
E-1594	Elizabeth Dunne	Arlington, VA
E-1595	Bobbie Phelps	Westminster, MD
E-1596	Elizabeth MacDonald	Bloomfield Hills, MI
E-1597	Claudia Johnson	Cambridge, MD
E-1598	Charles & Sherry Lewis	Albuquerque, NM
E-1599	Jessy Broniarczyk	Palos Park, IL
E-1600	Damien Wilkinson	Milledgeville, GA
E-1601	Katie Welter	Denver, CO
E-1602	John Biglow	Atherton, CA
E-1603	April McKay	Lilburn, GA
E-1604	Jennifer Milton	Clearlake, WA
E-1605	David Antonio Gurule	Denver, CO
E-1606	C. Michael Brown	Raleigh, NC
E-1607	Arleen Wiley	Mena, AR
E-1608	Mary Wilkinson	Loveland, CO
E-1609	Paul Williams	Atlantic City, NJ
E-1610	Lauren Lewis	Irvine, CA
E-1611	Janet Kuciejczyk	St. Louis, MO

Log #	Name	Location
E-1612	Bette Shelton	Indianapolis, IN
E-1613	Jason Kishineff	Chico, CA
E-1614	Sandra Saitz Cewballos	Mexico
E-1615	Elam Blackman	San Rafael, CA
E-1616	Jeff Lerner	Pacific Grove, CA
E-1617	David Burkhart	Salem, OR
E-1618	Amy Prisco	Washington, NJ
E-1619	Carol Betts	Berea, OH
E-1620	Jessica Parker	Temecula, CA
E-1621	Meg McDonald	Baltimore, MD
E-1622	Jeri Alexis Rosenthal	Klawock, AK
E-1623	Rose Griffin	Cortland, NY
E-1624	Kamal Fox	Martinez, CA
E-1625	Matthew Coate	University Heights, OH
E-1626	Doug Couchon	Elmira, NY
E-1627	Amy Haines	Racine, WI
E-1628	Peggy Schreiner	Vernon Hills, IL
E-1629	Kay Louise Cook	Seattle, WA
E-1630	Howard Lazzarini	Everett, WA
E-1631	Evalyn Segal	Philadelphia, PA
E-1632	Sherry Rock	Rineyville, KY
E-1633	Mark A. Giordani	Van Nuys, CA
E-1634	Martha Vitale	Los Angeles, CA
E-1635	Phil Mayfield	Wanette, OK
E-1636	Ernest Hopkins	Chula Vista, CA
E-1637	Paul Escamilla	Brooklyn, NY
E-1638	Dinda Evans	San Diego, CA
E-1639	Nicole Masaluso	Rancho Santa Fe, CA
E-1640	Pam Marcum	Tempe, AZ
E-1641	Rachel Fahrig-Richards	Baltimore, MD
E-1642	Kristin Summer	Midland, MI
E-1643	Sharane Stevenson	Redding, CA
E-1644	Annaka Dodd	Traverse City, MI
E-1645	Sandra Walter	Tucson, AZ
E-1646	Nancy Ward	Portland, OR
E-1647	Linda Tran	Portland, OR
E-1648	Morona Madsen	Loa, UT
E-1649	Linda Hartge	Brookeville, MD
E-1650	Peter Burnside	Avon, MN
E-1651	Myrna Mincey	NJ
E-1652	Enid Gilham	Santa Monica, CA
E-1653	Alice Ermlich	Seattle, WA
E-1654	Dolores Pietrzak	Albuquerque, NM

Log #	Name	Location
	9/15/02	
E-1655	Austin Leach	La Jolla, CA
E-1656	Randi Miller	Puyallup, WA
E-1657	Anna Barrows	Connersville, IN
E-1658	Frank Smith	Bluff City, KS
E-1659	Bret Schacht	Beatrice, NE
E-1660	Grethen Grimm	Guam
E-1661	Nichole Bouwens	Douglasville, GA
E-1662	Carol Schlapo	Warrenton, VA
E-1663	Margaret Wood	Suffolk, VA
E-1664	Sharon Rambo	EHT, NJ
E-1665	Sandy Crooms	Gary, IN
E-1666	Carol Wagner	Williston, VT
E-1667	Martha Morton	Greensboro, NC
E-1668	Jason Rossow	Johnson City, NY
E-1669	Anthony Donnici	Kansas City, MO
E-1670	Jennifer Hunter	Jewett, NY
E-1671	Summer Restrepo	Stockbridge, GA
E-1672	Bethany Bulgrin	Altoona, WI
E-1673	Nancy Johnstone	Columbus, OH
E-1674	Kimmi Short	Phoenix, AZ
E-1675	Glen Berger	New York, NY
E-1676	Lia Friedman	Jersey City, NJ
E-1677	William Freeto	Chicago, IL
E-1678	H. Dubuisson	Denver, CO
E-1679	Linda Axman	Newport Beach, CA
E-1680	William Dugan	Lancaster, PA
E-1681	Victoria Ramirez	Butler, OH
E-1682	Larry Trutter	Springfield, IL
E-1683	Kim Cartwright	Greensboro, NC
E-1684	Jessica Sawchuk	Ronkonkoma, NY
E-1685	Anne W. Phillips	Mercer Island, WA
E-1686	Rosemary Fox	Rhinecliff, NY
E-1687	Jennifer Willis	Cincinnati, OH
E-1688	Mary Ann Keefer	Denver, CO
E-1689	Steve Green	Sedro Woolley, WA
E-1690	Joseph P. Gaby	Denver, CO
E-1691	Tony Massarello	Oak Park, IL
E-1692	Jennifer Olive	Bay Village, OH
E-1693	Dana Reed	Corona del Mar, Ca
E-1694	Karen Mitchell	Columbia, MD
E-1695	Amanda Yaggy	Chapel Hill, NC
E-1696	Kevin Crosier	San Pedro, CA
E-1697	Julene Cole	Corona, CA

Log #	Name	Location
E-1698	Alison Megger	Tinley Park, IL
E-1699	Melissa Donley	Glen Bernie, MD
E-1700	Linda Schwarz	Santa Anna, CA
E-1701	Mary 0'Connor	Chicago, IL
E-1702	L. Lynn Bolin	Crossville, TN
E-1703	Charlotte Meyer	Tokoma Park, MD
E-1704	Jason Wells	Tempe, AZ
E-1705	Stacie Duncan	South Royalton, VT
E-1706	Shannon Dillon	San Leandro, CA
E-1707	Audrey Blumeneau	Santa Cruz, CA
E-1708	Melissa Arnold	Bellmore, NY
E-1709	Angela Duffer-Vargas	Annapolis, MD
E-1710	Melissa Foley	Chattanooga, TN
E-1711	Gina Novak	Philadelphia, PA
E-1712	Gwen Ilaban	Kailua-Kona, HI
E-1713	Valerian Anderson	Hiram, OH
E-1714	Ashley Gronek	Chicago, IL
E-1715	Anna Leach	Muncy Valley, PA
E-1716	Molly Skaer	Clarkston, MI
E-1717	Trisha Jachlewski	Amherst, NY
E-1718	Ellen Cox	Helena, MT
E-1719	Jennifer Hausler	Watertown, NY
E-1720	Wendy Howell	Montpelier, VT
E-1721	Shannon Bell	Mansfield, OH
E-1722	Michele Anderson	Scandia, MN
E-1723	Chris Beetley-Hagler	Davis, CA
E-1724	Seth Pogue	Hamilton, MT
E-1725	Betsy Munro	Madison, WI
E-1726	Shelley Berlincourt	Rifton, NY
E-1727	John Hartman	Endicott, NY
E-1728	Jill Whitney	Avon-By-The-Sea, NJ
E-1729	Eleanor Conger-Milnes	Denver, CO
E-1730	Lora Donnelly	Ft. Collins, CO
E-1731	Raymond Paynter	Belmont, CA
E-1732	Jenn Zwart	Wallkill, NY
E-1733	Cindy Russo	Villa Park, IL
E-1734	John Pearce	San Francisco, CA
E-1735	Randy Davis	Baltimore, MD
E-1736	Mike Hart	Aurora, IL
E-1737	Joyce Storm	Roesmount, MN
E-1738	Val Porter	Bloomington, IN
E-1739	Mary Hitchcock	Toledo, OH
E-1740	Robert Warner	Poway, CA
E-1741	Anne Allison	Franklin, NC

Log #	Name	Location
E-1742	Frank Cannon	South Lake Tahoe, CA
E-1743	Renee Gayk	St. Francis, WI
E-1744	Regina Holt	Elkridge, MD
E-1745	Aubry Bennett	Kincaid, WV
E-1746	Donna Strong	Carmel, CA
E-1747	Gary Bennett	Royal Oak, MI
E-1748	Keeta Cox	Huxley, IA
E-1749	William Word	Eureka, CA
E-1750	Sarah Eberhardt	Chester, NJ
E-1751	Yochanan Zakai	Rockville, MD
E-1752	Marcia Cooperman	Portland, OR
E-1753	Brett Rogers	South Orange, NJ
E-1754	Esther Cover	Ranchester, WY
E-1755	Miriam Garcia	Rio Piedras, Puerto Rica
E-1756	Freeda Goldberg	Eastport, NY
E-1757	Meredith Calvert	Charlottesville, VA
E-1758	Diana Brownell	Somerset, NJ
E-1759	Angelo Frigo	Chicago, IL
E-1760	Kristina Kordulak	Virginia Beach, VA
E-1761	Patricia Porter	Yardley, PA
E-1762	Nathan Boddie	LaGrange, GA
E-1763	Kathy FitzJefferies	Salisbury, NC
E-1764	Rev. Diane Russell	Santa Rosa, CA
E-1765	Angel Phillips	Napa, CA
E-1766	Hilary Caws-Elwitt	Friendsville, PA
E-1767	Johathan Caws-Elwitt	Friendsville, PA
E-1768	Carolyn Jackson	Mountain Home, NC
E-1769	Linda Lyerly	Cardiff, CA
E-1770	Rose Shulman	Charlotte, NC
E-1771	Nancy Ritthamel	Northridge, CA
E-1772	Rebecca Jamieson-Pugh	Springfield, MO
E-1773	Michael Maslanek	Congers, NY
E-1774	Brenda Stouffer	Dana Point, CA
E-1775	Kathy Galligan	Bridgewater, NJ
E-1776	Shannon O'Laughlin	Inverness, IL
E-1777	Suzanne Staples	Hawthorne, NJ
E-1778	Carol Blumenthal	Millsboro, DE
E-1779	Katherine Kautz	Northglenn, CO
E-1780	Andrea Hackett	Atlanta, GA
E-1781	Patti Laursen	Los Angeles, CA
E-1782	Danine Murphy	Colorado Springs, CO
E-1783	Anna Przybylski	Golden Valley, MN
E-1784	Meg Oldman	Davis, CA
E-1785	Kathleen Leenerts	Loveland, CO

Log #	Name	Location
E-1786	Siobhan Maty	Chapel Hill, NC
E-1787	Elizabeth Pabon	Bronx, NY
E-1788	Diana Weber	Albany, NY
E-1789	Jessica Aldrich	Windsor, NY
E-1790	C. J. McPherson	Gig Harbor, WA
E-1791	Ravi Grover	Chicago, IL
E-1792	Laura Kahn	Sparland, IL
E-1793	Lin Silvan	Eugene, OR
E-1794	Teresa Heying	Saint Peters, MO
E-1795	Christopher Pielli, J.D.	West Chester, PA
E-1796	Jean Lee	Chicago, IL
E-1797	Miriel Hope Collins	Denver, CO
E-1798	Chris Striegel	Philadelphia, PA
E-1799	Shelly Lemon	Tucson, AZ
E-1800	Laura Davis	Albany, NY
E-1801	Sarah Montague	New York, NY
E-1802	Ed Abril	Tucson, AZ
E-1803	Sophie Keller	Kirkland, WA
E-1804	Martha Hannah	Ann Arbor, MI
E-1805	Stephen Funk	Oakland, CA
E-1806	Delores Mays	St. Louis, MO
E-1807	Ronald Holland	New York, NY
E-1808	Diane la Chusa	National City, CA
E-1809	Helen Kopp	Grafton, OH
E-1810	Denise Cutrell	Medford, OR
E-1811	Mollie Tubbs	Webster, NY
E-1812	Patti Motter	Venus, PA
E-1813	Deborah Bancroft	Onalaska, WA
E-1814	Luca Van Der Kraan	Oxnard, CA
E-1815	Shermi Parikh	Chicago, IL
E-1816	Ursa Rose	Florence, AZ
E-1817	Gwen Carlson	Richland, WA
E-1818	Sandra O'Rourke	East Chatham, NY
E-1819	Terry Sario	Phoenix, AZ
E-1820	Sarah Keech	Rancho Palos Verdes, CA
E-1821	Adrian Tremayne	Mt. Morris, NY
E-1822	Shawn Linderman	Mt. Morris, NY
E-1823	Mary Zimmerman	San Jose, CA
E-1824	Brian James	Independence, MO
E-1825	Diane Caldwell	Crescent City, CA
E-1826	Anita Soper	Gettysburg, SD
E-1827	Lone Rhodes	New York, NY
E-1828	Denise Speicher	Rochester, NY
E-1829	Marisa Brandstetter	Cincinnati, OH

Log #	Name	Location
E-1830	Sarah Tromp	Eau Claire, WI
E-1831	Tereza Marks	Arlington, VA
E-1832	Connie Turner	Massillon, OH
E-1833	Joan Bush	Thousand Oaks, CA
E-1834	Geri Acker	La Crosse, WI
E-1835	Scott Snibble	San Francisco, CA
E-1836	Matt Cox	Anchorage, AK
E-1837	Harold Rapp	Ewing, NJ
E-1838	Sheila Chambers	Brookings, OR
E-1839	Marilyn Capello	Orange, CA
E-1840	Jan McCreary	Silver City, NM
E-1841	David Orr	Heleiwa, HI
E-1842	Frank Jr. Marrero	New York, NY
E-1843	Dan Elder	Santa Barbara, CA
E-1844	Carrie Johnson	Tahoe City, CA
E-1845	Anne Clarke	Atlantic Beach, NC
E-1846	Jeri Pollock	Tujunga, CA
E-1847	Linda Hoyt	St. Louis, MO
E-1848	LaRee Nelson	Chouteau, OK
E-1849	Timothy McDermond	Eureka, CA
E-1850	Bonita Early	Littleton, CO
E-1851	Anthony Villagomez	Trout Lake, WA
E-1852	Stefanie Schmidt	Whittier, CA
E-1853	Linda Hunt	North East, MD
E-1854	Albert Iannacone	Knoxville, TN
E-1855	Christopher Mattias	Fort Wayne, IN
E-1856	Mary Dugan	Chatham, NY
E-1857	Kyle Smith	Long Beach, CA
E-1858	Christie Walker	Atlanta, GA
E-1859	Heather Ritter	Glen Head, NY
E-1860	James Holley	Santa Cruz, CA
E-1861	Jessica Gilmartin	Jordanville, NY
E-1862	Terry Bunch	San Diego, CA
E-1863	Monica Speck	Gibsonia, PA
E-1864	Emily Bjonnes	Hillsborough, NJ
E-1865	Robert Holder	Mt. Sinai, NY
E-1866	Scott Baker	Chicago, IL
E-1867	Jennifer Gilmartin	Jordanville, NY
E-1868	Lars Olsen	Haleiwa, HI
E-1869	Elaine Chismar	Brick, NJ
E-1870	Diane Buccheri	Avon, NC
E-1871	Marian Anderson	Mechanicsburg, PA
E-1872	Jeri Cheraskin	Ithaca, NY
E-1873	Rachael Stanford	Mackiaw, IL
E-1874	Lauren Throop	Lander, NY
E-1875	Kai Eichert	San Diego, CA
E-1876	Melissa King	Eau Claire, WI
E-1877	Betsy Newman	Columbia, SC
E-1878	Melissa Pierce	West Chester, PA
E-1879	Bret Glass	Columbia, MO
E-1880	Alexandra Glazer	Thousand Oaks, CA
E-1881	Chris Heintzelman	Fairfax, CA
E-1882	Jenae Neiderhiser	Middleburg, VA
E-1883	Chad Halsey	Lansing, MI
E-1884	Emily Sherman	Los Angeles, CA
E-1885	Arleen Becker	Tarzana, CA
E-1886	Leah Haury	Reedley, CA
E-1887	Nancy Crom	Albany, NY
E-1888	Carol Bellavia	Thornton, CO
E-1889	Joanna Huitt	Mentone, CA
E-1890	Ashley Skakie	Renton, WA
E-1891	Sherri Bray	La Habra Heights, CA
E-1892	Lisa Pacheco	Santa Fe, NM
E-1893	Linda Burton	Lexington, KY
E-1894	Mildred	Lexington, KY
E-1895	Doug Wallace	Minneapolis, MN
E-1896	Stephen Tillotson	Winston-Salem, NC
E-1897	Sharon Augenstein	Huntington Beach, CA
E-1898	John Hayden	Avalon, CA
E-1899	T. Hart	Stillwater, OK
E-1900	Lee Frank	Sherman Oaks, CA
E-1901	Katherine Dineen	Loudonville, NY
E-1902	Renee Tiesler	New York, NY
E-1903	Pete MacGregor	Secane, PA
E-1904	Lisa Velez	Round Lake Beach, IL
E-1905	Davydd Contarino	Power Springs, GA
E-1906	Greg Maloney	Pitman, NJ
E-1907	Claire Salyards	Manassas. VA
E-1908	Cathy Villalobos	Gainesville, GA
E-1909	Julie Osborn	Moab, UT
E-1910	Amanda Hoffman	Fort Wayne, IN
E-1911	Patricia Fogarty	Atlanta, GA
E-1912	Lisa Warden	New Brunswick, NJ
E-1913	Julie Danton	Huntingdon Valley, PA
E-1914	Amy McDaniel	Lynchburg, VA
E-1915	Cassie Schmitz	Fairfield, IA
E-1916	G. D.	New York, NY
E-1917	Dean Paul	O’Fallon, MO

Log #	Name	Location
E-1918	Michelle Yakel	Turtle Creek, PA
E-1919	Trudy Deutsch	Ringoes, NJ
E-1920	Danielle Stumbo	Oak Hill, OH
E-1921	Adam Michel	Tucson, AZ
E-1922	Lori Werba	New Paltz, NY
E-1923	Carolyn Doswell	Studio City, CA
E-1924	Randy Sailer	Beulah, ND
E-1925	Traci Hamilton	Charlotte, NC
E-1926	Brian Walker	Paterson, NJ
E-1927	Jenna Feinstein	Columbus, OH
E-1928	Dennis Hendren	La Plata, MO
E-1929	Hilary Field	Belgrade, MT
E-1930	Patricia St. August	Okanogan, WA
E-1931	Gordon Butt	Lakewood, CO
E-1932	Richard Salmon	Green Bay, WI
E-1933	David Randall	Port Jefferson, NY
E-1934	Stacie Dullmeyer	El Segundo, CA
E-1935	Gimone Hall	Ottsville, PA
E-1936	Geoff Newman	Ithaca, NY
E-1937	Chris Young	Chattanooga, TN
E-1938	Venus Cheng	Madison, WI
E-1939	Barbara Ann Dembek	East Meadow, NY
E-1940	Gina Cardinal	Philadelphia, PA
E-1941	Shaun & ReNae Gardner	Clancy, MT
E-1942	Ray Hancock	Colbert, WA
E-1943	Louis Deere	Villas, NJ
E-1944	Pat Quinn	Paterson, NJ
E-1945	Virginia Velasquez	Las Vegas, NV
E-1946	Kristin Peterson	Kutztown, PA
E-1947	Debra McGraw	Douglasville, GA
E-1948	Lisa Furman	Albany, GA
E-1949	Melissa Jones	South Pasadena, CA
E-1950	Lisa Monda	Placitas, NM
E-1951	Betty & Curt Cureton	Pebble Beach, CA
E-1952	Kevin Barry	Carlsbad, CA
E-1953	Eliana Garcia	Staten Island, NY
E-1954	Gail Lee Van Heel	Inver Grove Heights, MI
E-1955	Laura Bucher	New York, NY
E-1956	Karen Vahling	Hot Sulphur Springs, CO
E-1957	Theodore Pasquali	Princeton, NJ
E-1958	Theresa Media	Sacramento, CA
E-1959	Janine Panna	Greentown, PA
E-1960	Crystal Hawthorne	Redwood Shores, CA
E-1961	C. Reeves-Rutledge	Medford, OR

Log #	Name	Location
E-1962	Jeffre Rosenfeld	Santa Monica, CA
E-1963	Linda Lace	Mesa, AZ
E-1964	Courtney Bonnell	Phoenix, AZ
E-1965	Marcie Holst	Canyon Country, CA
E-1966	Thomas Urani	Kansas City, MO
E-1967	Michael Boucher	Los Angeles, CA
E-1968	Jane Cothron	Newport, OR
E-1969	Steve Gaias	Chandler, AZ
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E-1970	Krista Finlay	Santa Barbara, CA
E-1971	James Malecki	Seattle, WA
E-1972	Amanda Nelson	Arlington, WA
E-1973	Lisa Tricoli	Buffalo, NY
E-1974	Adrian Herrera-Fuentes	New York, NY
E-1975	Ken Goldsmith	London, United Kingdom
E-1976	Kara Cunningham	Honolulu, HI
E-1977	Vincent Zoccolante	Honolulu, HI
E-1978	Marcus Carpenter	Charlottesville, VA
E-1079	Elliot Lebediker	Buffalo, NY
E-1980	Robin Karnatz	San Jose, CA
E-1981	Harold Harris	New York, NY
E-1982	Monika Willisegger	Gaithersburg, MD
E-1983	Chris Gross	Doylestown, PA
E-1984	Evelyn Phillips-Gutchell	Colonie, NY
E-1985	Fran Dickenshied	Stroudsburg, PA
E-1986	Lee Horne	Mt. Bethel, PA
E-1987	Andrew McMaster	Hazelwood, MO
E-1988	Robert Braeges	Angola, NY
E-1989	Jennifer Neault	Harrison Township, MI
E-1990	John Mohler	Catonsville, MD
E-1991	Cam Holmes	Baltimore, MD
E-1992	Lance Polya, PhD	Jericho, VT
E-1993	Matt Hils	Lakewood, OH
E-1994	Diane Connors	New York, NY
E-1995	Glenn Hennessee	Raleigh, NC
E-1996	James Snyder	Hogansburg, NY
E-1997	Linda Brown	South Euclid, OH
E-1998	Michael Leuthold	Spokane, WA
E-1999	Brie Kessler	Charleston, SC
E-2000	Mary Lynn Fisher	Kensington, MD
E-2001	Don Conway-Long	Webster Groves, MO
E-2002	Dennis Toppel	McAllister, MT
E-2003	Nicole Pawelski	Holly Springs, NC
E-2004	Ann Marie Kotlik	Pittsburgh, PA

Log #	Name	Location
E-2005	Sue Shawl	Coulter, PA
E-2006	Teri Fittro	Winston-Salem, NC
E-2007	Lynne Sidey	Pittsford, NY
E-2008	Avis Campbell	New Brighton, MI
E-2009	Mark Sidey	Pittsford, NY
E-2010	N. Simmons	Massapequa, NY
E-2011	Peter Poppe	Syracuse, NY
E-2012	Ellen Fisher	Knoxville, TN
E-2013	Ericka Wietecha	Chicago, IL
E-2014	Michele Morgen	Williamsport, PA
E-2015	Jessica Gunter	Saddle Brook, NJ
E-2016	Heidi Blackwell	Guilderland, NY
E-2017	Craig R. Beach	Reisterstown, MD
E-2018	Nicole Stefan	Baltimore, MD
E-2019	Carolyn Faulkner	Holly Springs, NC
E-2020	Patti Tomasello	Waxhaw, NC
E-2021	Bruce Schaffer	Huntsburg, OH
E-2022	Sonali Gokhale	Marietta, GA
E-2023	Aine-Theresa Melvin	North Brunswick, NJ
E-2024	Kara Cassels	Clarkston, GA
E-2025	Shane Tanner	Belgrade, MT
E-2026	Richard Heinlein	Oakbrook Terrace, IL
E-2027	Virginia Boynton	Macomb, IL
E-2028	Marty Feczko	Pittsburgh, PA
E-2029	Marjorie Haizlip	Canadaigua, NY
E-2030	Benjamin Francis	Rock Hill, SC
E-2031	Audra Schrader	WI
E-2032	Joanna Markessinis	Selkirk, NY
E-2033	James Mitchell	Winston-Salem, NC
E-2034	Gitana Chunyo	Baltimore, MD
E-2035	Bree Brostko	Arlington, VA
E-2036	Cynthia Steinberger	Lakewood, OH
E-2037	Lisa A. Monk	Virginia Beach, VA
E-2038	Jennifer Thompson	Ball Ground, GA
E-2039	Suzanne Sliger	Clinton Township, MT
E-2040	Tonya Fisher	Raymore, MO
E-2041	Stacy Albritton	St. Thomas, VI
E-2042	Vivienne Sturgill	Athens, GA
E-2043	Robert Blankenship	Charlotte, NC
E-2044	Rick Scheffert	Calmar, IA
E-2045	Suzanne Stewart	Rutledge, PA
E-2046	Philip Batty	Memphis, TN
E-2047	Tammy Johnson	Granada Hills, CA
E-2048	Jena Sleboda	Chicago, IL

Log #	Name	Location
E-2049	Katherine Stukel	Eagan, MN
E-2050	Barbara Warner	Lebanon, KY
E-2051	Michael Cavanaugh	Redondo Beach, CA
E-2052	Maria Betancourt	Atlanta, GA
E-2053	Caroline King	New York, NY
E-2054	Emily Carr	Murray, KY
E-2055	Chad Wawrzyniak	Northfield, VT
E-2056	Todd O’Buckley	Chapel Hill, NC
E-2057	John Savlove	North Bennington, VT
E-2058	Suzanne Brier	New York, NY
E-2059	Stephanie Crease	Northfield, VT
E-2060	John Venezia	Arlington, VA
E-2061	Chris Phillips	Denver, CO
E-2062	Shannon Kresse	Hudson, OH
E-2063	Christine Hughes	Blue Springs, MO
E-2064	Bronwyn Bleakley	Ellettsville, IN
E-2065	Phil Gross	Oakland, CA
E-2066	Vicki Gore	Brentwood, TN
E-2067	Coy Christensen	Lafayette, CO
E-2068	Tonya Dreher	Astoria, NY
E-2069	Heather Saxon	San Diego, CA
E-2070	Donna Hopper	Benton, AR
E-2071	Rinda Tisdale-Hesis	Loveland, CO
E-2072	Amy Carter	Washington, DC
E-2073	Amy Grubert	St. Louis, MO
E-2074	Bryanna Carroll	Chicago, IL
E-2075	Dawn Garcia	Minneapolis, MN
E-2076	Melissa Chisena	Pine Bush, NY
E-2077	Debra Collins	Mountain Home, AR
E-2078	Wendi Wright	Levittown, PA
E-2079	Rachael Alvarez-Jett	Torrance, CA
E-2080	Regina Dunn	Douglasville, GA
E-2081	Andrew Katkin	Washington, DC
E-2082	Sarah Mackinney	New York, NY
E-2083	Ben Smith	Baltimore, MD
E-2084	Pamela Hahler	Denver, CO
E-2085	Jerry Crossan	Rising Sun, MD
E-2086	Kelly Parfitt	Grosse Point Farms, MI
E-2087	Jaclyn Faber	Hazelwood, MO
E-2088	Sandy Lynn	St. Louis, MO
E-2089	Terri Fish	Charlotte, NC
E-2090	Sharon Shinas	Mountainside, NJ
E-2091	Theresa Pauline	Lexington, KY
E-2092	Robert Moore, II	New York, NY

Log #	Name	Location
E-2093	Denise Rosmerman	New York, NY
E-2094	Elizabeth Weiner	Brooklyn, NY
E-2095	Jan Siplon	Savannah, GA
E-2096	Sara Kube	Philadelphia, PA
E-2097	Athba Hammed	Baltimore, MD
E-2098	Karen Gana	Bardstown, KY
E-2099	Mauricio Mejia	Long Beach, CA
E-2100	Melissa Wagner	West Leyden, NY
E-2101	Kieran Alcumbrac	San Jose, CA
E-2102	Donna Foote	Atlanta, GA
E-2103	Lisa Graham	Oak Park, MI
E-2104	Amanda Goodner	Porum, OK
E-2105	Mary Ramos	Sacramento, CA
E-2106	Rebecca Nadel	Ann Arbor, MI
E-2107	Grady McCallie	Raleigh, NC
E-2108	Mike Racette	Fountain, CO
E-2109	Deborah Bush	Littleton, CO
E-2110	John Bresding	San Francisco, CA
E-2111	Stacey Galarza	Alpharetta, GA
E-2112	Brandie Withrow	Fairborn, OH
E-2113	Lynne Multen	Encino, CA
E-2114	Shawn Broadhead	Renton, WA
E-2115	Kirk Schaeffer	Huntington Beach, CA
E-2116	Val Huston	Chicago, IL
E-2117	James Stevenson	Waterville, OH
E-2118	Stacy Hammond	Sullivan, IN
E-2119	Mark Lesher	Leavenworth, KS
E-2120	Maxwell & Teri Sobel	Indianapolis, IN
E-2121	Heidi Recksiek	North Charleston, SC
E-2122	Angela Winholtz	Blue Springs, MO
E-2123	Christopher Robinson	Seattle, WA
E-2124	Elizabeth Brill	Corning, NY
E-2125	Greg Holder	Fall Creek, OR
E-2126	Alice Edwards	Milford, OH
E-2127	Melissa McDaniel	Glenside, PA
E-2128	Lynn Bobicka	Haworth, NJ
E-2129	Alisia Wixom	Seattle, WA
E-2130	Thrower Starr	Atlanta, GA
E-2131	Dina Zainy	Golden, CO
E-2132	Chris Geremia	Government Camp, OR
E-2133	David Wick	Minneapolis, MN
E-2134	Alex Mistuloff	Redondo Beach, CA
E-2135	Matthew McCloskey Wolfe	Columbus, OH
E-2136	Brienne Carpenter	Portland, OR

Log #	Name	Location
E-2137	Rita Martinez	Colorado Springs, CO
E-2138	Lynne Van Treeck	Neenah, WI
E-2139	Laura Ellison	Fort Collins, CO
E-2140	Monica Brazel	Las Vegas, NV
E-2141	Julia Kaufmann	Napa, CA
E-2142	Silvie Celiz	Los Angeles, CA
E-2143	Jody Parker	Chillicothe, OH
E-2144	Chrisley Pickens	Durham, NC
E-2145	Joyce Tompkins	Spokane, WA
E-2146	Peggy Schramm	Waukegan, IL
E-2147	Cynthia Jaffe	Louisville, CO
E-2148	Lisa Crummett	Fullerton, CA
E-2149	Tara Sieber	Wilmington, DE
E-2150	Amy Daugherty	Monkton, MD
E-2151	Natalie Van Dyke	Addison, IL
E-2152	Susan Lane	Raleigh. NC
E-2153	Charmaine Oakley	Woodside, NY
E-2154	Kanchana Rimnongrua	Erie, PA
E-2155	Barry Robbins	Morris Plains, NJ
E-2156	Florence Cattin	Los Angeles, CA
E-2157	Jeff A. Jones	Raleigh, NC
E-2158	Melissa Sanderson	Durham, NC
E-2159	Alison Monk	Mishawaka, IN
E-2160	Kenneth Roberts	West Hollywood, CA
E-2161	David Rosenstein	Santa Monica, CA
E-2162	Boomer Mitzel	Lancaster, PA
E-2163	Elizabeth Walker	New York, NY
E-2164	Marguerite Porter	Lilburn, CA
E-2165	Michelle Waters	Santa Cruz, CA
E-2166	Clarice Haigh	Ballwin, MD
E-2167	Cathy Hobbs	Ararat, VA
E-2168	Tia Triplett	Los Angeles, CA
E-2169	Chris Greene	Ypsilanti, MI
E-2170	Margaret Yarbrough	Chicago, IL
E-2171	Kari Stamm	Groton, NY
E-2172	Helen Voris	Chicago, IL
E-2173	Staci Roth	Victorville, CA
E-2174	Brian Kelly	Sea Bright, NJ
E-2175	Brian Symington	Schaumburg, IL
E-2176	Bridgette Hagerty	Reno, NV
E-2177	Karen Scott	Greenville, NC
E-2178	Rodney Hedrick	Wilmington, NC
E-2179	Tenchi Hamaki	New York, NY
E-2180	Angela Burbage	Eugene, OR

Log #	Name	Location
E-2181	Yasaman Golban	San Francisco, CA
E-2182	Eva Grey	Sacramento, CA
E-2183	Shannon Teders	Worthington, OH
E-2184	Janet Smith	Portland, OR
E-2185	William Ralph	Narrows, VA
E-2186	Charles Miller	Highland, NY
E-2187	James Galsterer	Sebastopol, CA
E-2188	Erika Kayea	Greensville, SC
E-2189	Nancy Hey	Bethesda, MD
E-2190	Glenn Cronick	Staten Island, NY
E-2191	Eric Branson	Chicago, IL
E-2192	Amy LaFary	Indianapolis, IN
E-2193	Debbie Moewes	Laramie, WY
E-2194	Pete Falic	New York, NY
E-2195	Marshall Kavanaugh	Ewing, NJ
E-2196	Charlotte Jones	Indianapolis, IN
E-2197	David Kratz Mathies	Malden, MA
E-2198	Margaret Stone	Oakland, CA
E-2199	Darice Shumway	Hastings, MI
E-2200	Mami Nomura	Larkspur, CA
E-2201	Peggy Goddard	La Jolla, CA
E-2202	Oliver Burgess	Columbia, SC
E-2203	Kim Schlittler	Oklahoma City, OK
E-2204	Beatrice Stone	Reading, MI
E-2205	Laurel Haines	Chicago, IL
E-2206	Jennifer Johnson	Fairfield, OH
E-2207	Barbara Workman	Elizabeth City, NC
E-2208	John Kremer, PhD	Madison, WI
E-2209	Darcy Fisher	Albuquerque, NM
E-2210	Mary Gail Decker	Hyde Park, NY
E-2211	L. Langford	Spokane, WA
E-2212	Jesse Wilson	San Francisco, CA
E-2213	Janet Decker	Glengary, WV
E-2214	Kathleen Callahan	Howell, NJ
E-2215	Leslie Bober	Pittsburgh, PA
E-2216	Tom Brown	Tinton Falls, NJ
E-2217	Carol Maehr	Monterey, CA
E-2218	Julie Heffington	Santa Cruz, CA
E-2219	Bill Hensley	Kenosha, WI
E-2220	Bill Bradlee	Seattle, WA
E-2221	Michael Kirby	Northfield, MN
E-2222	Sherri Glebus	Richmond, VT
E-2223	Mariely Carvajal	Queens, NY
E-2224	Joan A. Lahmon	South Holland, IL

Log #	Name	Location
E-2225	William Ashman	Powell, OH
E-2226	Avvaiyar Kamari	New York, NY
E-2227	Lin Simpson	Vashon, WA
E-2228	Delia Barrett	East Berlin, PA
E-2229	April Adams	Fort Lewis, WA
E-2230	Paula von Weller	Warrenton, OR
E-2231	Timothy Rhone	Astoria, NY
E-2232	Kimberly Lowe	Gahanna, OH
E-2233	Lori Whitney	Mesa, AZ
E-2234	Wayne Williams	Signal Mountain, TN
E-2235	Gina Marie Robinson	Valley Village, CA
E-2236	Sandra Barnett	Springfield, MO
E-2237	Eleanor Tudor	Charlottesville, VA
E-2238	Martina Coronado	Woodbridge, VA
E-2239	Peggy Torres	Floyds Knobs, IN
E-2240	Michelle Muir	Nashville, TN
E-2241	Tina Carter	Ingleside, IL
E-2242	Sarah Berman	Washington, DC
E-2243	Jennifer Kim	Holmdel, NJ
E-2244	Melissa Mahoney	Monterey, CA
E-2245	Heather Thomas	Pasadena, MD
E-2246	Wendy Brown	Nova Scotia, Canada
E-2247	Kathryn Simmons	Aiken, SC
E-2248	Gail Rains	Sacramento, CA
E-2249	Sandra Douglass	WA
E-2250	Mike Williams	Princeton, MN
E-2251	Susan Alter	Shoreline, WA
E-2252	Lauren Phipps	Richmond, VA
E-2253	Amalia Collins	Toledo, OH
E-2254	Eliet Brookes	Milwaukee, WI
E-2255	Adrianna Buonarroti	Ann Arbor, MI
E-2256	Sienna Wagner	Annapolis, MD
E-2257	Joe Menniti, Jr.	Bellmore, NY
E-2258	Kari Wouk	Raleigh, NC
E-2259	Astrid Eglitis	Columbia Heights, MN
E-2260	Jennifer Price	Charleston, IL
E-2261	Rhonda Depue	Portland, OH
E-2262	Steven Damm	Akron, OH
E-2263	Kelly Roberts	Honolulu, HI
E-2264	Marisol Rojo	Fresno, CA
E-2265	Anjanette Forte	Ahwahnee, CA
E-2266	Andy Bunnell	Graton, CA
E-2267	John Dukes	Tucson, AZ
E-2268	Cristina Hipp	Springfield, OH

Log #	Name	Location
E-2269	Dawn Hegger	Honolulu, HI
E-2270	Kristina Gabriel	Gaithersburg, MD
E-2271	Ronald Galbavy	Agoura Hills, CA
E-2272	Nick Andrews	North Little Rock, AR
E-2273	Bonnie Bross	Kansas City, MO
E-2274	Yvonne Helms	Atascadero, CA
E-2275	Ky Carnell Russell	San Francisco, CA
E-2276	Linda de Soto	Manhattan Beach, CA
E-2277	David Block	Columbus, GA
E-2278	Jennifer Durkin	Columbia, MD
E-2279	Susan LoFurno	Webster, NY
E-2280	David Roberts	Kamuela, HI
E-2281	Lisa Feldkamp	Warrenton, MO
E-2282	Matthew Prince	Chandler, AZ
E-2283	Susan Robertson	Floyd, VA
E-2284	Jean Parkinson	Florence, AZ
E-2285	Jane Schultz	Riverside, CA
E-2286	Daniel Phipps	Washington, DC
E-2287	Memriy Miene	Huntingtown, MD
E-2288	Virginia Goolsby	Morristown, TN
E-2289	Anne-Marie Batchelor	San Francisco, CA
E-2290	Maximilian Sims	Arcadia, CA
E-2291	Lorraine Pacheco	Millbrae, CA
E-2292	Marc Rayburn	Sunbury, OH
E-2293	Candice Richards	Richmond, VA
E-2294	Heather Harrison	Tocoma, WA
E-2295	Hannah Beadman	Los Angeles, CA
E-2296	Leslie Howard	Manheim, PA
E-2297	Wonil Kim	Riverside, CA
E-2298	Jason Bean	Dublin, OH
E-2299	Caren Quay	Albany, CA
E-2300	Stuart Hutchings	Ypsilanti, MI
E-2301	Denise Templeton	Shoreview, MN
E-2302	Leo Melena	Escondido,CA
E-2303	Jeremy Millen	Anchorage, AK
E-2304	Niels Versfeld	Ft. McMurray, AK
E-2305	Jessica McGettigan	Wernersville, PA
E-2306	Kelly McMillan	Stockton, CA
E-2307	Suzanne Lepple	Alexandria, VA
E-2308	Manata Gerald	Santa Barbara, CA
E-2309	Jenna Hains	Westerville, OH
E-2310	Jessica King	Madison, WI
E-2311	Toni Chan	Vacaville, CA
E-2312	Heather Danskin	Tacoma, WA

Log #	Name	Location
E-2313	Celine Foy	Fargo, ND
E-2314	L. Aument	Philadelphia, PA
E-2315	Linda Ballou	Sherman Oaks, CA
E-2316	Maria Fellin	Stevens Point, WI
E-2317	Susan Savia	Glenville, PA
E-2318	Rebecca Koo	San Jose, CA
E-2319	Jeff Milner	Kansas City, KS
E-2320	Lenore Krasner	Chicago, IL
E-2321	Dorothy Adams	Boyds, MD
E-2322	Shannon Taylor	Lakewood, CO
E-2323	Kathleen Kalil	St. Louis Park, MN
E-2324	Jason Lambert	Artesia, CA
E-2325	Ronald Sandler	Edwardsville, IL
E-2326	Jimmy Sugahara	South San Francisco, CA
E-2327	Jenni Kovich	Leon, WV
E-2328	Sequoaih Wachenheim	Berkeley, CA
E-2329	Leslie Marshall	Iowa City, IA
E-2330	Brian Smith	Tacoma, WA
E-2331	Jacquelyn Styrna	Kalamazo, MI
E-2332	Patrick Reilly	Annapolis, MD
E-2333	Anne Brennan	Saginaw, MI
E-2334	Ann Rich	Saline, MI
E-2335	Catherine McLean	Alexandria, VA
E-2336	Galen Davis	San Francisco, CA
E-2337	Frank DeSantis	Staten Island, NY
E-2338	Sarah Emmerson	Westminister, CA
E-2339	Effie Fox	Warrenton, VA
E-2340	Kelly Livernois	Riverview, MI
E-2341	Tammy Morgan	Upland, CA
E-2342	Dana Wullenwaber	Redding, CA
E-2343	Michael Gonzales	Raleigh, NC
E-2344	Henry Tang	Fremont, CA
E-2345	Bettina Bickel	Glendale, AZ
E-2346	Rosanne Benavides	Phoenix, AZ
E-2347	Alice & Hans Hartwig	Acampo, CA
E-2348	Cristen Megdanis	Pearl River, NY
E-2349	Sandra Wiley	Eugene, OR
E-2350	Brice Fukumoto	Chicago, IL
E-2351	Jean Moran	Wethersfield, CT
E-2352	Erline Fernandez	Mesa, AZ
E-2353	Douglas Clayton Uptain	Rapid City, SD
E-2354	Chelsea Doepp	Charleston, SC
E-2355	Nileen Shadow Hawk	Creola, OH
E-2356	Gerald Worrall	Cardiff, CA

Log #	Name	Location
E-2357	Jonathan Roman	Stamford, CT
E-2358	Nicole Killebrew	Sammamish, WA
E-2359	Laurie Mollo-McLain	Brooklyn, NY
E-2360	Sheila Ward	San Juan, PR
E-2361	Mary Lou Long	Chesterland, OH
E-2362	Emily Bishton	Seattle, WA
E-2363	Dr. Jill Anne Quick	Longmont, CO
E-2364	J. Roberts	Portland, OR
E-2365	Peggy-Jo Schulte	Chicago, IL
E-2366	Thad Miller	Malverne, NY
E-2367	Sandra Schroth	Denver, CO
E-2368	Sara Schmidt	Cape Girardeau, MO
E-2369	Suzanne Summerfelt	Saint Francis, WI
E-2370	Brian & Suzie Henning	Bronx, NY
E-2371	M. Bradshaw	Kaneohe, HI
E-2372	Anna Ball	Santa Paula, CA
E-2373	Cheryl Cady	San Mateo, CA
E-2374	Ben Vitale	Barrington, IL
E-2375	Claire Johnson	Santa Barbara, CA
E-2376	Karen Kavanaugh	Ewing, NJ
E-2377	Carol Artz	Hagerstown, MD
E-2378	Francis Fanelli	Brooklyn, NY
E-2379	Montana Rohrback	Springfield, OR
E-2380	Troy Lambert	CA
E-2381	Marie Reyes	San Francisco, CA
E-2382	Emma Hilt	Cambridge, MA
E-2383	Arthur Meeder	Bluffton, SC
E-2384	Dianna Wentink	Ogdensburg, NJ
E-2385	Rutz Karen	IL
E-2386	Justus D'Addario	Asheville, NC
E-2387	David Pillette	York, PA
E-2388	Jo Ann Arcarese	Rochester, NY
E-2389	Dorothy Teola	Canoga Park, CA
E-2390	Josh Legere	Long Beach, CA
E-2391	Helen Schafer	Jackson, NJ
E-2392	Chris Jacobs	Craftsbury Common, VT
E-2393	Robert Lesko	New York, NY
E-2394	Deborah Cassady	Naperville, IL
E-2395	Teri, Garrett & Megan Hunt	Greenwood, MO
E-2396	Debra Rainey	Aurora, IL
E-2397	Jezabel Morton	Gahanna, OH
E-2398	Abby Harms	Topeka, KS
E-2399	Mary Mooney	New York, NY
E-2400	Melinda Z.	Dekalb, IL
E-2401	Karen Fredrickson	Wappingers Falls, NY
E-2402	Bryan Chauveau	Port Hueneme, CA
E-2403	Steven Luo	San Leandro, CA
E-2404	Heidi Boettger	Long Beach, CA
E-2405	Laura Hansen	Carson City, NV
E-2406	Christy Rose	Salt Lake City, UT
E-2407	Patricia Dray	British Columbia, Canada
E-2408	Othilia Figueroa	Richmond, CA
E-2409	K. L. Matlock	San Jose, CA
E-2410	Judith Willour	Mentor, OH
E-2411	Susan Dougherty	Renton, WA
E-2412	Alan Vogan	San Luis Obispo, CA
E-2413	Rose Wessels	O'Fallon, MO
E-2414	Grace Holden	Arlington, VA
E-2415	Nadya Trytan	Manhattan, KS
E-2416	Jenny Gerding	Kailua, HI
E-2417	Katherine Jarrell	Wilmington, NC
E-2418	Lisa Danz	Los Altos, CA
E-2419	Linda Sommer	Ashtabula, OH
E-2420	Diana Dexter	Overland Park, KS
E-2421	Gary Rejsek	Bolingbrook, IL
E-2422	Rick Williams	Orem, UT
E-2423	Brenda Osterlye	Pacific Grove, CA
E-2424	Seanna Williams	Orem, UT
E-2425	Janice Meyer	San Mateo, CA
E-2426	Richard Wen	Chino, CA
E-2427	Anne Robison	Sherman Oaks, CA
E-2428	Jody Conrad	Oregon City, OR
E-2429	Susan Danberg	Seattle. WA
E-2430	Jared Franz	New York, NY
E-2431	Nicole Gonowon	Champaign, IL
E-2432	Lana Wilson	Tucson, AZ
E-2433	C. J. Dupont	La Mesa, CA
E-2434	Kathryn Greeson	Englewood, CO
E-2435	Craig Usher	Sacramento, CA
E-2436	Peter Cooper	Honolulu, HI
E-2437	Deniz Bolbol	Redwood City, CA
E-2438	Deniz Bolbol (repeat)	Redwood City, CA
E-2439	Chuck Flacks	San Diego, CA
E-2440	Austin King	Madison, WI
E-2441	Ana Maria Giliberti-Ippel	Haleiwa, HI
E-2442	Jozlyn Heine	Lindenhurst, IL
E-2443	Andrew Platner	Madison, NJ
E-2444	Lango Deen	Columbia, MD

Log #	Name	Location
E-2445	Lisa Bailey	Poca, WV
E-2446	Kathie Healy	Milwaukee, OR
E-2447	Sue Williams	Forest Ranch, CA
E-2448	Dana Palka	Lincoln City, OR
E-2449	Corinne Rhae	Scottsdale, AZ
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E-2450	Kat Tullett	Allenton, MI
E-2451	Lynn Craig	Waterford, MI
E-2452	Melanie Konrad	Sand Lake, MI
E-2453	Jim & Jeanne Deller	Issaquah, WA
E-2454	Hannah Dul	NY
E-2455	Phyl Morello	Albrightsville, PA
E-2456	Kent Harris	Reston, VA
E-2457	Elaine Casey	New York, NY
E-2458	Jessica Lasky	Essex Falls, NJ
E-2459	Kathlynn Breinich	Davenport, IA
E-2460	Codie Hellman	Las Vegas, NV
E-2461	Susan E. Chapman	Lawrenceville, GA
E-2462	Lorie Burris	Ft. Oglethorpe, GA
E-2463	Janice Zinkl	Denver, CO
E-2464	Laurie Tuttle	Greensboro, NC
E-2465	Marilyn Depew-Hillman	Willits, CA
E-2466	Barbara Cashman	Greensboro, NC
E-2467	Patty Majors	Petersburg, MI
E-2468	Cheryl Saum	Blaine, MN
E-2469	Melissa Smith	Greenbelt, MD
E-2470	Keith Carlton	Columbia, MO
E-2471	Pamela Raya-Carlton	Columbia, MO
E-2472	Michelle Dunn	Whitmore Lake, MI
E-2473	Janice Burr	Talent, OR
E-2474	Victoria Francis	Rock Hill, SC
E-2475	Richard Goodman	King of Prussia, PA
E-2476	Bree Yednock	Mt. Vernon, WA
E-2477	Mirella Trantham	Moorpark, CA
E-2478	Brian McConville	Fairfax, VA
E-2479	Todd Gartner	Baltimore, MD
E-2480	Guy J. de Baere	New York, NY
E-2481	Turner Jeanette	Seattle, WA
E-2482	Roxanne Warren	New York, NY
E-2483	Deborah Thomas	Indianola, WA
E-2484	Lynne Batlan Levine	Mount Sinai, NY
E-2485	Marilin Engelman	Coram, NY
E-2486	Joel Jensen	Boulder, CO
E-2487	Lisa Meyer	Antioch, TN

Log #	Name	Location
E-2488	George Kinyon	Hedgesville, WY
E-2489	Mary Boyer	Minneapolis, MN
E-2490	Anne O'Neill	Kansas City, MO
E-2491	Steven Adcock	Portland, OR
E-2492	John P. Nelson, PhD	McKenzie, TN
E-2493	Genevieve Adell	Silver Spring, MD
E-2494	Bryce Bulgrin	Stevens Point, WI
E-2495	John Love	Bellevue, WA
E-2496	Melanie Oxley	Silverado, CA
E-2497	Susan Pierce	Park Ridge, IL
E-2498	Maria Graciela Ceballos Ruiz	Mexico, NM
E-2499	Mary Rita Neal	Detroit, MI
E-2500	Cheryl Johncox	Richwood, OH
E-2501	Samantha Blake	Corona, CA
E-2502	Analisa Drew	West Allis, WI
E-2503	Michelle Page	Eugene, OR
E-2504	Karen Watt	Fort Collins, CO
E-2505	Bill Cronin	Minneapolis, MN
E-2506	Lorna Soroko	Tucson, AZ
E-2507	Theresa Hendricks	Washington, DC
E-2508	Pamela J. Jensen	Mount Vernon, WA
E-2509	Jill Gambino	Holly Springs, NC
E-2510	Anna Wilson	Pittsburg, KS
E-2511	Melissa Bulkowski	Byron Center, MI
E-2512	Pamela Yeaton	Eugene, OR
E-2513	Craig Taylor	Santa Barbara, CA
E-2514	Thaddeus Kozlowski	Portland, OR
E-2515	Jessica Simms	Santa Cruz, CA
E-2516	David Mikkelsen	Princeton, NJ
E-2517	Adam Atherton	Columbus, OH
E-2518	Phyllis Hasty	Snellville, GA
E-2519	Christine Witschi	Bandon, OR
E-2520	Sue Carroll	Charlotte, NC
E-2521	Audrey Temelini	Los Angeles, CA
E-2522	Twila Slind	Colbert, WA
E-2523	Nicole & Adam Robinson	Gazelle, CA
E-2524	Tra Fra	Cadiz, KY
E-2525	Christian Ambrose	Atchison, KS
E-2526	Cherie Rees	Vienna, VA
E-2527	Melynda Millard	River falls, WI
E-2528	Kristin Otto	Willits, CA
E-2529	Kristi Kashmer	Columbus, OH
E-2530	Fiona Wilmot	Big Pine Key, FL
E-2531	Martin Byhower	Palos Verdes Peninsula, CA

Log #	Name	Location
E-2532	Sue Boulton	St. Paul, MN
E-2533	Bob Jackson	Lilburn, GA
E-2534	Kimberly Wright	San Diego, CA
E-2535	Holly Dyer	Troy, MI
E-2536	Connie Duchinsky	St. Louis, MO
E-2537	Ashley Norton	Gaylord, MI
E-2538	Micandra C.	PA
E-2539	Patricia M. Mace	Charleston, OR
E-2540	Carolyn McCord	Phoenix, AZ
E-2541	John Riddell	Chino, CA
E-2542	Adrienne Sutton	Madison, MD
E-2543	Erin Holland	Collingswood, NJ
E-2544	Elizabeth Holloway	Warren, OH
E-2545	Annmarie Parmenter	Belleville, NJ
E-2546	Teresa Nemeth	Santa Clara, CA
E-2547	Cynthia Parker	Temecula, CA
E-2548	Jill Morrison	Manhattan Beach, CA
E-2549	Tera James	Breckenridge, CO
E-2550	Sherwin Harris	Hayward, CA
E-2551	Joe Jennings	Columbus, OH
E-2552	Jeffrey Charles Beane	Raleigh, NC
E-2553	Don & Pat Rathmann	Cincinnati, OH
E-2554	Tulasi Higginbottom	Princeville, HI
E-2555	Thomas Steines	Stow, OH
E-2556	Jennifer Hickman	Eden Prairie, MN
E-2557	Carlotte Palumbo	Lakebay, WA
E-2558	Andrea Brown	Santee, CA
E-2559	Meris Untalan	Des Moines, WA
E-2560	Jeff Gwin	Colora Del Mar, CA
E-2561	Lauren Brown	Denver, CO
E-2562	Shawn Duke	Los Feliz, CA
E-2563	Jennifer Craigen	Nesconset, NY
E-2564	Layla Holguin-Messner	Decatur, GA
E-2565	Carol S. Bostick	Eugene, OR
E-2566	Terryl Todd	Pacific Grove, CA
E-2567	Ron Horton	Salt Lake City, UT
E-2568	Roselyn Weil	Rockville, MD
E-2569	Maryam Khorram	Newbury Park, CA
E-2570	Ruth Moorberg	Estherville, IA
E-2571	Aviva Gutin	Caldwell, NJ
E-2572	Christine Cyriacks	Astoria, NY
E-2573	Kelly Reice	Moorestown, NJ
E-2574	Elisse De Sio	Redwood City, CA
E-2575	Cary Marie Jack	San Diego, CA
E-2576	Kyle Pauley	Seattle, WA
E-2577	Loretta Hollings	Tuscon, AZ
E-2578	Matthew Donatoni	Aptos, CA
E-2579	Cory Harden	Hilo, HI
E-2580	Catherine Brickell	Mason City, IL
E-2581	Cynthia Chavez	Eagle Rock, CA
E-2582	Sean Ryan	Roselle Park, NJ
E-2583	Patricia Dishman	Nashville, TN
E-2584	Constance Malone	San Francisco, CA
E-2585	Breen Casey	Pittsburgh, PA
E-2586	Jennifer Rosenberg	Boulder, CO
E-2587	Josephine Burke	Merrionette Park, IL
E-2588	Biancka Jimenez	Mission, KS
E-2589	Linda Anderson	Olathe, KS
E-2590	Randy Burton	Franklin, TN
E-2591	Amy Prisco	Washington, NJ
E-2592	Meghan Allen	Denver, CO
E-2593	David Pray	Anchorage, AK
E-2594	Robert Obrien	Anacortes, WA
E-2595	Airton M. Junior	Porto Alegre, Brazil
E-2596	Jennifer Hafner	Portsmouth, NH
E-2597	Erin Sexton	Cincinnati, OH
E-2598	Jessica White	Farmers Branch, TX
E-2599	Cathy Patterson	Boynton Beach, FL
E-2600	Heather Bent	New Brunswick, NJ
E-2601	Peter Belden	Palo Alto, CA
E-2602	Brittany Lang	Houston, TX
E-2603	Michael McCurdy	Marion. IA
E-2604	Karine Kerns	Spanaway, WA
E-2605	Sharon Warren	Fountain Hills, AZ
E-2606	Ruud Hoemakers	Netherlands
E-2607	Woodson Spring	Iowa City, IA
E-2608	Marianne Manock	Tarzana, CA
E-2609	Susan Thompson	San Antonio, TX
E-2610	Andrea Mancuso	Kingwood, WV
E-2611	Sarah Peck	La Selva Beach, CA
E-2612	Beverly Drucker	Tuckahoe, NY
E-2613	Amanda H.	Orlando, FL
E-2614	Melissa Judge	Tampa, FL
E-2615	Mary Lynch	Fairbanks, AK
E-2616	Juliana Mujica	New Orleans, LA
E-2617	Renee Stefferud	Racine, WI
E-2618	Susan Burgenbauch	Mt. View, CA
E-2619	Marsha Holbrook	Anchorage, AK

Log #	Name	Location
E-2620	Teresa Knezek	Fairbanks, AK
E-2621	Morton Fallick	Encino, CA
E-2622	Lionel Baron	Canada
E-2623	Dotty Cunnington	Key West, FL
E-2624	David Bell	Kingwood, TX
E-2625	Kathy Martin	Port Charlotte, FL
E-2626	Iris Delgado	Sacramento, CA
E-2627	Ellory Laval Rhone	Monona, WI
E-2628	Matthew Rutledge	Whitemore Lake, MI
E-2629	Morgen Crawford	Keystone Heights, FL
E-2630	Samuel Fowler	Delaware, OH
E-2631	Sanura Jackson-Diaz	Avon Lake, OH
E-2632	Rauf Amirli	Little Rock, AR
E-2633	Josh Treadwell	New York, NY
E-2634	Mami Nomura	New York, NY
E-2635	Ellen Tulles	Denver, CO
E-2636	Juliana Barwig	Santee, CA
E-2637	Natalie Ban	Vancouver, Canada
E-2638	Calder Lorenz	Vancouver, Canada
E-2639	Katherine Stuber	Kirkland, WA
E-2640	Floris van Geel	Netherlands
E-2641	Paul Fellegy	Somerville, MA
E-2642	Jane Liebschutz	Jamaica Plain, MA
E-2643	Michael Austin	No. Topsail Beach, NC
E-2644	Tracy Jordan	Galivants Ferry, SC
E-2645	Dana McPhall	Sherman Oaks, CA
E-2646	Rick Wilson	Aliso Viejo, CA
E-2647	Ted Williams	Ralls, TX
E-2648	Mark O'Callaghan	Doraville, GA
E-2649	Catherine Melnicki	Brooklyn, NY
E-2650	Tim Blundell	Australia
E-2651	Marcie Kimball	Baton Rouge, LA
E-2652	Melani Weber	Minneapolis, MN
E-2653	Jaime Bloom	Orlando, FL
E-2654	Francesca Ling	Roseville, CA
E-2655	Victoria C. Faeo	Wasilla, AK
E-2656	Christine Gakovich	Santa Cruz, CA
E-2657	Luba Muzichenko	San Francisco, CA
E-2658	Bridget Shirey	Indiana, PA
E-2659	Patricia Saddler	United Kingdom
E-2660	Linda Laws	Boulder, CO
E-2661	Sandra Grepling	Peoria, AZ
E-2662	Heather Perkins	League City, TX
E-2663	Carrie West	Worcester, MA

Log #	Name	Location
E-2664	Anita Newman	Naperville, IL
E-2665	Ricky Soonagrook	San Francisco, CA
E-2666	Gina Goad	Conway, AR
E-2667	Lori Cushner	Allentown, PA
E-2668	Kenna Davis	Indianapolis, IN
E-2669	Geoffrey Hofman-Frethem	St. Paul, MN
E-2670	Jean E. Hughes	Avondale Estates, GA
E-2671	Scott Kasten	Hudson, WI
E-2672	M. C. Finn	Madison, NJ
E-2673	William Walker	Theodore, AL
E-2674	Garren Watkins	Portland, OR
E-2675	Vera Snyder	Pasadena, CA
E-2676	Kimberly Kones	Teaneck, NJ
E-2677	Rebekah Walker	Hollywood, FL
E-2678	Rosa Temes	Anacortes, WA
E-2679	Natelie Quan	San Jose, CA
E-2680	Philip Thomas	Clute, TX
E-2681	Susan Krahn	Westfield, NJ
E-2682	Jan Clifford	New Orleans, LA
E-2683	Leanna Erickson	Wayzata, MN
E-2684	Poulette Whitfield	Tampa, FL
E-2685	Lee Sonmor	Houston, TX
E-2686	Erica Broome	Alexandria, VA
E-2687	Marie Gutkowski	Ridgewood, NY
E-2688	Kim Berg	Duluth, MN
E-2689	Judy Lyman	Martinez, CA
E-2690	Lisa Hughes	Australia
E-2691	Tom Ford	Marina Del Rey, CA
E-2692	Christina Rivera	Napa, CA
E-2693	Martyn Williams	Santa Fe, NM
E-2694	Andy Ervin	Albuquerque, NM
E-2695	Naomi Kane	Brooklyn, NY
E-2696	Heather Cobb	Dunbar, WV
E-2697	B. Hugh McPeck	Anchorage, AK
E-2698	Joan E. Bork	Maplewood, NJ
E-2699	Nicole Sugarman	Westport, CT
E-2700	Geri Tomat	Lyndhurst, NJ
E-2701	Tom Phelan	Ann Arbor, MI
E-2702	Alison Simpole	United Kingdom
E-2703	John Wallack	Ft. Bragg, CA
E-2704	Paul Hunt	Flint, MI
E-2705	Libby Cornett	Asheville, NC
E-2706	Libby Roderick	Anchorage, AK
E-2707	Eric Ward	Fort Wayne, IN

Log #	Name	Location
E-2708	Jose Garcia	Bronx, NY
E-2709	George T. Roberts	Keizer, OR
E-2710	Raed Ayyad	Fort Worth, TX
E-2711	Sarah Olivo	Alhambra, CA
E-2712	Merry Kay Protheroe	Valley Center, KS
E-2713	Thunderr Wolf	Pennsauken, NJ
E-2714	Nancy Sheridan	St. Petersburg, FL
E-2715	Michael Brand	San Antonio, TX
E-2716	Becky Harris	Medford, MA
E-2717	France Perlman	West Paris, ME
E-2718	Michael Sterns	St. Petersburg, FL
E-2719	Richard Gibbons	Portland, TX
E-2720	Johnna Flahive	Oakton, VA
E-2721	Linda Rodriguez	Chula Vista, CA
E-2722	Andrea Bureman	Locust Grove, VA
E-2723	Laura Lundy	New York, NY
E-2724	Teresa Cambrelen	Miami, FL
E-2725	Lisa Hopkins	Turtle Creek, PA
E-2726	Darin Murray	Saugerties, NY
E-2727	Xan Rubey	Boulder, CO
E-2728	Michele Flood	Fairbanks, AK
E-2729	Chris Or Nai	TX
E-2730	Zulma Henneberger	Crofton, MD
E-2731	Mike Ebert	Vista, CA
E-2732	Rose Mann	Forest City, PA
E-2733	Karna Barquist	Kansas City, MO
E-2734	Maria Gusek	Ft. Worth, TX
E-2735	Sarah Bond	Driftwood, TX
E-2736	June Brown	Stafford, TX
E-2737	Jesse Armaline	Lakewood, OH
E-2738	Brooke Smith	Australia
E-2739	Sky Aisling	Murphy, OR
E-2740	Emily Darlington	Gainesville, FL
E-2741	Cat Widders	Martinez, CA
E-2742	Kathy Kerr	Erie, MI
E-2743	Tammy Searles	Blowing Rock, NC
E-2744	Gary Waters	Lake Wales, FL
E-2745	Nancy Dunn	Poolesville, MD
E-2746	Troy Freund	Milwaukee, WI
E-2747	Rhonda Alfaro	Joliet, IL
E-2748	Sue Clouser	Ukiah, CA
E-2749	Deborah Johnson	Ferndale, MI
E-2750	Peter & Mary Alice Belov	Underwood, WA
E-2751	Paige Sullivan	Urbana, IL

Log #	Name	Location
E-2752	Kristi Ciener	Kernersville, NC
E-2753	Stephen Gerrish	Hailey, ID
E-2754	Sarah Julian	Clarkston, MI
E-2755	Cynthia Gibson	Bailey, CO
E-2756	Matthew Cloner	Tukwila, WA
E-2757	Marie Ostrander	Fairview, NC
E-2758	Don Hirth	Gulfport, MS
E-2759	Dorothy Vollans	Siasconset, MA
E-2760	Lisa Dobias	Mill Valley, CA
E-2761	Nicholas Boeschen	Charleston, SC
E-2762	Melissa Bauer	Marietta, GA
E-2763	Kristine Campbell	Westfield, NY
E-2764	Shakirah Bey	Kutztown, PA
E-2765	Steve & Basia Boos	Canada
E-2766	Cynthia Cotton	Windham, ME
E-2767	Greg Joder	Boulder, CO
E-2768	Mary Page	Charlotte, NC
E-2769	J. Barlow	Cocoa, FL
E-2770	Kliff Hopson	Fairbanks, AK
E-2771	Ezshwan Winding	Ashland, OR
E-2772	Lois Dunn	Roslyn, PA
E-2773	Gudrun Hansen	Ovlla, TX
E-2774	Keth Luke	New Port Richey, FL
E-2775	B. J. Powell	Chattanooga, TN
E-2776	Sherrie Bedard	Sarasota, FL
E-2777	Kelly, Carr	Westminster, CO
E-2778	Catherine Farrell	Los Angeles, CA
E-2779	June Nesmith	Murrells Inlet, SC
E-2780	Gage Hansen	Newburyport, MA
E-2781	Karin McEvoy	Los Angeles, CA
E-2782	Teelyn Mauney	Lincoln, NE
E-2783	Miranda Dwyer	Clearwater, MN
E-2784	Phyllis Sanford	Las Vegas, NV
E-2785	Jack Harmell	Novato, CA
E-2786	Konrad Bis	Chicago, IL
E-2787	Laurie Small	Dillingham, AK
E-2788	Jennifer Maxwell	Oakville, CT
E-2789	Mark Ball	Cardiff, CA
E-2790	Rebecca Paska	Chantilly, VA
E-2791	Tom Clavin	New York, NY
E-2792	Carol DeLisle	Encino, CA
E-2793	Sophia Letournea	Margate, FL
E-2794	Stefanie Freckelto	Joliet, IL
E-2795	Laila Kinnunen	Juneau, AK

Log #	Name	Location
E-2796	Reid Betz	New York, NY
E-2797	MaryJane Buchan	Warsaw, IN
E-2798	Dale Harlow	Bandon, OR
E-2799	Melody Kolb	Medford, OR
E-2800	Yvette LeFevre	Nashville, TN
E-2801	Deb Courtney	Port St. Lucie, FL
E-2802	Joy Leet-Mullins	Lexington, KY
E-2803	Ernest Jacques	Palm Bay, FL
E-2804	Velda Nasal	Westland, MI
E-2805	Nancy Walther	Denver, CO
E-2806	Katherine Davis	Peculiar, MO
E-2807	Anna Suojanen	Medfield, MA
E-2808	Diana Netland	Corona, CA
E-2809	Irene Jones	Richmond, MA
E-2810	Carly Pratt	Portland, OR
E-2811	Elizabeth Martin	LaCanada, CA
E-2812	Laurene Cormier	Windsor, VT
E-2813	Jennifer Johnson	Reno, NV
E-2814	Susan Young	Costa Mesa, CA
E-2815	Peggy Donahue	Allenspark, CO
E-2816	Jennifer Loomis	Appleton, WI
E-2817	Karen Hoffman	Rolla, MO
E-2818	Norma Dehn	Crystal River, FL
E-2819	Sarah Griffith	Gainesville, FL
E-2820	Dawn Thompson	Surfside Beach, SC
E-2821	Tara Troisi	Stony Brook, NY
E-2822	Arthur Trupp	Nanuet, NY
E-2823	Barbara Roth	Las Vegas, NV
E-2824	Adriana Mourad	Plantation, FL
E-2825	Kelleigh Shepard	Richmond, VA
E-2826	David Nettleton	Sacramento, CA
E-2827	Heidi Smith	Albuquerque, NM
E-2828	Phyllis Henderson	Liverpool, NY
E-2829	Millie Gearhart	Muncy, PA
E-2830	Sarah Snyder	Connellsville, PA
E-2831	Allen Sim	Covesville, VA
E-2832	Vasiliki Kyriakakis	Sunnyvale, CA
E-2833	Angelia Nunley	Cross Lanes, WV
E-2834	Deb Gehl	Chicago, IL
E-2835	Kirk Dubose	Portland, OR
E-2836	Nancy Velazquez	Sarasota, FL
E-2837	Erica Glatting	Milwaukee, WI
E-2838	Melissa Bordelon	Lafayette, LA
E-2839	Helen Lembeck	Chula Vista, CA

Log #	Name	Location
E-2840	Joseph Holmes	Kensington, CA
E-2841	John Zuffante	Holbrook, MA
E-2842	Matthew Stein	Clarks Summit, PA
E-2843	Mea Cadwell	Eau Claire, WI
E-2844	Samantha Goodman	Los Angeles, CA
E-2845	Doris Lubonovich	Tovey, IL
E-2846	Deann Russell	Porter, TX
E-2847	Lauren Padawer	Cordova, CA
E-2848	Corinne Myers	Lafayette, LA
E-2849	Linda Kozak	Clearwater, FL
E-2850	Marcia Ruland	Flanders, NY
E-2851	Daniel Guaqueta	Hattiesburg, MS
E-2852	Nancy Robbins	Wasilla, AK
E-2853	Sandra Hutchison	Rock Hill, SC
E-2854	Andreya Edge	Las Vegas, NV
E-2855	Michael Mc Nally	Irvine, CA
E-2856	Noreen Parks	Keaau, HI
E-2857	Elyse Kline	Asheville, NC
E-2858	Diana Bledsoe	Appalachia, VA
E-2859	Jerry Adams	Crofton, MD
E-2860	Dolores McCoy	Saginaw, MI
E-2861	Paige Vallee	Sunnyside, GA
E-2862	Nancy McClintock	Potomac, MD
E-2863	Chris White	Anchorage, AK
E-2864	Jason Graham	Anchorage, AK
E-2865	Gonzalo A. R. Galanes	Argentina
E-2866	Martha Bradshaw	Monterey Park, CA
E-2867	Dianne Sullivan	Kent, WA
E-2868	Natalie Fryman	Poughkeepsie, NY
E-2869	Ruth T. Lerow	West Palm Beach, FL
E-2870	Amanda Schwartz	Studio City, CA
E-2871	Mary Lyon	Los Angeles, CA
E-2872	Doyle Sebesta	Georgetown, TX
E-2873	Amanda Cunningham	Westminster, CA
E-2874	James Shafer	Tucson, AZ
E-2875	Claude Guillemard	Baltimore, MD
E-2876	Kathy Tobiassen	Belchertown, MA
E-2877	Martin Beam	Damascus, MD
E-2878	Dee Matkowski	Carrollton, OH
E-2879	Michael Finley	Wauconda, IL
E-2880	Jessica Moore	Jacksonville, FL
E-2881	Peter Holck	Anchorage, AK
E-2882	David Prawel	Loveland, CO
E-2883	Debby Bender	Eureka, CA

Log #	Name	Location
E-2884	Micah McConochie	Raleigh, NC
E-2885	Emily Hays-Newman	Marietta, OH
E-2886	Susan McDonald	Frostburg, MD
E-2887	Carol Hambrecht	Middleton, WI
E-2888	Sharon Rosenberger	Youngstown, FL
E-2889	Dorothy Anacleto	Harbor, OR
E-2890	Deborah Anthony	Kansas City, MO
E-2891	Charles Patti	South Euclid, OH
E-2892	Wendy Proulx	Canada
E-2893	Maureen Main	Burbank, CA
E-2894	Dee Scarr	Conifer, CO
E-2895	Liz Veazey	Morganton, NC
E-2896	Robert Loucks	Big Bear Lake, CA
E-2897	Anne Callace	Bethel, CT
E-2998	Darryl Carstensen	West Lafayette, IN
E-2899	Kara Hodgson	Fairbanks, AK
E-2900	Yllyse Yang	Aurora, CO
E-2901	Mansfield Christopher	Trinidad, Tobago
E-2902	Bonnie Callahan	Tucson, AZ
E-2903	Judith Hallberg	Middletown, NJ
E-2904	Catherine Steichen	Glendale, AZ
E-2905	Margaret Hedderman	Cimarron, NM
E-2906	Bob Hedderman	Cimarron, NM
E-2907	Margaret Stein	Scottsdale, AZ
E-2908	Lawrence Nader	Canonsburg, PA
E-2909	Patricia Heiden	Dousman, WI
E-2910	Vince Scialabba	Merchantville, NJ
E-2911	Jessica Uze	Arlington, VA
E-2912	Cheryl Works	Jasper, AL
E-2913	John Viglione	Erie, PA
E-2914	Jacquelyn Sheehan	Barnesville, MD
E-2915	Richard Takagi	Cypress, CA
E-2916	Leigh Hedderman	Cimarron, NM
E-2917	Cheryl Wisniewski	Milton, FL
E-2918	Lisa Weber	San Mateo, CA
E-2919	George Lyne	Lowell, AR
E-2920	Nydia Cabrera	Miami Beach, FL
E-2921	Pam Dinuuci	Hillside, IL
E-2922	Cheryl Somers	Egg Harbor Township, NJ
E-2923	Jacob Snider	Alanson, MI
E-2924	Kristen Rollo	Winnie, TX
E-2925	Adam Sokool	La Mirada, CA
E-2926	Eddie Filer	Naples, FL
E-2927	Rebecca Deering	Newton, MA

Log #	Name	Location
E-2928	Anisha Shankar	Newark, DE
E-2929	Glen Young	Camp Hill, PA
E-2930	Shelly Edwards	Odessa, TX
E-2931	Mike Stoakes	Overland Park, KS
E-2932	Melissa Vernon	Ann Arbor, MI
E-2933	Leah Marx	Beverly Hills, MI
E-2934	Sarah Thornton	Fairbanks, AK
E-2935	Jane Engel	Taos, NM
E-2936	Diana Carnahan	Clarksville, TN
E-2937	Oliver Hardin	Perkins, OK
E-2938	Robin Gustus	Jacksonville, FL
E-2939	Christine Maggi	Myrtle Beach, SC
E-2940	Albina Vazquez	Puerto Rica
E-2941	Claudette Schiratti	Shawnee, KS
E-2942	Betty Jean Herner	Strongsville, OH
E-2943	Susan Stephens	Safety Harbor, FL
E-2944	Sally Gillette	Palo Alto, CA
E-2945	Jeanne St. John	Newport, OR
E-2946	Steve M. Wood	Summerville, SC
E-2947	Kate Brandt	Burbank, CA
E-2948	Brenda Lewis	Rockdale, TX
E-2949	Toni M. Belski	Bentleyville, PA
E-2950	Diane Pelke	Spanaway, WA
E-2951	J. B. Wilson	Greenwood, SC
E-2952	Stacey Lawless	Asheville, NC
E-2953	Mike Fortune	Brevard, NC
E-2954	Fred Cepela	Traverse City, MI
E-2955	Charlotte Brody	Chappaqua, NY
E-2956	Hee Cheon Park	South Korea
E-2957	Carol Hernandez	Huntington Park, CA
E-2958	R. Schraft	Angola, NY
E-2959	Theresa Wilcox	Rodanthe, NC
E-2960	Dee Daza	Johnston, RI
E-2961	Judy Soto	South Gate, CA
E-2962	Carol Mylant	Willowick, OH
E-2963	Elise Henline	Key Largo, FL
E-2964	Janice Farnsworth	Jacksonville, FL
E-2965	Tamara Travis	Miami Beach, FL
E-2966	Agnes Rambeck	Sauk Rapids, MN
E-2967	Dick Jones	New York, NY
E-2968	Jill Sullivan	Hamden, CT
E-2969	Kristi Turner	Prescott Valley, AZ
E-2970	Amy Miller	Tyler, TX
E-2971	Joann Tippett	Apopka, FL

Log #	Name	Location
E-2972	Lara Rusch	Ann Arbor, MI
E-2973	Tibitha Harrison	Lewisburg, TN
E-2974	Kimberly Jarvis	Merritt Island, FL
E-2975	Megan Young	Charlotte, NC
E-2976	Eugenia Zhurbinskaya	South Plains, NJ
E-2977	Krist Bussart	Columbus, OH
E-2978	Kamyar Marashi	Novato, CA
E-2979	Gaynell Farmer	Shaker Heights, OH
E-2980	Blerina Xeneli	Bronx, NY
E-2981	Dwight Hayden	Danville, IN
E-2982	Emily Zabor	Santa Fe, NM
E-2983	Susan Nicoll	Frazier Park, CA
E-2984	Anna Kirkpatrick	Jamaica Plain, MA
E-2985	Cayce Leithauser	Levering, MI
E-2986	Michael Williams	Baltimore, MD
E-2987	Sandra Isabel Rodrigue	Ann Arbor, MI
E-2988	Christie Boudreaux	Portland, IN
E-2989	Janis Prinslow	Temecula, CA
E-2990	Mary Ann Kim	Santa Rosa, CA
E-2991	Sarah Ansley	Hickory, NC
E-2992	Lyla Lampson	Milton-Freewater, OR
E-2993	Jutta Bruegel-Sasse	Temple Terrace, FL
E-2994	Dorothea Caltabiano	Clayton, NC
E-2995	Kristin Fischer	Waltham, MA
E-2996	Jennifer Rosenberg	Boulder, CO
E-2997	Betty Whitmer	Vancouver, WA
E-2998	Karla Nicolasora	Phillippines
E-2999	Molle McCurnin	San Antonio, TX
E-3000	Heidi Sowers	Salisbury, MD
E-3001	Sarah Brady	Los Angeles, CA
E-3002	Tanya McNeil	Cass City, MI
E-3003	Phoebe Wray	Ayer, MA
E-3004	John Nichols	Carson City, NV
E-3005	Robert Prevallet	North Fort Meyers, FL
E-3006	Judy Paley	Lawrence, KS
E-3007	Davin Holen	Anchorage, AK
E-3008	Stephen Betgen	Houston, TX
E-3009	Jeff Lantos	Marina del Ray, CA
E-3010	Judith Hutchison	Washington, DC
E-3011	Leslie Wagner	Houston, TX
E-3012	Melinda Disque	Home, PA
E-3013	Steven Quigley	Virginia Beach, VA
E-3014	Bet Alwin	Northhampton, MA
E-3015	Melody Schatz	Townsend, DE

Log #	Name	Location
E-3016	William Meyer	San Francisco, CA
E-3017	Debra Sparque	Yukon, OK
E-3018	Tammy Ballard	Portland, OR
E-3019	Lyn Bradford	Los Angeles, CA
E-3020	Dan & Hilary Walker	Southfield, MI
E-3021	Alan Frankel	Truro, MA
E-3022	Morris Leibowitz	Leeds, MA
E-3023	Sherry Pridemore	Norman, IN
E-3024	Rammohan Rao Errabelli	Hyderabad, AL
E-3025	Lynn Lynch	Newport, NH
E-3026	Nicole Paul	Asheville, NC
E-3027	Rachel Edwards	Franklin, TN
E-3028	Debi Hamlin	Eudora, KS
E-3029	Laurie Glaser	St. Paul, MN
E-3030	Erik Vahl	Soquel, CA
E-3031	Allan Campbell	San Jose, CA
E-3032	Marjorie Gerhart	Panama
E-3033	Richard & Mary Chaisson	Oxford, CT
E-3034	Dianna Johnson	San Diego, CA
E-3035	Sydney Wallace	Ellicott City, MD
E-3036	Amy Levine	Dorchester, MA
E-3037	Danielle Seyfarth	Brighton, MI
E-3038	Gloria Bucco	Lincoln, NE
E-3039	Yale Feder	Berkeley, CA
E-3040	Warren Mutter	York, PA
E-3041	Jan Lowe	Australia
E-3042	Emmett Blankenship	Marietta, GA
E-3043	Al Dwyer	Louden, NH
E-3044	Sister Letitia	Mukwonago, WI
E-3045	Barbara Malley	Weymouth, MA
E-3046	Sharon Mitchell	Davisburg, MI
E-3047	Clara Fuchsman	Seattle, WA
E-3048	Cheryl Ebbing	Hamilton, OH
E-3049	Ralph Van Dusseldorp	Kenai, AK
E-3050	Bill Culpepper	South Daytona, FL
E-3051	Mary Piacquadio	Margate, FL
E-3052	Peter W. Beuttell	Vero Beach, FL
E-3053	Darlene Jackson	Minneapolis, MN
E-3054	John Thornton	Grants Pass, OR
E-3055	Joanne Proffitt	Rockport, TX
E-3056	Steven Wehling	Rapid City, SD
E-3057	Brian Milbrandt	Aurora, IL
E-3058	Rick Partridge	Nome, AK
E-3059	A. Wynn	Hendersonville, NC

Log #	Name	Location
E-3060	Theresa Borsodi	Wayland, MA
E-3061	Linda Cameron	New York, NY
E-3062	Cathy Runge	Lovettsville, VA
E-3063	Carol Biggs	Juneau, AK
E-3064	Alex Carmichael	Bedford Corners, NY
E-3065	Anthony D. Diana	Phoenix, AZ
E-3066	Rosanne Minich	Bethel Park, PA
E-3067	Tom Hutchins	Santa Rosa, CA
E-3068	Gloria Garcia	Miami, FL
E-3069	Barbara Fleury	Brooklyn, NY
E-3070	Tara Bellefontaine	Uxbridge, MA
E-3071	Jonathan Sabel	Boonton Township, NJ
E-3072	Stacey Forrester	Spring Hill, FL
E-3073	Elyse D'Angelo	Big Sur, CA
E-3074	Erin Bishop	Louisville, KY
E-3075	Yvette Latiolais	Broussard, LA
E-3076	Nazen Merjian	Charlottesville, VA
E-3077	Aric Blitch	Salt Lake City, UT
E-3078	Scot Charles	Seattle, WA
E-3079	Jessica King	Madison, WI
E-3080	Maggie Breitenstein	Tigard, OR
E-3081	Agnes Jung	Budapest, Hungery
E-3082	Kristin Killian	San Diego, CA
E-3083	Nicole Orengo	Asheville, NC
E-3084	Steve Hunt	North East, MD
E-3085	Linda Patten	Port St. Lucie, FL
E-3086	Robert Harrison	Homer, AK
E-3087	Kathy Daniels	WV
E-3088	Douglas Collura	New York, NY
E-3089	Dian Hardy	Sebastopol, CA
E-3090	Alex Sowl	LaPointe, WI
E-3091	Deb Conner	Warrensburg, MO
E-3092	Jessica Pitre	Green Bay, WI
E-3093	Steve & Patti Devine	Fox Island, WA
E-3094	Greg Woodruff	Radford, VA
E-3095	Virginia Arnette	Brevard, NC
E-3096	Stacy Clark	Allen, TX
E-3097	Ellen Tavares	Tiverton, RI
E-3098	Linda Woodcock	Huntsville, AL
E-3099	R. David Speller	Peachtree City, GA
E-3100	Anna Hautzinger	Chicago, IL
E-3101	Deborah Poole	Watkinsville, GA
E-3102	Cherie Cannaday	Muskegon, MI
E-3103	David Platt	Hollywood, FL

Log #	Name	Location
E-3104	Jo Camas	Bronx, NY
E-3105	Paul Davis	Anchorage, AK
E-3106	Marilyn Teberio	Warrior Run, PA
E-3107	Valarie Wagner	Cathedral City, CA
E-3108	Pam Young	Chevy Case, MD
E-3109	Yueli Gan	Malaysia
E-3110	Karen Retford	Modesto, CA
E-3111	Virginia Salvin	Chippewa Falls, WI
E-3112	Amy Dawn	Fresno, CA
E-3113	Cindy Beckner	Hanover, PA
E-3114	Paul Rettig	Chicago, IL
E-3115	Kathryn Barnes	Sherwood, MI
E-3116	K. C. Curry	San Angelo, TX
E-3117	Gene Hanson	Chester, NJ
E-3118	Renee Burkhead	Everett, WA
E-3119	Jo Clark	Hong Kong
E-3120	Peter Mulshine	Phillipsburg, NJ
E-3121	Kent Mijangos	Salt Lake City, UT
E-3122	Elizabeth LaPosta	Salisbury, MD
E-3123	Bob Patterson	Eagle River, WI
E-3124	Emily Duval	Lake Worth, FL
E-3125	Bonnie Melton	Mission, TX
E-3126	Gary Boyd	Dayton, TN
E-3127	Charles Langelier	Salt Lake City, UT
E-3128	Robert Reinhardt	Los Angeles, CA
E-3129	Dwight Buck	Mammoth Lakes, CA
E-3130	Paula Simmons	Cookeville, TN
E-3131	Julee Spangler	Nashville, TN
E-3132	Phyllis Hyde	Bethesda, MD
E-3133	Lloyd Johnson	Corning, CA
E-3134	Cher Houston	Anaheim, CA
E-3135	Megan Marion Shea	Sitka, AK
E-3136	Albert Huebner	Canoga Park, CA
E-3137	Karen Miller	Warminster, PA
E-3138	Robert Seyko, MD	St. Clair, MI
E-3139	Kathy Brown	Pahrump, NV
E-3140	Sandra Track	Elkhart, IN
E-3141	Rossi Peralta	Mexico
E-3142	Amanda Burrows	Brooklyn, NY
E-3143	Jean Fox	Racine, WI
E-3144	Rose Toh	Singapore
E-3145	Dawn Saunders	Patterson, NY
E-3146	Marcus Petrelli	Pittsburgh, PA
E-3147	Lori P. Warren	Belleville, MI

Log #	Name	Location
E-3148	Seth Collins	Johnson, VT
E-3149	Shelly Partridge	Orlando, FL
E-3150	Rebecca Adams	Jacksonville, FL
E-3151	Jonathan Baker	Greensboro, NC
E-3152	Jen Smith	York, PA
E-3153	Gina Rocchio	Denver, CO
E-3154	Christine Dellert	St. Petersburg, FL
E-3155	Joy Fortunato	Coconut Creek, FL
E-3156	Jerry Link	Nashville, TN
E-3157	Dorothy Keeler	Anchorage, AK
E-3158	Ron Sonntag	Snohomish, WA
E-3159	Edgar Wayburn, MD (see L-0032)	San Francisco, CA
E-3160	Glen Weber	Endicott, NY
E-3161	Nicolette Crone	Clearlake Oaks, CA
E-3162	Michael Jarvis	Newark, DE
E-3163	Vivienne Handy	Lithia, FL
E-3164	Judy Desreuisseau	Gill, MA
E-3165	Kathy Bayles	Jacksonville, OR
E-3166	David Holderread	Euclid, OH
E-3167	Arnette Dulyea-Curley	Grand Rapids, MI
E-3168	Jessica Barry	Garden City, KS
E-3169	Chris Dunford	South Newfane, VT
E-3170	Donna Pollock	Hope, AR
E-3171	Christina Turnes	Red Bluff, CA
E-3172	Elaine Swain	Tallahassee, FL
E-3173	Julie Shoemaker	Kenvil, NJ
E-3174	Remy Tankel	Lynn, MA
E-3175	Manual Cruz	Puerto Rico
E-3176	Lloyd Downs	Magalia, CA
E-3177	Connie E. Turner	Massillon, OH
E-3178	Barbara Nelson	Pelham, NY
E-3179	Victoria Wormell	Vernon, CT
E-3180	Jacob Pedroza	Castle Rock, CO
E-3181	Joey Gilbert	Livingston, TX
E-3182	Carol Meyer	California, MO
E-3183	Russell Deatherage	Wake Forest, NC
E-3184	Margaret Pigman	Pasadena, CA
E-3185	Janna Hall	Santa Ana, CA
E-3186	Jimmy Sinton	Fairfield, IA
E-3187	Robert Allen	Galesburg, IL
E-3188	Victoria Chichester	Middleburgh, NY
E-3189	Joann Harrison	Hamilton, GA
E-3190	Emily Kornik	Signal Hill, CA
E-3191	Autumn Thomas	Levittown, PA

Log #	Name	Location
E-3192	Cindy Maier	Saginaw, MI
E-3193	Cheryl Marriage	Madison, IN
E-3194	Mary Miceli	Chugiak, AK
E-3195	Heather Chatwin	Canada
E-3196	Erin Rose Carrico	Little Rock, AR
E-3197	Rick F.	Holyoke, MA
E-3198	Rick Phillips	Corunna, MI
E-3199	Jay Patel	Reisterstown, MD
E-3200	James Kovacs	Upper Lake, CA
E-3201	Frank Polites	Aston, PA
E-3202	Elizabeth Freedman	Lancaster, PA
E-3203	Michelle Ford	Biloxi, MS
E-3204	Jeremiah Holes	Titusville, PA
E-3205	Sharron James	Tuolumne, CA
E-3206	Terence McNamara	Burlington, NC
E-3207	Christopher Connor	Santa Barbara, CA
E-3208	Risa Spindler	Scarsdale, NY
E-3209	Kendra Lipinski	Albuquerque, NM
E-3210	Christine Moreno	Davie, FL
E-3211	Jeannine Eldridge	Elizabeth, NJ
E-3212	Catherine Hutchinson	Calgary, Canada
E-3213	Elizabeth Davis	Sebastopol, CA
E-3214	Jean Gregas	Roebling, NJ
E-3215	Annette Albert	Revere, MS
E-3216	Niki Scott	Orange City, FL
E-3217	George Thomas	Nederland, CO
E-3218	Don Tilleman	Longmont, CO
E-3219	Andrea Wensley	Middleville, MI
E-3220	Mel Laubach	Missoula, MT
E-3221	Lisa DeOrnellas	Lemoyne, PA
E-3222	Cheryl Cullen	Seattle, WA
E-3223	Kay Bedingfield	Chapel Hill, NC
E-3224	Grantham Thomas	New Windsor, NY
E-3225	Dana Cole	Tampa, FL
E-3226	Eric Sundquist	Decatur, GA
E-3227	Robert Mull	Davie, FL
E-3228	Brion J. Dodson	Wyandotte, MI
E-3229	Patricia Collins	Garner, NC
E-3230	Jesse Czekanski-Moir	Hamilton, NY
E-3231	Mike Acton	Hudsonville, MI
E-3232	Erin Boydstun	Gainesville, FL
E-3233	Kara Legault	Montreal, Canada
E-3234	Karin Haussen	Brazil
E-3235	Ana Maria Velasco	Crown Point, IN

Log #	Name	Location
E-3236	Jennifer Apple	Sammamish, WA
E-3237	Phil West	Wenatchee, WA
E-3238	Teresa Brown	Conshohocken, PA
E-3239	Kelly Arnold	Fairbanks, AK
E-3240	Tom Williams	Hollywood, CA
E-3241	Nicole Groch	Melbourne, Australia
E-3242	Jacqui Nuttall	Auckland, Australia
E-3243	Ali Kittle	Dallas, TX
E-3244	Randall Johnston	Little Rock, AR
E-3245	Garrett Smith	Tempe, AZ
E-3246	Nina Kelly	New York, NY
E-3247	Rosalin Chrest	Fridley. MN
E-3248	Rebecca Forbath	San Francisco, CA
E-3249	Jackie Moore	Santa Clara, CA
E-3250	Joseph Ramcheck	Green Bay, WI
E-3251	Doug Dickson	Calgary, Canada
E-3252	Joanne Smith-Hileman	Victorville, CA
E-3253	J. J. Kapkin	Los Gatos, CA
E-3254	Sandra Blackburn	La Puente, CA
E-3255	Henry Neal Camp	Tempe, AZ
E-3256	Leslee Goodman	Santa Barbara, CA
E-3257	Ruth Adam	Whitemore Lake, MI
E-3258	Dr. & Mrs. Jonathan S. Levy	Eugene, OR
E-3259	Jon Huls	Scottsburg, IN
E-3260	Shaney Frey	Summerland Key, FL
E-3261	Jackie Hendrix	Canada
E-3262	Rebecca English	Colorado Springs, CO
E-3263	J. Johnson	Anchorage, AK
E-3264	Elaine Costeas	Lombard, IL
E-3265	Diana Bozell	Omaha, NE
E-3266	Carol Duchamp-Katz	Bolinas, CA
E-3267	Lesa M. Chambers	Anchorage, AK
E-3268	Ginger Smith	Tolar, TX
E-3269	Yvonne Smith	Dearing, GA
E-3270	Vicky Ludwig	Lewiston, ID
E-3271	Linda Everett	Correctionville, IA
E-3272	Kalleena Dove	Gilbertsville, PA
E-3273	Deborah Manning	Indianapolis, IN
E-3274	Nancy Miller	Baltimore, MD
E-3275	William Claytor	Bloomington, IN
E-3276	Joey Sutton	Chocowinity, NC
E-3277	Lisa Dantonio	Wellington, FL
E-3278	Carlotte Grenard	Orting, WA
E-3279	Claire Rogers	Webster, NY

Log #	Name	Location
E-3280	Claudia Dikinis	Santa Monica, CA
E-3281	Rebecca Abbott	Lake Park, FL
E-3282	Michael & Judith Wheeler	Cana, VA
E-3283	Janelle Higgins	Chesapeake City, MD
E-3284	Doree Grossman	Ann Arbor, MI
E-3285	Carmen Silvers	Columbia Heights, MN
E-3286	Kristen Landolt	Pullman, WA
E-3287	Kathleen Byrnes	Vineyard Haven, MA
E-3288	Coreen Kendrick	Canada
E-3289	Sara Kleinbaum	Hackensack, NJ
E-3290	Gregory Henderson	Belle Plaine, KS
E-3291	Carol Millard	Apopka, FL
E-3292	Susan Fruth	Madison, WI
E-3293	Madalena Hutcheson	Portland, TN
E-3294	Lorraine King	Uncasville, CN
E-3295	Jerry R. Landers	Austin, TX
E-3296	Virgie McKeague	Honolulu, HI
E-3297	Jeannette Geib	Pittsburgh, PA
E-3298	Betty Lee	Hong Kong
E-3299	Jonathan Stephenson	Lyndeborough, NH
E-3300	Jerry Rasmussen	Waco, TX
E-3301	Anand Seemangal	Hollis, NY
E-3302	Margaret Lydecker	New York, NY
E-3303	Roland Hackenberg	Germany
E-3304	Tracy Swenson	Logan, UT
E-3305	Jenni Cortinas	Oshkosh, WI
E-3306	Kathryn Wood	Sartell, MN
E-3307	Janice Hodghead	Hayfork, CA
E-3308	Merni Lindquist	Willmar, MN
E-3309	Kenji Takakashi	Newark, DE
E-3310	Luis Rivers	La Jolla, CA
E-3311	David Adams	Jersey City, NJ
E-3312	Ronald Grubb	Rockford, IL
E-3313	Ella Yanok	Bridgeport, OH
E-3314	Debby Lamey	Fayetteville, NC
E-3315	Sarah E. J. Cohen	Berkeley, CA
E-3316	Adam Yates	Fairbanks, AK
E-3317	Diana Weber	Albany, NY
E-3318	Tauseef Quraishi, PhD	Madison, WI
E-3319	Dan Semler	Colton, WA
E-3320	Richard Gabriel	Eugene, OR
E-3321	Chris Gardos	Burbank, CA
E-3322	Carroll Dana	Kalaheo, HI
E-3323	Ruth Barrett	Toronto, Canada

Log #	Name	Location
E-3324	Kate Merrick	Jacksonville, FL
E-3325	Amie Coomer	Cincinnati, OH
E-3326	Paige McKee	Fort Collins, CO
E-3327	Charmaine Slaven	Seattle, WA
E-3328	Sonnia Smith	Tallahassee, FL
E-3329	Marina Baker	Glendale, CA
E-3330	Ed Mass	Naples, FL
E-3331	Ellen Matheson	Salisbury, NH
E-3332	Beth Lewis	Baltimore, MD
E-3333	Jennifer Kovel	Pittsburgh, PA
E-3334	Pam Connally	Thomson, GA
E-3335	Gregg Kuehl	Muncie, IN
E-3336	Caroline Casey	Cabin John, MD
E-3337	Zelda Block	Larchmont, NY
E-3338	Kimberlee James	Phoenix, AZ
E-3339	Linda Devendorf	Fremont, CA
E-3340	Chantal Gutierrez	Austin, TX
E-3341	Jennifer Matas	Coral Gables, FL
E-3342	Michael Lombard	Denver, CO
E-3343	Charlene Murphy	Dade City, FL
E-3344	Bill Benson	Taipei, Taiwan
E-3345	Brina Ingraham	Orange Park, FL
E-3346	Mary Doyle	Xenia, OH
E-3347	Susan Pepperwood	Ukiah, CA
E-3348	Heather Reich	Hayward, CA
E-3349	Gabrielle Guhl	Santa Barbara, CA
E-3350	Megan Oglevie	Mill Valley, CA
E-3351	Charmain McAdory	North Pole, AK
E-3352	D. Anthony Breed	Chicago, IL
E-3353	James Bowling	Martinsville, VA
E-3354	Alyson South	Anchorage, AK
E-3355	Linda Molnar	East Palestine, OH
E-3356	Paul Corogin	Gainesville, FL
E-3357	Kate Stead	Westminster, CO
E-3358	Dr. Richard Woerpel	Simi Valley, CA
E-3359	Janine Ireland	Macon, GA
E-3360	Robin Nadeau	St. Augustine, FL
E-3361	Scott Wilson	San Carlos, CA
E-3362	Sacha Dowell	Christchurch, New Zealand
E-3363	Jennie McLaughlin	Blue Bell, PA
E-3364	Zelta Burnette	Toronto, SD
E-3365	Paula Scheuering	Miles City, MT
E-3366	Leanne Droke	Ketchikan, AK
E-3367	Yvonne Wilder	Fairbanks, AK

Log #	Name	Location
E-3368	Bob Sommer	San Francisco, CA
E-3369	Mary Alice Marcial	Blairstown, NJ
E-3370	Jennifer Kim	Holmdel, NJ
E-3371	Jacqueline Gelfuso	El Paso, TX
E-3372	Shawn Nelson	Costa Mesa, CA
E-3373	Kimberly Villalobos	Los Angeles, CA
E-3374	Alyson Wiedrich	Beulah, ND
E-3375	James Blue	Ft. Collins, CO
E-3376	Cat Koehn	Fall Creek, OR
E-3377	Mark Finn	Florissant, MO
E-3378	Ximena Sanchez	Santiago, Chile
E-3379	Cassandra Suarez	Albuquerque, NM
E-3380	Jodi Groberg Hodrov	Israel
E-3381	Karen Roberts	Nashua, NH
E-3382	Colleen Weiler	Davison, MI
E-3383	Amy McAnlis	King of Prussia, PA
E-3384	Martha Wade	Arlington Heights, IL
E-3385	Arvind Kumar	San Jose, CA
E-3386	Shannon Cragg	Halifax, Canada
E-3387	Linda Lanz	Anchorage, AK
E-3388	Katherine Lillejord	Tacoma, WA
E-3389	Gail Gardener	Sebastopol, CA
E-3390	Meg Blanchet	Eugene, OR
E-3391	Jamie Minnaert-Grote	Waverly, IA
E-3392	Ariel Graham	Coronado, CA
E-3393	Frerderick Wen	Houston, TX
E-3394	Sandra Barni	Kirkland, WA
E-3395	Riv Tukiainen	Finland
E-3396	Annie Morris	Eufaula, OK
E-3397	Peter Wilcox	Rodanthe, NC
E-3398	Alisa Moffat	Anchorage, AK
E-3399	Alice Arnesen	Roy, WA
E-3400	Theodora Haughton	Sandwich, NH
E-3401	Zazie Lucassen	Escondido, Mexico
E-3402	Marissa Anderson	Minneapolis, MN
E-3403	Paige Layne	Hanford, CA
E-3404	Lynne Stanford	Canyonlake, TX
E-3405	John Kafkaloff	Lakeport, CA
E-3406	Katherine Burke Brand	Anchorage, AK
E-3407	Susan Sommers	Aurora, CO
E-3408	Karen Shoop	Long Beach, CA
E-3409	Dusty Young	St. Augustine Beach, FL
E-3410	Jakara Hubbard	Charlottesville, VA
E-3411	Weeping Willow	Katy, TX

Log #	**Name**	**Location**
E-3412	Timea Kesztyus	Kosovo
E-3413	Sonja Staes	Antwerp, Belgium
E-3414	Inger Bjorkman	Australia
E-3415	Barbara Carmichael	Ramona, CA
E-3416	Dianna Morris	Bakersfield, CA
E-3417	Alison Hill	Aurora, CO
E-3418	Vilmarie Roura	San Francisco, CA
E-3419	Courtney Larson	Weed, CA
E-3420	Janette Jakobs	Belleville, IL
E-3421	Jenna Berg	Santa Barbara, CA
E-3422	Dorothy Bennett	Tucson, AZ
E-3423	Laurie Moss	Huntsville, AL
E-3424	Sheila Edwards	Dubai, United Arab Emirates
E-3425	Ellen Peterson	Berkeley, CA
E-3426	Phyllis Mandell	Great Neck, NY
E-3427	Patrice Blain	Auckland, New Zealand
E-3428	Ruth Niswander	Davis, CA
E-3429	Ronald Johnson	Fremont, WI
E-3430	Nicole Navarro	Concord, CA
E-3431	Jeffrey Workman	Pittsburgh, PA
E-3432	Lauri Kero	Tampere, Finland
E-3433	Kristin Hanson	Anchorage, AK
E-3434	Laura Parker	Eugene, OR
E-3435	David Cann	Oakland, CA
E-3436	John Lazzareschi	South San Francisco, CA
E-3437	Gordon Taft	Mesa, AZ
E-3438	Diane Caldwell	Crescent City, CA
E-3439	George L. Pettit	San Jose, CA
E-3440	Linda Heath	Sheridan, CA
E-3441	Tina Walters	Dillsburg, PA
E-3442	Irmtraud Roth	Muenchen, Germany
E-3443	Agah Ugaz	Bursa, Turkey
E-3444	Merrill Frank	New York, NY
E-3445	John Makinen	Haines, AK
E-3446	Carol Vila-Young	Dallas, TX
E-3447	Mike Cluster	Concord, CA
E-3448	Angie Turner	Greenfield, MA
E-3449	Joesph Martinez	El Paso, TX
E-3450	Dennis Sturm	Jayville, OR
E-3451	Eve Himmelhaber	Oro Valley, AZ
E-3452	Sara Berggren	Bandhagen, Sweden
E-3453	Anissa Tai	Amsterdam, Netherlands
E-3454	D. J. Lubonovich	Franklin, PA
E-3455	Karen Barrows	Nordland, WA

Log #	**Name**	**Location**
E-3456	Adrian Pisica	Bucharest, Romania
E-3457	Sandro Di Domenico	Zurich, Switzerland
E-3458	Miquel Camps	Mao, Spain
E-3459	K. Paige Seek	Alburquerque, NM
E-3460	Zeb Nole	Las Vegas, NV
E-3461	Jeff Dowden	Newport Beach, CA
E-3462	Rose Mari	Point Arena, CA
E-3463	Linda Knight	San Francisco, CA
E-3464	Hylke de Vries	Amsterdam, Netherlands
E-3465	Ole Sol	Copenhagen, Denmark
E-3466	Liana Sonne	Ostrander, OH
E-3467	Kathi Skidmore	North Highlands, CA
E-3468	Manuel Zapater	Zaragoza, Spain
E-3469	John Pearce	San Francisco, CA
E-3470	Sophie Crouch	United Kingdom
E-3471	Gail & Robert Stagman	Mercer Island, WA
E-3472	Janis Ohmstede	Ester, AK
E-3473	Jennifer Pawlitschek	Long Beach, CA
E-3474	Olena, Lana	Denver, CO
E-3475	Bob Wright	Goodfish Lake, Canada
E-3476	Kat Cirelli	Bullhead City, AZ
E-3477	Hailey Barger	Altoona, PA
E-3478	Jean Selmes	United Kingdom
E-3479	Gloria Vasco	Caceres, Spain
E-3480	Judy Dodson	CA
E-3481	James McElroy	Ft. Myers, FL
E-3482	Michael Keith	West Covina, CA
E-3483	Anthony Horth	Gothenburg, Sweden
E-3484	Michael Strbac	Rancho Cucamonga, CA
E-3485	Lars Schmidt	Copenhagen, Denmark
E-3486	Marisa Besteiro	Western Cape, South Africa
E-3487	Aaron Bodnar	San Francisco, CA
E-3488	Thomas McGovern	Dubuque, IA
E-3489	Joyce Wippler	San Diego, CA
E-3490	Zoe Goad	United Kingdom
E-3491	Helmuth Glutzberger	Taufkirchen, Germany
E-3492	Sherry Harper	Frederick, MD
E-3493	Joe Pandya	United Kingdom
	9/18/02	
E-3494	Sara Adams	Duluth, MN
E-3495	Jacqueline Lasahn	Richmond, CA
E-3496	Amber Bey	Pittsburgh, PA
E-3497	Lan Vuong	Houston, TX
E-3498	Terumi Terao	Japan

Log #	Name	Location
E-3499	Dale Bates	Eugene, MO
E-3500	Gerardo Garcia Rosales	Calexico, CA
E-3501	Juletta Adinda Vruggink	Utrecht, Netherlands
E-3502	Anita Beardsley	United Kingdom
E-3503	Patricia Brown	South Africa
E-3504	Cynthia Wischow	Columbia, SC
E-3505	Andrew Walsh	London, United Kingdom
E-3506	Nicola Kerridge	London, United Kingdom
E-3507	John Edwards	United Kingdom
E-3508	Katie Alipranti	Athens, Greece
E-3509	Joy Jones	Cincinnati, OH
E-3510	Maria Romeiro	Fatima, Portugal
E-3511	Maro Charalambides	Nicosia, Cyprus
E-3512	Maureen Soares	United Kingdom
E-3513	Mary Lou Lewis	Charlotte, NC
E-3514	Elise Villemaire	Healdsburg, CA
E-3515	Robert Smith	Garden City Park, NY
E-3516	Caroline Mac Caughey	Bray, Ireland
E-3517	Jamie Martin	Erie, PA
E-3518	Scheryl Fulkerson	New Castle, PA
E-3519	Bob Martling	Richmond, VA
E-3520	Andrea Griffiths	Kent, United Kingdom
E-3521	Sandy Allenson	Miramar, FL
E-3522	Alison Lewis	Liverpool, United Kingdom
E-3523	Robert Ernest	Port St. Lucia, FL
E-3524	Nancy C. Anderson	Falmouth, MA
E-3525	Phyl Morello	Albrightsville, PA
E-3526	Donna Nelson	Roseville, MI
E-3527	Susan Sweitzer	Windsor, VT
E-3528	N. L. Ashton	Haddonfield, NJ
E-3529	John Schommer	Ann Arbor, MI
E-3530	Jessica Kirk	Leeds, United Kingdom
E-3531	Diane Reed	Statesboro, GA
E-3532	Bruce Williams	McGrath, MN
E-3533	Joe Bauer	Stillwater, MN
E-3534	Jo Ann Thomas	Fairgrave, MI
E-3535	Sari Jutila	Turku, Finland
E-3536	Delmos Stone	Macon, GA
E-3537	Robert Mulligan	Melville, NY
E-3538	Robert A. Foster	Bethesda, MD
E-3539	George Van Sickle	Petersburg, MI
E-3540	Thomas Charles	Greenville, NC
E-3541	Simon Harlock	Bristol, United Kingsom
E-3542	Sarina Huntington	Copiague, NY
E-3543	Michaella Stefanescu	Bucharest, Romania
E-3544	Lori Taft	Louisville, KY
E-3545	John Stone	Wheaton, IL
E-3546	Elizabeth Sprague	Chicago, IL
E-3547	Laura Hanke	Las Cruces, NM
E-3548	Robert Conlogue	Dublin, CA
E-3549	Mary Greer	Aransas Pass, TX
E-3550	Rick Krapf	Naples, FL
E-3551	Anna Bagnall	Brooklyn, NY
E-3552	Sally Koziol	Maine, NY
E-3553	Fran Kelsey	Boone, NC
E-3554	Sheila Lewis	Forest, OH
E-3555	Lee Meggison	Sleepy Hollow, NY
E-3556	Ron Roberts	Tacoma, WA
E-3557	Shannon Brown-Perez	Reynoldsburg, OH
E-3558	Anna Barrows	Connersville, IN
E-3559	Grechen Pruett	Stockton, NJ
E-3560	Amie Pounds	Danville, IL
E-3561	Catherine Wendell	Ocala, FL
E-3562	Kim Spalding	Durham, NC
E-3563	Janine Panna	Greentown, PA
E-3564	Marty Gerace	Upper Darby, PA
E-3565	Judy Stauffer	Auburn, NY
E-3566	Andrea Scrivener	Moscow, PA
E-3567	Henry Robert Kolb	Gainesville, FL
E-3568	Karen Tuthill	Raleigh, NC
E-3569	Lyle McRae	North Bend, WA
E-3570	Corey Paul Mondello	Boston, MA
E-3571	Sandra Kauffman	Brunswick, MA
E-3572	Bob Parcelles, Jr.	Pinellas Park, FL
E-3573	Laura Urich	Raleigh, NC
E-3574	Linda Nicholson	Lake Ariel, PA
E-3575	Ann Dinino	Burlington, VT
E-3576	Peter Kneisel	Framingham, MA
E-3577	Eric Lachance	Palm Beach Gardens, FL
E-3578	Valyrie Ellis	Fredrick, MD
E-3579	Timothy Burris	Portland, ME
E-3580	Nikki Banfield	Shavertown, PA
E-3581	Phyllis Moffo	Sewell, NJ
E-3582	Judy Winsett	Green Sulphur Springs, WV
E-3583	Barnaby Green	Cambridge, United Kingdom
E-3584	Thomas Parker	Asheville, NC
E-3585	Diane Post	Ashland, MA
E-3586	Janet Nirenberg	Holliston, MA

Log #	Name	Location
E-3587	Julia Valigore	Chesterland, OH
E-3588	Gerry Francis	Meriden, CT
E-3589	Denise Olle	East Lansing, MI
E-3590	John Saylor	South Bend, IN
E-3591	Joe Jacobson	Sarasota, FL
E-3592	Denise Srekric	Cleveland, OH
E-3593	Natalia Fernandez	United Kingdom
E-3594	Ted Ludzik	Toronto, Canada
E-3595	Mary Nordkvelle	London, United Kingdom
E-3596	Michelle Arsenault	Toronto, Canada
E-3597	Lara Schalbury	Sumerduck, VA
E-3598	Marty Wisott	Chicago, IL
E-3599	AnnMarie Johnson	Oshkosh, WI
E-3600	Corey Mesler	Memphis, TN
E-3601	Elizabeth Coulard	Guilford, Ct
E-3602	Mathieu Valcke	Montreal, Canada
E-3603	Karin LaMothe	Belleville, MI
E-3604	Mark Berkheimer	Reston, VA
E-3605	Dedra Johnson	New Orleans, LA
E-3606	John Cheney	Henderson, NV
E-3607	Robert Freid	Cincinatti, OH
E-3608	Enrique Guerra	Mexico
E-3609	Erika DeCarlo	Aurora, IL
E-3610	Kathy Rucinski	Stevens Point, WI
E-3611	Jose V. Padilla-Lopez	Ft. Myers, FL
E-3612	Deborah Sweet	West Plains, MO
E-3613	E. Stanley	Albany, NY
E-3614	Cynthia Gearld	Leavenworth, KS
E-3615	Cindy Ellis	Mt. Zion, IL
E-3616	Esena Doyle	Clinton, NY
E-3617	Bill Rubenstein	Hollywood, FL
E-3618	Lorie Morgan	Birmingham, MI
E-3619	Patty Majors	Petersburg, MI
E-3620	Eileen A. Mulholland	Franklinville, NJ
E-3621	Kim Iwanicki	Marquette, MI
E-3622	Ruth Mitchell	Gloucester, United Kingdom
E-3623	Karen Guthrie	Brazil, IN
E-3624	Hedvig Olander	Jarlasa, Sweden
E-3625	Valar Deimosa	Malaysia
E-3626	Colleen Sanderson	Tampa, FL
E-3627	Brooke Dumain	New York, NY
E-3628	Taunya Harrill-Orazio	Bangor, ME
E-3629	Nilesh Rao	Mumbai, India
E-3630	James Tasker	Sudbury, MA
E-3631	Dianne Fannin	Williamsburg, VA
E-3632	Cheryl Mullins	Alamogordo, NM
E-3633	Kathryn Kenney	Lava Hot Springs, ID
E-3634	Richard Carstens	Denver, CO
E-3635	Clark James	Crystal Lake, IL
E-3636	Kristine Flannery	Rochester, NY
E-3637	Debbie Beane	Owensboro, KY
E-3638	Lindsay Spratt	Asheville, NC
E-3639	Rich Pascall	Newark, NJ
E-3640	Marianne Alme	Vienna, VA
E-3641	Susan Mullinax	Greenvile, SC
E-3642	Annette DeFeo	Paterson, NJ
E-3643	Tony Bailey	North Chili, NY
E-3644	Darren Misenko	Washington, DC
E-3645	Olivier Humblet	Cambridge, MA
E-3646	Rick Lane	Jefferson City, TN
E-3647	Ana Rodriquez	Orlando, FL
E-3648	Joshua Trepczyk	Racine, WI
E-3649	Richard Ambrosio	Wall, NJ
E-3650	Phil DeFabio	Silver Spring, MD
E-3651	Daniel Schuller	Miami, FL
E-3652	Sari Koshetz	Miami, FL
E-3653	Julia Hanline	Garner, NC
E-3654	Ron Johnson	San Bruno, CA
E-3655	Linda Espenschied	Dayton, NJ
E-3656	Janet Lewis	Bowling Green, MO
E-3657	Teresa Stockman	Sterling, VA
E-3658	Judie Scalfano	Brooklyn, NY
E-3659	Karen Algiers	Hartford, WI
E-3660	Jennifer Coleman	Brooklyn, NY
E-3661	Dan Ritzman	Anchorage, AK
E-3662	Manorita Singh	Gurgaon, India
E-3663	Stephen David Walter	Hopewell, NJ
E-3664	Kathleen Boislard	Victoriaville, Canada
E-3665	Bobette Eckland	Chapel Hill, NC
E-3666	Melissa Metcalf	Newark, DE
E-3667	Cindy Lemek	Wethersfield, CT
E-3668	Vicki D. Gore	Brentwood, TN
E-3669	Daphne Mascioli	Orlando, FL
E-3670	Alexis Naydenov	Everett, MA
E-3671	Kristy Apostol	Lansing, MI
E-3672	Judith Modak	Flowery Branch, GA
E-3673	Jennifer Pann	Harrison Township, MI
E-3674	Edward Stetson	Kansas City, MO

Log #	Name	Location
E-3675	Greg Dimitroff	Canton, MI
E-3676	Nicole Meese	Arlington, VA
E-3677	Dia Redman	North St. Paul, MN
E-3678	Ann Jacobs	St. Louis, MO
E-3679	Therese Davies	Nashville, TN
E-3680	Ann Jacobs	St. Louis, MO
E-3681	Vicky Campbell	Faber, VA
E-3682	Sylvia Ross	Hayden, AL
E-3683	Leslie Miceli	Flushing, NY
E-3684	Aileen Seldes	New York, NY
E-3685	Aino Inkinen	Edinburgh, United Kingdom
E-3686	Anne Coker	Georgetown, SC
E-3687	Christine Knapp	Philadelphia, PA
E-3688	Donna Hampson	Ayer, MA
E-3689	Alexander Charez	Arcadia, CA
E-3690	Dawna Mendall	Franklin, MA
E-3691	Bonnie Sonder	Merion Station, PA
E-3692	Julea Cheshire	Madison, WI
E-3693	Ally Karge	Orlando, FL
E-3694	Angela Ichigui	North East, MD
E-3695	John Drury	Bon Aqua, TN
E-3696	Rebecca Killa	United Kingdom
E-3697	Liz Boon	Broomfield, CO
E-3698	Jack Hawkins	Milwaukee, WI
E-3699	Marlowe Mager	Charlotte, NC
E-3700	Irene Kharag	Beds, United Kingdom
E-3701	Jody Sloan	Tucker, GA
E-3702	Deanne Hart	Walpole, MA
E-3703	One Alm	Marlboro, VT
E-3704	Jaime Wykle	Athens, WV
E-3705	Michelle De Uriar	San Antonio, TX
E-3706	Priscilla Freeman	San Antonio, TX
E-3707	Richard Sinclair	Schertz, TX
E-3708	Connie Brown	Tatum, TX
E-3709	Vernon Newhous	Bryn-Mawr, PA
E-3710	Sarah Chapman	Murray, KY
E-3711	Lindsay Townsen	Parkland, FL
E-3712	Denyce Berg	Tucson, AZ
E-3713	Jackie Eller	Tecumseh, KS
E-3714	Ellen Stringer	Blythewood, SC
E-3715	KimberlyDeLaurentis-Cohen	Enfield, CT
E-3716	Nicola Gonzalez	Poughkeepsie, NY
E-3717	Galicia Outes	New Rochelle, NY
E-3718	Jim D'Angelo	Red Creek, NY
E-3719	Maurice Hernandez	Chattanooga, TN
E-3720	Roger Foster	Santa Monica, CA
E-3721	P. Tellekamp	New London, CT
E-3722	Pauline Slane	United Kingdom
E-3723	Glenn Cronick	Staten Island, NY
E-3724	Phyllis Howard	Austin, TX
E-3725	Debra Albin	Hudson, FL
E-3726	Jan Christopher	Foster, RI
E-3727	Sarah MacDonald	Inter Grove Heights, MN
E-3728	Sarah Clark	Nokomis, FL
E-3729	Pat Doran	Seattle, WA
E-3730	Scott Mullins	Shelbyville, TN
E-3731	Gail McAllister	Avon, NC
E-3732	Cheryl McPherron	Orlando, FL
E-3733	Leta Dally	Alexandria, VA
E-3734	Martha Larsen	Charlotte, NC
E-3735	Terilee Peavler	Jones Borough, TN
E-3736	Gerolyn Jenkins	Palm Beach Gardens, FL
E-3737	Todd Tarrant	East Lansing, MI
E-3738	Ann McAlister	West Valley City, UT
E-3739	Wendy Buffett	Pittsburgh, PA
E-3740	Thin Lo	Malaysia
E-3741	Patricia Scrimgeour	Pensacola, FL
E-3742	Judy Christy Maqueda	Aitkin, MN
E-3743	Robert Funk	Jersey City, NJ
E-3744	Jamie Thomas	Montgomery, PA
E-3745	Melani Wineburner	Colman, SD
E-3746	Toni Siegrist	Cambridge, MA
E-3747	Page Winters	Metairie, LA
E-3748	Nathan Snyder	Kodak, TN
E-3749	Joanna Ball	Asheville, NC
E-3750	Valerie Lane	Clearwater, FL
E-3751	Kelli Howerin	Virginia Beach, VA
E-3752	Jenna Pridemore	Cleves, OH
E-3753	Cherie Snyder	Palm Bay, FL
E-3754	Cathy Higbee	Egg Harbor Township, NJ
E-3755	Emma Stayduhar	Washington, DC
E-3756	Janis Aldridge	Irving, TX
E-3757	Tim McConville	Libertyville, IL
E-3758	Miranda Swanson	West Palm Beach, FL
E-3759	Siobhan Wolf Shaffer	Lewis Center, OH
E-3760	Tobias Ryen	Gothenburg, Sweden
E-3761	Thomas M. Seidl	White Bear Lake, MN
E-3762	Donna Walter	Spring House, PA

Log #	Name	Location	Log #	Name	Location
E-3763	Melody Brown	Danielson, CT	E-3807	Lori Esquibel	St. Petersburg, FL
E-3764	Jack Burdick	Centerbrook, CT	E-3808	Luanne Semler	Pullman, WA
E-3765	Kimberly Chow	Elmhurst, NY	E-3809	Raymond Riley	United Kingdom
E-3766	Kelly Carlisle	Santa Fe, NM	E-3810	Rose Izikoff	Goffstown, NH
E-3767	Flora Rummel	Hollsopple, PA	E-3811	Tara Treasurefield	Rohnert Park, CA
E-3768	Russell Bezette	LaVerkin, UT	E-3812	Liza Goldberg	Parlin, NJ
E-3769	Brenda Morgan	Winston Salem, NC	E-3813	Neesha Patel	New York, NY
E-3770	Katherine Babiak	New York, NY	E-3814	Carla Blair	Brooklyn, NY
E-3771	John J. Link	Fremont, CA	E-3815	DianaLee Behr-McIntire	Wichita, KS
E-3772	Heidi Cheatham	Ceres, CA	E-3816	Laura Hake	Natick, MS
E-3773	Ali Ozgene	Rochester, NY	E-3817	Yuenne Walter	Mukilteo, WA
E-3774	Nancy L. Guido	Tampa, FL	E-3818	Michael White	Yorktown, VA
E-3775	Cyndi May	Washborn, WI	E-3819	Heidi Hunt	Rockport, ME
E-3776	Annette Gingerich	Minnetonka, MN	E-3820	Erin Severi	Little River, CA
E-3777	Deb Kilgore	Sylvan Springs, AL	E-3821	Terry Frewin	Santa Barbara, CA
E-3778	Donna Jean Brenaman	Lexington, NC	E-3822	Thomas Best	Roswell, GA
E-3779	Deborah Wertz	Lafayette, IN	E-3823	Kimberly Farmer	Warrenton, VA
E-3780	Dianne Bradford	Dublin, OH	E-3824	Lynn E. Alden	St. Louis, MO
E-3781	Laura Phillips	Highland, IN	E-3825	Julia Johns	McMurray, PA
E-3782	Todd Brayton	Riverside, RI	E-3826	Richard Davis	Kansas City, MO
E-3783	Waveney Bowman	Stony Brook, NY	E-3827	Nick Ardinger	Chicago, IL
E-3784	Christine Vitiello	Saddle Brook, NJ	E-3828	Bea Osapai	Brooklyn, NY
E-3785	Lindsey Springer	Marinette, WI	E-3829	Shelly Ferris	Burdett, NY
E-3786	Robin Orliner	Glenside, PA	E-3830	William E. Bruce	Key Largo, FL
E-3787	Touche Guimaraes	Salvador, Brazil	E-3831	Vicki Brown	Creston, IA
E-3788	Yvonne Moore	Janesville, WI	E-3832	Mary Beth Garvin	Olean, NY
E-3789	Marvin Holder	Castle Hayne, NC	E-3833	Polly Endreny	Sleepy Hollow, NY
E-3790	Aguilar Veronica	Mexico	E-3834	Sandra Brinker	Randolph, NJ
E-3791	Alexandra D. Pappano	Mattawamkeag, ME	E-3835	Sharon Herzberg	Columbus, WI
E-3792	Holly Sletteland	Templeton, CA	E-3836	Sonia Ng	New York, NY
E-3793	Lucy Erickson	Atlanta, GA	E-3837	Christopher Stillm	Jamaica Plain, MS
E-3794	Natalie Talbot-Shatas	Miami, FL	E-3838	Shelly Chirico	Tampa, FL
E-3795	Akilah Prout	Washington, DC	E-3839	Lana Branch	Leo, IN
E-3796	James Parker	Atlanta, GA	E-3840	Jane Baker	Rockville, MD
E-3797	Patricia Gallo	Tucson, AZ	E-3841	Elizabeth Rheault	Minneapolis, MN
E-3798	Jonathan Monsen	Miami, FL	E-3842	Audrey Cheng	Arlington, VA
E-3799	Melissa Rowland	Plano, TX	E-3843	Nicole Way	Spokane, WA
E-3800	Kim Fuentes	Azle, TX	E-3844	Randolph Barton	Wilmington, DE
E-3801	Erik & Lori Booth	Ironwood, MI	E-3845	Chelsey Ward	Vacaville, CA
E-3802	Ray & Louise Compere	Norfolk, VA	E-3846	Michael Pappano	Mattawamkeag, ME
E-3803	Chris Seabrooke	Hayden, ID	E-3847	Sue M. Watkins	Fulton, MS
E-3804	Heather Ferguson	Albuquerque, NM	E-3848	Carlos Negron	Bayamon, Puerto Rico
E-3805	Arthur Saarinen	Gainesville, FL	E-3849	Sharon Witt	Lakeland, FL
E-3806	K. Marks	Los Angeles, CA	E-3850	Shelby Reeser	Madison, WI

Log #	Name	Location
E-3851	Irawan Asaad	Makassar, Indonesia
E-3852	Johathan Wetzel	Homer, AK
E-3853	Claire Bean	Old Orchard Beach, ME
E-3854	Philip Gibson	Marysville, WA
E-3855	Roseann Marulli	New York, NY
E-3856	Jan Van Sickle	Sonoma, CA
E-3857	Nicholas Romano	New York, NY
E-3858	Lally Saucedo	Sacramento, CA
E-3859	Amanda Terpstra	Holland, MI
E-3860	Beverly Nadelma	Brooklyn, NY
E-3861	John Yale	New York, NY
E-3862	Jamie Arbuckle	Point Harbor, NC
E-3863	Rose Kesten	Santa Barbara, CA
E-3864	Patrice Humke	Canal Zone
E-3865	Alyssa Schwartz	Daly City, CA
E-3866	Zachary Henige	Cambridge, MA
E-3867	Schuyler Greenleaf	El Portal, CA
E-3868	Deb Nykamp	Holland, MI
E-3869	Fran Recht	Depoe Bay, OR
E-3870	Mr. & Mrs.James D. Pollock	Silverton, OR
E-3871	Christopher Root	Venice, CA
E-3872	Patricia Baker	Rockville, MD
E-3873	Thyme Curtis	San Diego, CA
E-3874	Carmen Young	Chicago, IL
E-3875	Peter Bennett	Langley, WA
E-3876	Virginia Hood	Birmingham, AL
E-3877	Naomi Tillison	Farmington Hills, MI
E-3878	Shawn Dugan	Ephrata, PA
E-3879	Mary King	Norcross, GA
E-3880	Mary Hall Matson	Enumclaw, WA
E-3881	Jenna Sunderlin	Grand Island, NY
E-3882	Elizabeth Morton	Sebastopol, CA
E-3883	Mariah Bellello	San Francisco, CA
E-3884	Marijo Ahnger	San Diego, CA
E-3885	David Bunde	Urbana, IL
E-3886	D. Jessup	Hamilton, Canada
E-3887	David Kratz Mathies	Malden, MA
E-3888	Daniel M. Portwood	Sterling, VA
E-3889	Susan Usher	Seattle, WA
E-3890	Natalie Abram	Bardstown, KY
E-3891	Judy Dunn	DesAllemands, LA
E-3892	Delia Barrett	East Berlin, PA
E-3893	Yvonne Merck	Charlotte, NC
E-3894	George Bostick	Victorville, CA
E-3895	Marie McRae	Freeville, NY
E-3896	Tom Yarish	Mill Valley, CA
E-3897	Senyo Adjabeng	Accra, Ghana
E-3898	Matthew Schult	West Newton, PA
E-3899	Ina Ross	Seattle, WA
E-3900	Katherine Himes	Minneapolis, MN
E-3901	Lori Bailey	PA
E-3902	Richard Rowland	Springfield, OH
E-3903	Gloria Bando	Culver City, CA
E-3904	R. Romaker	Ann Arbor, MI
E-3905	Bobbie Johnson	Canon City, CO
E-3906	Gretchen Weddig	Stevens Point, WI
E-3907	Jill Ellicott	Seattle, WA
E-3908	Francesca Taylor	San Francisco, CA
E-3909	Andrea Fournier	Oakland, CA
E-3910	Tenzin Gyaltsen	Salt Lake City, UT
E-3911	Ed Carter	Nederland, CO
E-3912	Victor Raymond	Wilson, WY
E-3913	April Sconyers	West Palm Beach, FL
E-3914	Sharon Cruz	Orange Park, FL
E-3915	Rhodia Mason	Chicago, IL
E-3916	Alice Bartholome	Elmira, NY
E-3917	Alice Yoe	Huntingtown, MD
E-3918	Julie Lucente	Netcong, NJ
E-3919	Eileen Murray	Windsor, CO
E-3920	Sandra Bernard	Forest Hills, NY
E-3921	Catherine Schults	Kerhonkson, NY
E-3922	Elizabeth Albert	Somerville, MA
E-3923	Claire Wynters	Winter Springs, FL
E-3924	Lynn Means, Ph.	Rockville Centre, NY
E-3925	John Robert Jack	Panama City, FL
E-3926	Alison Burrows	Astoria, NY
E-3927	Mike Monroe	Batavia, IL
E-2928	Kate Hare	Princeton, NJ
E-3929	Felicia Day	Santa Monica, CA
E-3930	Cynthia Delafield	Ft. Lauderdale, FL
E-3931	Ellen Bourgault	Industry, ME
E-3932	Sarah Wyllie	Sherwood Park, Canada
E-3933	Larry Orzechowski	Phoenix, AZ
E-3934	Laura Lee Fairchild	San Jose, CA
E-3935	Brian Thompson	Huntington, WV
E-3936	M. Mass	Santa Barbara, CA
E-3937	Tatiana Medina	Bogota, Columbia
E-3938	Katherine Cadury	Bazel, Switzerland

Log #	Name	Location
E-3939	Erin Emerson	Ann Arbor, MI
E-3940	Rose Nichols	Ft. Collins, CO
E-3941	Jake Kheel	Ithaca, NY
E-3942	Barbara Kurtz	Lexington, IL
E-3943	Kim Garber	Mount Pleasant, MI
E-3944	Jaeson Boyers	Duluth, MN
E-3945	Jacob Reichard	Richmond Hills, Canada
E-3946	Don Dial	Bellevue, WA
E-3947	Emily Lopez	Pensacola, FL
E-3948	Glenda Gessay	Black Creek, WI
E-3949	Gloria Shelley	Dudley, NC
E-3950	Brandi Hoter	Keller, TX
E-3951	Richard Charter (see L-0026)	Oakland, CA
E-3952	Susan Carter	Hammond, IN
E-3953	Connie Yarborough	Santa Monica, CA
E-3954	Twyla Wolfe	Stoughton, MA
E-3955	Lynne Humkey	Franklin, TN
E-3956	Colleen Threlfall	Middleburg, CT
E-3957	Irene Stemler	Chicago, IL
E-3958	David Jaffe	Irvine, CA
E-3959	John Waz	Pensacola, FL
E-3960	Niamb Corbett	Boca Raton, FL
E-3961	Stacie Gallenstein	San Diego, CA
E-3962	Kelly Rose	Los Angeles, CA
E-3963	Vanessa Metcalf	Bodega Bay, CA
E-3964	Matt Madia	Saddle Brook, NJ
E-3965	Gina Allen	Springfield, MA
E-3966	Michael Roedema	Saddle Brook, NJ
E-3967	Susan Workman	Winston-Salem, NC
E-3968	Sarah McLean	Sedona, AZ
E-3969	Annie Pepper	Williamsburg, VA
E-3970	Karen Ha	Fresh Meadows, NY
E-3971	Connie Reeves	Lakeland, FL
E-3972	Susan Haberkorn	Naples, FL
E-3973	Julie Milliren	Oconomowoc, WI
E-3974	Patricia Guenther	Girard, OH
E-3975	Anna Brenna	Lakeville, MN
E-3976	Robin Skees	Watertown, MA
E-3977	Joel Aggerholm	Lakeville, MN
E-3978	Lisa Chaudhry	Grand Prairie, TX
E-3979	Charles Hornaday	Santa Monica, CA
E-3980	Tanya Smith	Johannesburg, South Africa
E-3981	Deborah Asch	El Cerrito, CA
E-3982	Scarey Martin	Mamaroneck, NY
E-3983	Matt Walker	Atlanta, GA
E-3984	Sam Malone	Bourne, United Kingdom
E-3985	Jason Hotchkiss	Austin, TX
E-3986	Matt Fitzgibbons	Auburn, MA
E-3987	Sharlene White	Escondido, CA
E-3988	Joseph DeGregorio	Portland, OR
E-3989	Leslie Hafemeister	Fairbanks, AK
E-3990	Ginger Young	Spring, TX
E-3991	Michele Cincotta	Ocean View, NJ
E-3992	Kevin Lamonia	Bethesda, MD
E-3993	German Herrera	San Andres Iland, Colombia
E-3994	Jennifer Banoczy	Los Angeles, CA
E-3995	Tarek Maassarani	Washington, DC
E-3996	J. Pfaehler	Hemet, CA
E-3997	Adi Fairbank	Eugene, OR
E-3998	Deborah Siemer	Los Angeles, CA
E-3999	Sarah Tromp	Eau Claire, WI
E-4000	Jackie Finch	Oak Park, IL
E-4001	Cherie Jones	Bradenton, FL
E-4002	Sarah Piechuta	Brunswick, OH
E-4003	Alexandra Manion	Sausalito, CA
E-4004	Maryellen Oman	Anchorage, AK
E-4005	Julio Calle	Jackson Heights, NY
E-4006	Coleman Tanner	Winston-Salem, NC
E-4007	Eden Robertson	New York, NY
E-4008	Peter Buck	Alexandria, VA
E-4009	Pamela Turner	Orinda, CA
E-4010	Lyrae Emerson	Sechelt, Canada
E-4011	Glenn Sisson	San Francisco, CA
E-4012	Richard Brandes	Marina Del Rey, CA
E-4013	A. Ayers	Olathe, KS
E-4014	Alyson Mohan-Lucas	Minneapolis, MN
E-4015	Kymberli Martinez	Winters, CA
E-4016	Jamie Miller	San Diego, CA
E-4017	Gary Stuart	Studio City, CA
E-4018	Danielle Tocco	Mt. Laurel, NJ
E-4019	Sharon Carraway	Riverside, NJ
E-4020	Sara Bush	Costa Mesa, CA
E-4021	Omar Monzon	Canovanas, Puerto Rico
E-4022	Cassie Long	Lawrenceville, GA
E-4023	Mary LaPlant	Everett, MA
E-4024	Lara Martin	Los Angeles, CA
E-4025	Toben Dilworth	Sebastopol, CA
E-4026	Erica Brodman	Reading, PA

Log #	Name	Location
E-4027	Jennifer Stewart	Nederland, CO
E-4028	Anthony Niether	Kalispell, MT
E-4029	Meghan Jones	Raleigh, NC
E-4030	Cindi Labbe	Alstead, NH
E-4031	Terry Everett	Holstein, IA
E-4032	Chandra McGee	Fairbanks, AK
E-4033	Ei Ei Nyane	Falls Church, VA
E-4034	Peter Zadis	Jamaica, NY
E-4035	Sandi Burland	Burnaby, Canada
E-4036	Yara Ghrewati	London, United Kingdom
E-4037	Melissa Cruze	Northfield, MN
E-4038	Sarah Peterson	University Place, WA
E-4039	Peter Sandoval	Brooklyn, NY
E-4040	Julie Weber	Livonia, MI
E-4041	Kristin Sands	Wylie, TX
E-4042	Andrea Moore	Cols, OH
E-4043	Elaine Fischer	Branford, CT
E-4044	Erin McVay	Troy, OH
E-4045	Julio Y. Sanchez	Point St. Lucie, FL
E-4046	Fred L. Metcalf	Drummond, MT
E-4047	Lola Misirlic	Beograd, Yugoslavia
E-4048	Cassandra Jackson	Cobourg, Canada
E-4049	Hilary Masson	Gabriola Island, Canada
E-4050	Tina Marie Winders	Gulf Breeze, FL
E-4051	Dr. Richard Boylan	Sacramento, CA
E-4052	Molly Coeling	Ann Arbor, MI
E-4053	Douglas Johnson	Burbank, CA
E-4054	Bill Stokes	St. Petersburg, FL
E-4055	Rachel Kinder	McFarland, WI
E-4056	Daniel Broersma	Holland, MI
E-4057	Michael Bessanette	Fairfax, CA
E-4058	Marion Pittelli	Massapequa, NY
E-4059	Claudia Pruitt	Springfield, IL
E-4060	Suzanne Powell	Pittsburgh, PA
E-4061	Abhijit Banerjee	Newark, DE
E-4062	Lee Hackenberger	Anchorage, AK
E-4063	Joy Hoeppner	Magnolia, DE
E-4064	Mary Ann DellaRocco	Indianapolis, IN
E-4065	Kelly Foster	Philadelphia, PA
E-4066	Autumn Stubbs	Memphis, TN
E-4067	Chloe Metz	Durham, NC
E-4068	Sarah Rohn	Normal, IL
E-4069	Mary Ann DellaRocco	Indianapolis, IN
E-4070	Jessica Isenman	Kenai, AK

Log #	Name	Location
E-4071	Shawna Williams	Taos, NM
E-4072	Vicki Garay	Tucson, AZ
E-4073	Ciana Olson	Green Bay, WI
E-4074	Ann Hannigan-Breen	Pamplona, Spain
E-4075	Michael Rotter	Greenville, MI
E-4076	Tracy Griffin	Moore, OK
E-4077	Jamie Shohan	Lee, MA
E-4078	Taylor Attaway	Pompano Beach, FL
E-4079	Anna Sgarlato	Athens, GA
E-4080	Kim Causey	Dayton, TX
E-4081	Sindy Cho	San Francisco, CA
E-4082	Kristine Gillis	Encinitas, CA
E-4083	Cherie Jagodrinski	Apollo, PA
E-4084	Louise Fry	New York, NY
E-4085	Mark Nielson	Santa Barbara, CA
E-4086	Pamela St. John	Chapel Hill, NC
E-4087	Sebastian Muccilli	Lake Park, FL
E-4088	Maddie McKeller	Brevard, NC
E-4089	Linda Linderman	Phoenix, AZ
E-4090	Peggy Sowden	Shakopee, MN
E-4091	James Polhemus	London, United Kingdom
E-4092	Scott Rappold	East Moriches, NY
E-4093	Jolene Richard	Youngsville, LA
E-4094	Sarah Pukala	Chicago, IL
E-4095	Christen Don	Seattle, WA
E-4096	Jane Olson	Sidney, MT
E-4097	Michael Hodgson	Lafayette, IN
E-4098	Mary Schmuck, RSM	Nazareth, KY
E-4099	Judith Carter	Phoenix, AZ
E-4100	Kalli MaRee	Greeley, CO
E-4101	Kathy Johnston	Fairfield, CA
E-4102	Sophia Hughes	Charlottesville, VA
E-4103	Liz Leavens	Memphis, MI
E-4104	Joe Lazarsky	Alexandria, VA
E-4105	Georgia Donovan	Doylestown, PA
E-4106	Robert Savidge	Annapolis, MD
E-4107	Veronica Aceved	Cabo Rojo, Puerto Rico
E-4108	Georgia Donovan	Buckingham, PA
E-4109	Robert Savidge	Annapolis, MD
E-4110	Anna Tritschler	Gulf Breeze, FL
E-4111	Tracy Erchul	New Berlin, WI
E-4112	Alora Windsor	Magndia, TX
E-4113	Karl Neufville	Phoenix, AZ
E-4114	Gayle Nicholson	Gainesville, FL

Log #	Name	Location
E-4115	Mare Rachmuth	Oxnard, CA
E-4116	Karen Gormley	Winsloe, Canada
E-4117	Arnold Brown	Milwaukee, WI
E-4118	Siobhan Doyle	Dublin, Ireland
E-4119	Tina Twito	Lehigh, IA
E-4120	Jennifer Hawkes	Georgetown, DE
E-4121	Cheryl Vigoda	Coconut Creek, FL
E-4122	Richie Transou	Lowgap, NC
E-4123	Stacy Stiegleiter	Cottage Grove, TN
E-4124	Lisa Etherington	Gustavus, AK
E-4125	Paul Bickmore	Austin, TX
E-4126	Michelle Kwon	North Arlington, NJ
E-4127	Andrea Cornett	Columbus, OH
E-4128	Sarah Peterson	Rohnert Park, CA
E-4129	Shelly Dunn	Independence, MO
E-4130	Alice Hesselrode	Detroit, MI
E-4131	David Wachtel	Columbus, OH
E-4132	Edmond Wright	Bradenton, FL
E-4133	Melody Stewart	Rockbridge, OH
E-4134	Craig Edelman	Los Angeles, CA
E-4135	Lewis Rifkind	Whitehorse, Canada
E-4136	Abigail Hutson	Andersonville, TN
E-4137	Jane Bryant	Mauldin, SC
E-4138	Fredrick Swords	Pendleton, OR
E-4139	Jeannine Coleman	Easley, SC
E-4140	Jeffrey Wiles	Hopkins, MN
E-4141	R. Weinschel	Norfolk, VA
E-4142	Teresa Cox	Cane Beds, AZ
E-4143	Elizabeth Dunham	Mount Arlington, NJ
E-4144	Andrea Polk	Antioch, CA
E-4145	Patricia Piazza	Albany, NY
E-4146	Danielle Tannourji	Glendora, CA
E-4147	Sarah Manock	Fresno, CA
E-4148	David Reiner	Carrboro, NC
E-4149	Nancy Bates	Tyler, TX
E-4150	Laura Pinedo	El Monte, CA
E-4151	Thomas Bressani	Deltona, FL
E-4152	Anthony Lyons	Lamar, MO
E-4153	Heather Maus	Glennie, MI
E-4154	Susan Murray	Orange, CA
E-4155	Lisa Temmen	Newtown, CT
E-4156	Lynette Smith	Zeeland, MI
E-4157	Virginia Ferriero	Clearwater, FL
E-4158	Jennifer Wolf	Cardiff, CA

Log #	Name	Location
E-4159	Wendy Jean Gehring	Portland, OR
E-4160	Chas Jewett	Rapid City, SD
E-4161	Devon Werble	Sherman Oaks, CA
E-4162	Barbara Jenkins	Odenton, MD
E-4163	Shannon Scheidell	Port St. Lucie, FL
E-4164	Peter Vachuska	West Bend, WI
E-4165	Sagi Nahor	Chicago, IL
E-4166	Jeremiah Steidl	Albuquerque, NM
E-4167	Julia Withington	Leon, KS
E-4168	Linda Tran	San Diego, CA
E-4169	Michael Backer	Brooklyn, NY
E-4170	Corina St. Martin	Richmond, IN
E-4171	Sheila O'Keefe	Corvallis, OR
E-4172	Kathie Blair	Portland, OR
E-4173	Nina Baker	Tacoma, WA
E-4174	Ida-Maria Ramling	Hridovre, Denmark
E-4175	Jillian Aronson	Orlando, FL
E-4176	Terry Nieves	Comptche, CA
E-4177	Nicolas Fancher	Deltona, FL
E-4178	Natalie Ko	Thornhill, Canada
E-4179	Heather Rowe	Lowell, MA
E-4180	Tammara Maines	Tacoma, WA
E-4181	Michael Tucker	Costa Mesa, CA
E-4182	Jaclyn Gurule	Grants Pass, OR
E-4183	Tulare Adams	Las Vegas, NV
E-4184	Cheris Hoffmann	Hanna City, IL
E-4185	Kathi Tammick	Allston, MA
E-4186	Amin Arikat	Larkspur, CA
E-4187	Sharon Richards	Kansas City, MO
E-4188	Tavia Bachert	Tamaqua, PA
E-4189	Therese Yelk	Sun Prairie, WI
E-4190	Sandra Archer	Deltona, FL
E-4191	Mark Jenkins	Deltona, FL
E-4192	Tiare Wesley	Paia, HI
E-4193	Harold Brown	South Euclid, OH
E-4194	Carol McIntosh	North Branch, MI
E-4195	Robert Billetdeaux	Palm Coast, FL
E-4196	Andrea Saunders	Rockland, MA
E-4197	Leslieann Duncan	Cedar Rapids, IA
E-4198	Mattie Horine	Asheville, NC
E-4199	Maria Boggiano	Villa Park, IL
E-4200	Carlos Barcat	Buenos Aires, Argentina
E-4201	Renae Beeker	Salisbury, NC
E-4202	Tim Joyce	Versailles, KY

Log #	Name	Location
E-4203	Melodi Jenkins	Deltona, FL
E-4204	Tiffany Tom	Mesa, AZ
E-4205	Rainah Goldfeath	Alachua, FL
E-4206	Sarah Fecht	Cicero, NY
E-4207	Ingrid Enthoven	Oxnard, CA
E-4208	Ms. K. A. Ravenburg	East Olympia, WA
E-4209	Cristina Irizarry	Pompano Beach, FL
E-4210	Ben Keller	Pawtucket, RI
E-4211	Kelly Mulchay	Berkeley, CA
E-4212	George Dorman	Thornton, CO
E-4213	Sharon Vander Pool	Bonney Lake, WA
E-4214	Jim Curland	Moss Landing, CA
E-4215	Tomi Phillips	The Woodlands, TX
E-4216	Emily Johnson	Missoula, MT
E-4217	Linda Frances	Nathrop, CO
E-4218	Lisa Gust	Bayside, CA
E-4219	Paula Kamps	Hilbert, WI
E-4220	Jeff Dempsey	Little Rock, AR
E-4221	Joshua Frederick	Danville, KY
E-4222	J. M. Giles	Sandia Park, NM
E-4223	Kate Ludwig	Columbus, OH
E-4224	Eleanor Dickey	New York, NY
E-4225	Dawn Jones	Tinley Park, IL
E-4226	Candace Johnson	Chelmsford, MA
E-4227	Christine Wilson	West Suffield, CT
E-4228	Dale Godfrey	Oglethorpe, GA
E-4229	Audrey Edwards	Milan, MI
E-4230	Dianne Beal	Martinez, CA
E-4231	Jean Williams	Wakefield, RI
E-4232	Jan Charvat	Alpine, CA
E-4233	Arika S. Grace-Kelly	Portland, OR
E-4234	James R. Massa	Fairbanks, AK
E-4235	William Stevens	Cotopaxi, CO
E-4236	Karina Mancini	Miami, FL
E-4237	Marie Miller	Cocoa Beach, FL
E-4238	Marilyn Unger	Desert Hot Springs, CA
E-4239	Chris Wrinn	Milford, CT
E-4240	Alfred Rieger	Marathon, FL
E-4241	Henry Boyle	Carpinteria, CA
E-4242	Kathy Poynter	Cedar Rapids, IA
E-4243	Deborah Setzer	High Bar Harbor, NJ
E-4244	Robyn Reichert	Lake Worth, FL
E-4245	Rachael Smith	Glendale, AZ
E-4246	Anita Gale	Covington, KY

Log #	Name	Location
E-4247	Marguerite Joan Galimitakis	Clinton, CT
E-4248	Bonnie Dolan	Somerville, NJ
E-4249	Hannah Bourdo	Plainwell, MI
E-4250	Lisa Jackson	Encinitas, CA
E-4251	Judy Dalton	Lihue, HI
E-4252	Gary Moss	LaGrange, KY
E-4253	Adriana Maria Correa	Medellin, Colombia
E-4254	Kelly Wisniewski	East Brunswick, NJ
E-4255	Nancy Freyer	Houston, TX
E-4256	Deb Elliott	Anchorage, AK
E-4257	James Jason Ylanan	Cebu City, Philippines
E-4258	A. J. Heidmann	Silver Spring, MD
E-4259	Elizabeth Case	San Jose, CA
E-4260	Jay Albrecht	Tarrytown, NY
E-4261	Roni Siegel	New York, NY
E-4262	John Perry	Whitley City, KY
E-4263	Dorothy Quit	Deerfield Beach, FL
E-4264	Sue Albert	Wyoming, PA
E-4265	Aileen Jeffries	Winthrop, WA
E-4266	Jon Moore	Bellingham, WA
E-4267	Barbara Robbins	Madison, ME
E-4268	Lydia Adam	Whitmore Lake, MI
E-4269	Sarah Bupp	New York, NY
E-4270	Jackie Moreau	Portland, ME
E-4271	Karen & Richard Rodriguez	Deerfiield Beach, FL
E-4272	Keith McMahen	Bradenton, FL
E-4273	Annie Sanders	Chicago, IL
E-4274	Nicole Goodrow	Houston, TX
E-4275	Gerald Neff	Pleasant Valley, IA
E-4276	Chris Kirker	Eldersburg, MD
E-4277	Nicole Kalas	Santa Barbara, CA
E-4278	Suzannah Schmid	Almond, WI
E-4279	Robert Jones	Las Cruces, NM
E-4280	Angela Korpar	Henrietta, NY
E-4281	Rhoda Schlamm	Woodside, NY
E-4282	Kristin Otto	Fallbrook, CA
E-4283	Vickie Stuckey	Denver, CO
E-4284	Lynda McKeown	Sydney, Australia
E-4285	Jocelyn Harimon	Hampton Bays, NY
E-4286	Nick Hedlund	Portland, OR
E-4287	Shelly Rice	Murphys, CA
E-4288	Kristal Lewandowski	Cameron, NC
E-4289	Sunda Wooley	Modesto, CA
E-4290	Laura Savard	Norton, MA

Log #	Name	Location
E-4291	Brianna Es	Sunrise, FL
E-4292	Joanie Locey	Columbus, GA
E-4293	Jessica Wolf	Windsor, Canada
E-4294	Stephanie Norman	Madison, WI
E-4295	Michael Mayo	Syracuse, NY
E-4296	Laura Oldenburg	IN
E-4297	David Pedraza	Cocoa, FL
E-4298	Jayne Haverfield	Mansfield, OH
E-4299	Jon Drucker	Albuquerque, NM
E-4300	Fredda Mesick	Wharton, NJ
E-4301	Kristin Barker	Washington, DC
E-4302	Elaine Sartoris	Beulah, CO
E-4303	Jacki Fromme	Mill Valley, CA
E-4304	Kay Phipps	Omaha, NE
E-4305	David Ferrari	Boston, MA
E-4306	Timothy Richerson	Charleston, SC
E-4307	Susan O'Reilly	Riverside, CA
E-4308	Jerry Hamelink	Hudsonville, MI
E-4309	Terry Degerstrom	Moose Lake, MI
E-4310	Dolores Duchesne	Richardson, TX
E-4311	Alex Hyde	Eastsound, WA
E-4312	Kevin Gilnack	Glastonbury, CT
E-4313	Victoria Campbell	Wanganui, New Zealand
E-4314	Shana Gross	Quincy, CA
E-4315	Barbara Dersch	Bend, OR
E-4316	Paul Jacobson	Idyllwild, CA
E-4317	RaVen Sequoia	Portland, OR
E-4318	Adele Myers	Meadow Valley, CA
E-4319	Katie McHenry	Houston, TX
E-4320	Shannon DiGenova	Hometown, IL
E-4321	Kristin Sullivan	Capitola, CA
E-4322	Pam Kelly	Coweta, OK
E-4323	Claire Mikalson	Farmington, WA
E-4324	M. Abbey	Painted Post, NY
E-4325	Herbert Rodrigo	Bakersfield, CA
E-4326	Barbara Cohen	Port Elizabeth, South Africa
E-4327	Alejandro de la Torre	Mexico
E-4328	Celeste Dubois	Manchester, NH
E-4329	Barbara M. Heer	Philadelphia, PA
E-4330	Marianna M. Rivinus	Altadena, CA
E-4331	Kathy Godlewski	London, Canada
E-4332	Nicole Hayworth	Chickasha, OK
E-4333	Wendy Morris	San Clemente, CA
E-4334	Joey Beckenholdt	Conroe, TX

Log #	Name	Location
E-4335	Tonya Hale	Henderson, KY
E-4336	Dan Unger-Weiss	La Mesa, CA
E-4337	Rachel Pattillo	Humble, TX
E-4338	Anthony Lopez	Los Angeles, CA
E-4339	Jennifer Wolfe	Elwood, Australia
E-4340	Olawale Ayodele	Newhall, CA
E-4341	Bryan Milne	Jersey City, NJ
E-4342	Tristen Tuckfield	Sacramento, CA
E-4343	Johan Janse van Rensburg	Pretoria, South Africa
E-4344	Greg Holston	Longmont, CO
E-4345	Michael Hawthorne	Salinas, CA
E-4346	Daniel Ochoa	Paramount, CA
E-4347	Jonathan Bauer	Valparaiso, IN
E-4348	Aaron Henne	Minneapolis, MN
E-4349	Stephanie Corona	Downey, CA
E-4350	Velene Campbell	Van Nuys, CA
E-4351	David Robinson	New York, NY
E-4352	Glen Carner	Holualoa, HI
E-4353	Sharon Saad	Orland Park, IL
E-4354	Ahmed D. Pathan	Kalol, India
E-4355	Martina Beverly	Urbana, IL
E-4356	Keegan Roberson	Chula Vista, CA
E-4357	Diana Singleton	Glendale, CA
E-4358	Raven Bernstein	Los Alamos, NM
E-4359	Christina Gadbury	Galesburg, IL
E-4360	Terri Huyen Thi Nhu Mai	Chino, CA
E-4361	Matt Peeples	Bremerton, WA
E-4362	Lynne Mahlstedt-Burley	Cayce, SC
E-4363	Susan Munson	Galesburg, IL
E-4364	L. Vannessa Frazier	Howardville, MO
E-4365	Karen Clifford	Mississauga, Canada
E-4366	Donna Mae Travis-Morgan	Round Rock, TX
E-4367	Karien Joubert	Vredehoek, South Africa
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E-4368	Alvaro Ruiz	Needham, MA
E-4369	Patrick Kerber	Fairbanks, AK
E-4370	Gaie Sebold	London, United Kingdom
E-4371	Jenny Jefferies	London, United Kingdom
E-4372	Carla Korch	Hightstown, NJ
E-4373	Curtis Freeman	Kent, WA
E-4374	Barbara Schmiedtova	Nijmegen, Netherlands
E-4375	Kaye Batzko	Milwaukee, WI
E-4376	Dr. Ken Schoolmeester	Charlotte, SC
E-4377	Jayme Foulk	Cochranton, PA

Log #	Name	Location
E-4378	Jim Piecione	New London, CT
E-4379	Nicola Lueke	Duesseldorf, Germany
E-4380	Lia Wadick	Preston, Australia
E-4381	Pamela A. Turner	Hemosassa, FL
E-4382	Paulette Walters	Newport, MI
E-4383	Angela Timmons	New York, NY
E-4384	Marta Moreira	Harpers Ferry, WV
E-4385	Daniel Zak	Downers Grove, IL
E-4386	Asiel Norton	Cambria, CA
E-4387	Catrina Fales	Baltimore, MD
E-4388	Whitney Sigholtz	Baltimore, MD
E-4389	Cindy Bogan	Cary, NC
E-4390	Daphne Morgan	Bath, ME
E-4391	Michelle Schunck	Esbjerg, Denmark
E-4392	Alyona Apelgants	Johannesburg, South Africa
E-4393	Melissa Parker	Candler, NC
E-4394	Lisa Almaraz	Sylva, NC
E-4395	Andrea K. Cherpako	Dugald, Canada
E-4396	Paul Van Steenberghe	Old Town, ME
E-4397	Anna Escott	Knoxville, TN
E-4398	Dana Schwartz	Hopkins, MN
E-4399	Marika Base	St. Louis, MO
E-4400	David Hoops	Chardon, OH
E-4401	Jeff Banner	Sarasota, FL
E-4402	Katherine Holzman Golblatt	Hopkinton, MA
E-4403	Jo Hartog	Sparks, NV
E-4404	Sandra Blessing	Waterloo, IA
E-4405	Nathan Gillmore	Maumelle, AR
E-4406	Christine Hansen	Broomfield, CO
E-4407	Stuart G. Clark	Waterford, MI
E-4408	Heather Carpenter	Orlando, FL
E-4409	Kristine Royal	Mansfield, MA
E-4410	Sheila Coughtry	Fountain, CO
E-4411	Debbie Nassau	MD
E-4412	Amy Sloan	Silver Spring, MD
E-4413	Nariman Mistry	Ithaca, NY
E-4414	Connie Sherbino	Cape Coral, FL
E-4415	Jenny Goodwin	Leicester, United Kingdom
E-4416	Bernice Lavin	Buffalo, NY
E-4417	Georgia Hinton	Norco, CA
E-4418	Krista Johnson	New Haven, CT
E-4419	Koh Lay Ling	Singapore
E-4420	Nan Weed	Eugene, OR
E-4421	Dalra Chauncey	Harrison, TN

Log #	Name	Location
E-4422	Tracy Da Lomba	Livermore, CA
E-4423	Phillip Stamos	Endicott, NY
E-4424	Tatiana Len-Bork	Barrington, IL
E-4425	Amanda Schoeps	Bronx, NY
E-4426	Kyrsten Stalheim	Oslo, Norway
E-4427	Michelle Gonzales	New York, NY
E-4428	Alexis Woodrow	Denver, CO
E-4429	Ruma Singh	Monticello, GA
E-4430	Dale Ellen Mayer	Norwalk, CT
E-4431	Allan Archer	Chester, United Kingdom
E-4432	Harry Hart-Browne	Topanga, CA
E-4433	Cristin Lieske	Davie, FL
E-4434	Bob Gunn	New York, NY
E-4435	Bruce Hanke	Lime Springs, IA
E-4436	Gary Lee Eisenhuth	Radiant, VA
E-4437	Mike Preston	Yellowknife, Canada
E-4438	Lisa Anderson	Asheville, NC
E-4439	Roseann Winkler	Fords, NJ
E-4440	Michelle Panzrino	Austin, TX
E-4441	Shay McDonald	Fairfax, VA
E-4442	Melissa Hood	Blaine, MN
E-4443	Robin Mink	Ash Fork, AZ
E-4444	Cathy Woodrow	Denver, CO
E-4445	Paul Bourdeau	New York, NY
E-4446	Shree Ram	Chicago, IL
E-4447	Jeremy Dion	Golden, CO
E-4448	Monica Bonner	Cincinnati, OH
E-4449	Corlean Payne	Renton, WA
E-4450	Fatima Somani	Oshawa, Canada
E-4451	Stephanie Seery	Sacramento, CA
E-4452	Christopher Lanski	Lancaster, CA
E-4453	Viola Henning	Southampton, NY
E-4454	Cassy Marichal	Tallahassee, FL
E-4455	Denise Hetzel	Sugar Land, TX
E-4456	Mary Rita Neal	Detroit, MI
E-4457	Ferdinand Kutheis	O’Fallon, MO
E-4458	Wynn McGrenera	King City, CA
E-4459	Sondra Gearner	Gainesville, FL
E-4460	G. Sprague	Chicago, OH
E-4461	John & Nancy Arnold	Green Valley, AZ
E-4462	Robert Loucks	Big Bear Lake, CA
E-4463	Melanie Kavanaugh	Ewing Township, NJ
E-4464	Costas Manganiotis	Vega Alta, Puerto Rico
E-4465	Jude Gassaway	Edgewater, CO

Log #	Name	Location
E-4466	Jodie Manganiotis	Corpus Christi, TX
E-4467	Darla Wacnik	LaPorte, IN
E-4468	Sarah Olson	Waukesha, WI
E-4469	Christine Aurilia	Sayreville, NJ
E-4470	Priyanka Monga	Pune, India
E-4471	Jayne Matthews	Lancaster, PA
E-4472	B. T. Dorit	Tel-Aviv, Israel
E-4473	Dana Steeples	Littleton, CO
E-4474	Megan O'Neal	Marshall, VA
E-4475	Karen Christie	Covington, VA
E-4476	Umar Karim Mirza	Lahore, Pakistan
E-4477	Tessa Peltier	Vero Beach, FL
E-4478	Beth Jones	Salzburg, Austria
E-4479	Dan Hamilton	Phoenix, AZ
E-4480	Daniel Herzberg	Millbrae, CA
E-4481	Christopher Johnson	Austin, TX
E-4482	Niels Versfeld	Ft. McMurray, AK
E-4483	Caroline Porter	Hebron, MD
E-4484	Jessica Cucchi	Evergreen, CO
E-4485	Kathy Smith	New York, NY
E-4486	Staci Hutsell	Aiken, SC
E-4487	Philip Ratcliff	Cloverdale, CA
E-4488	Linda Garcia	San Marcos, CA
E-4489	Jon Clark	York, PA
E-4490	Kathy Forney	Stillwater, OK
E-4491	Cecilia Galup	Crawfordville, FL
E-4492	Trinja Rogers	Boone, NC
E-4493	Sharon Brunet	Mariapolis, Canada
E-4494	Dana Sterling	Indianapolis, IN
E-4495	Katrina Stechler	Breckenridge, CO
E-4496	Paul Bonatz	Raleigh, NC
E-4497	R. C. Cooper	Huachuca City, AZ
E-4498	Betty Pulfer	Bowling Green, KY
E-4499	Beverly Riverwood, J.D.	Sebastopol, CA
E-4500	Stephanie Descoteaux	Montreal, Canada
E-4501	Daemon Shalom	Jeffersonville, IN
E-4502	Erik Bouthillier	Rancho Cucamonga, CA
E-4503	Lisa Root	Santee, CA
E-4504	Gemma Dehnbostel	Herndon, VA
E-4505	Mrs. Robert A. Knapp	Lemon Grove, CA
E-4506	Lynda Capps	Gastonia, NC
E-4507	Robert Smithfield	San Anselmo, CA
E-4508	Ketil Rogn	Oslo, Norway
E-4509	Paula Sjunneson	Seattle, WA
E-4510	Del Bailey	Sharpsburg, GA
E-4511	Karin Wilson	Santa Monica, CA
E-4512	Nichole Lorusso	Branchville, NJ
E-4513	Rising Solari	Black Earth, WI
E-4514	Christy Bruce	Boulder, CO
E-4515	Laura Withrow	Dearing, GA
E-4516	Valeria Verme	Lima, Peru
E-4517	Kass Nesbitt	Moravia, NY
E-4518	Brian Symington	Schaumburg, IL
E-4519	Betty Lyon	Schuylerville, NY
E-4520	Sara Pratte	Springfield, OH
E-4521	Cheryl Rorabeck-Siler	Nehalem, OR
E-4522	Joanne Munderloh	Elwell, MI
E-4523	G. J. van Zuijlen	Sassenheim, Netherlands
E-4524	Carla Littleton	Pittsburgh, PA
E-4525	Jan Jewell	NE
E-4526	Christine Dupre	Crestone, CO
E-4527	Katherine Daniels	Minneapolis, MN
E-4528	Ryan Teelander	Kalamazoo, MI
E-4529	Ruth Collins	East Sussex, United Kingdom
E-4530	Nichole Lorusso	Branchville, NJ
E-4531	Marie Hebert	Falmouth, Canada
E-4532	Eileen Kopec	Colchester, CT
E-4533	Benjamin Short	Felton, CA
E-4534	Jeff Stein	Beverly Hills, CA
E-4535	Robert Baker	Dalzell, SC
E-4536	Allison Kozdron	New York, NY
E-4537	Joshua Becker	Claymont, DE
E-4538	Sonya M. Garbutt	Davis, CA
E-4539	Ruth Wolfgong	Clarion, PA
E-4540	Rhonda Depue	Portland, OH
E-4541	Dave White	San Marcos, CA
E-4542	Geoffrey Pierce	Fulton, NY
E-4543	Doug Israel	San Francisco, CA
E-4544	Andrew Clarke	Darlington, United Kingdom
E-4545	Colin McClung	Fairbanks, AK
E-4546	Glenn Shuart	Ventura, CA
E-4547	Eric Brecht	Grand Rapids, MI
E-4548	Julia Burlow	Salisbury, United Kingdom
E-4549	Christopher Barnes	Exton, PA
E-4550	Cheryl Van Dyke	Anchorage, AK
E-4551	Daniela Marchini	Mexico City, Mexico
E-4552	Nathan Pierce	Hollister, CA
E-4553	Remy Olson	Cleveland, OH

Log #	Name	Location
E-4554	Amy Lewis	New Dehli, ME
E-4555	Anne Brennan	Saginaw, MI
E-4556	Zachary Hall	Marietta, OH
E-4557	Richard Hunt	Staten Island, NY
E-4558	David Johnson	Orlando, FL
E-4559	Richard Call	Antioch, TN
E-4560	Shannon Reed	Murfreesboro, TN
E-4561	Cyndi Stover	Paradise, CA
E-4562	Margaret Opie (see L-0035)	Barrow, AK
E-4563	Elizabeth Dickinson	Westport, CT
E-4564	Melanie Sherwinski	Indianapolis, IN
E-4565	Starlinne Whatley, RN	Brewton, AL
E-4566	Margaret Opie (see L-0035)	Barrow, AK
E-4567	Laura Price	Denver, CO
E-4568	Maureen Simpson	Lancing, United Kingdom
E-4569	Grace Mueller	Edwardsville, IL
E-4570	Ann Long	Charlotte, NC
E-4571	Melissa Moyer	Gainesville, FL
E-4572	Cindy Gary	Encinitas, CA
E-4573	Josh Spahr	Lewisberry, PA
E-4574	Sheen Perkins	Reno, NV
E-4575	Julianne Berckman	Lexington, NC
E-4576	Concepcion Barquin-Moreno	Bellaire, TX
E-4577	Allan Marshall	HighWycombe,UK
E-4578	Robin Lapierre	Hollywood, FL
E-4579	Terry Szabo	Mentor, OH
E-4580	Brigitta Page	Vineburg, CA
E-4581	Vicki Ganske	Gatesville, TX
E-4582	Carol D. Boozer	Jefferson, GA
E-4583	Elissa Wilson	Xenia, OH
E-4584	Sherri Huggins	Houston, TX
E-4585	Dawn Mitchell	Holly, MI
E-4586	Amber Swortfiguer	Ripon, CA
E-4587	Linda Young	Camp Hill, PA
E-4588	James Marasco-Whitton	Narragansett, RI
E-4589	Cathy Stanley	Ventura, CA
E-4590	Jerri Kuehne	Lenox, MI
E-4591	Linda Hall	Denver, CO
E-4592	Tina Sharp	Cummaquid, MA
E-4593	Robert Couture	Indianapolis, IN
E-4594	Samantha Swisher	Baltimore, MD
E-4595	Diana Corbeil	Toronto, Canada
E-4596	Irene Larsen	Rancho Mirage, CA
E-4597	Jay Shafer	Salt Lake City, UT

Log #	Name	Location
E-4598	Sage Adams	Fairbanks, AK
E-4599	Jennifer Berman	Los Angeles, CA
E-4600	Emma Gib	White Plains, NY
E-4601	Janet Wells	Atlanta, GA
E-4602	Roy DuVerger	Alligator Point, FL
E-4603	Jessica Pappano	Mattawamkeag, ME
E-4604	Ann Ayers	Chuckey, TN
E-4605	Julie Pittman	Brevard, NC
E-4606	Tiana Trutna	Marina, CA
E-4607	Dawson McKinney	Ellensburg, WA
E-4608	Katherine Kline	Decatur, IL
E-4609	Diane Fanelli	Laguna Beach, CA
E-4610	Gidget Rupert	Fort Stewart, GA
E-4611	Jamie Vanucchi	Ithaca, NY
E-4612	J. Y.	New York, NY
E-4613	Lloyd Knight	Victoria, Canada
E-4614	Jane Tibbetts	Anchorage, AK
E-4615	Gregory Muller	unknown
E-4616	Jamie Hardy	Grand Haven, MI
E-4617	Michael Hetz Advertisi	San Diego, CA
E-4618	Tricia Armstrong	Brea, CA
E-4619	Shay Vetterman	Madison, WI
E-4620	Paula Till	Santa Cruz, CA
E-4621	Debbie Hillerich	Beaver Dam, KY
E-4622	Judy Desreuisseau	Gill, MA
E-4623	Jeanetta Davis	Lakewood, CO
E-4624	Jo Anne Smith	Christiansburg, VA
E-4625	Joel Hofstra	Rochester Hills, MI
E-4626	David Perle	Norfolk, VA
E-4627	Kiah Marks	Loxahatchee, FL
E-4628	Phyllis Price	Indianapolis, IN
E-4629	Heather Scott	Clearwater, FL
E-4630	Monica McCroskey	Monroe, IA
E-4631	Harold Johnson	Hammond, IN
E-4632	Meghann Decker	Winter Park, FL
E-4633	James W. Griffiths	Louisville, KY
E-4634	Sumathi Raguraman	Tamilnadu, India
E-4635	Alexandra Cohen	Bennington, VT
E-3636	Kristina Aston	Miami, FL
E-4637	Dea Butcher	Corvallis, OR
E-4638	Preybian Poon	Singapore
E-3639	Bette Zwayer	Cincinnati, OH
E-3640	Ethel Leider	West Palm Beach, FL
E-3641	Julianna Orgel	Riverdale, NY

Log #	Name	Location
E-4642	Sarah Florez	Golden, CO
E-4643	Elizabeth Motter	Cincinnati, OH
E-4644	Martina McGlynn	Huntington Beach, CA
E-4645	Rose Roever	Oconomowoc, WI
E-4646	Lindsey Davis	New York, NY
E-4647	Quinn Labadie	San Clemente, CA
E-4648	Megan Allsup	Longmont, CO
E-4649	Dr. Kenneth R. Sinibaldi	Seattle, WA
E-4650	Laura Dobb	San Francisco, CA
E-4651	Michael Hodgson	Topeka, KS
E-4652	Rickie-Ann Legleitner	Fenton, MI
E-4653	Elke Aston	Marathon, FL
E-4654	Kristen Kirkby	Mercer Island, WA
E-4655	Carla Lyles	Aumsville, OR
E-4656	Arthur Adams	San Francisco, CA
E-4657	Debra Raymond	Kannapolis, NC
E-4658	Kenneth Fong	Elmhurst, NY
E-4659	Vanessa Lauzon	Los Angeles, CA
E-4660	Jesse Lamb	Cryltal Springs, MS
E-4661	Carol Skowronnek	Streamwood, IL
E-4662	Sarah Harris	Innisfail, Australia
E-4663	Kevin Trout	Mission Viejo, CA
E-4664	Michelle Gonzale	West Islip, NY
E-4665	Deena McDougal	Ketchikan, AK
E-4666	Delisa Renideo	Wasilla, AK
E-4667	Nickolas Gordon	San Francisco, CA
E-4668	Adrienne Levine	Anchorage, AK
E-4669	Diona Patterson	Estes Park, CO
E-4670	Gudrun Dreher	Queen Charlotte City, Canada
E-4671	Teri Kitti	Reseda, CA
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E-4672	Dee Viljoen	Benoni, South Africa
E-4673	Akira Thietje	Honolulu, HI
E-4674	Elizabeth Momin	Mason, MI
E-4675	Kara Kukovich	Arlington, VA
E-4676	Sandra Lockhart	Arlington, VA
E-4677	Autumn Reinhard	Richland, WA
E-4678	Patricia Sousa	Lisboa, Portugal
E-4679	Grace Tolson	Mansfield, Australia
E-4680	Amanda Tep	Atlanta, GA
E-4681	Chung Winnie	Singapore
E-4682	Dan Parsons	Bracklesham, United Kingdom
E-4683	Betty Flinchbaugh	Collegeville, PA
E-4684	Gayle Schuett	Dublin, OH

Log #	Name	Location
E-4685	Gerald Fisher	Bluffton, IN
E-4686	Louis McLove	Toledo, OH
E-4687	Sara Tambrin	Alexandria, VA
E-4688	Mary Sue Rose	Sitka, AK
E-4689	Christine Doulis	Philadelphia, PA
E-4690	Jason J. Green	Stanardsville, VA
E-4691	Michael Kriebel	Quakertown, PA
E-4692	Gene Petsa	Windham, CT
E-4693	Wendi Abbott	Anderson Township, OH
E-4694	Richard Pettus	Haverstraw, NY
E-4695	Justin Bloom	Bronx, NY
E-4696	Jane Benedetto	San Antonio, TX
E-4697	Page Mary	Sete, France
E-4698	Erin Cone	Santa Fe, NM
E-4699	Little Tree	Singapore
E-4700	Jamal El-Turk	Tripoli, Lebanon
E-4701	Jennifer Hodgens	La Verne, CA
E-4702	Catarina Cristao	Lisboa, Portugal
E-4703	Annette Biasetti	Edinburgh, Scotland
E-4704	Don Warsavage	Longmont, CO
E-4705	Sharon McAuliffe	San Leandro, CA
E-4706	Stacey Olszewski	Lansing, MI
E-4707	Jennifer Adams	Atlanta, GA
E-4708	Ronald H. Silver, C.E.P.	Atlantic Beach, FL
E-4709	Galen Bosworth	Sedro Woolley, WA
E-4710	Jamie Caito	Pittsburgh, PA
E-4711	Julie De Silveira	Kitimat, Canada
E-4712	Dana Michaels	Sacramento, CA
E-4713	SarahJane Jackson	Bemidji, MN
E-4714	Silvia Hanna	Buxton, ME
E-4715	Kurt Bretsch	Georgetown, SC
E-4716	Tracy Wasielewski	Milwaukee, WI
E-4717	Margaret Fowler	Lake Worth, FL
E-4718	Mary Connors	Urbana, IL
E-4719	James Lane	Bennington, VT
E-4720	Dorothy Moore Singleton	Los Angeles, CA
E-4721	Ricardo Neves	Mirassol, Brazil
E-4722	Sharon Summers	Toronto, Canada
E-4723	Phyllis Perry	Parker City, IN
E-4724	Kai Chan	Princeton, NJ
E-4725	Jody Turner	Seattle, WA
E-4726	Destiny Zeiders	Williamsport, PA
E-4727	Heather Meyerhofer	NJ
E-4728	Sara Ramirez	Mahwah, NJ

Log #	Name	Location
E-4729	Jeremiah Devlin-Ruelle	Dearborn, MI
E-4730	Yuri Yamane	Los Angeles, CA
E-4731	Stephanie Miller	Santa-Rosa, CA
E-4732	Silvana Garcia	Boston. MA
E-4733	Mandy Osborne	North Wilkesboro, NC
E-4734	Rossana Rodriguez	San Juan, Puerto Rico
E-4735	Marie Calabrese	Highland Heights, OH
E-4736	Juan Irizarry	Vega Baja, Puerto Rico
E-4737	Matt Cox	Anchorage, AK
E-4738	Cristina Case	Ben Lomond, CA
E-4739	Marcus Dilliard	Minneapolis, MN
E-4740	Eva Gasser-Sunz	Naples, FL
E-4741	Mark Mueller	St. Petersburg, FL
E-4742	Dawn Carter	Chesterfield, VA
E-4743	Jonathan Jensen	Greenwood, IN
E-4744	Frank Worshek	Fairfax, VA
E-4745	Kelly Stechenfinger	Cheektowaga, NY
E-4746	Amie Huffman	Portage, MI
E-4747	Sachin Karnik	Lansdale, PA
E-4748	Emily Strasser	Avondale Estates, GA
E-4749	Denise Copeland	Ocala, FL
E-4750	Christina Moseley	Cape Town, South Africa
E-4751	Joanna Cook	Venice, CA
E-4752	Chad White	Thousand Oaks, CA
E-4753	Leslie-Anne Barrington	Hamilton, New Zealand
E-4754	Tammie Priselac	Wilmington, NC
E-4755	Anne Dunlap	Portland, OR
E-4756	Mary Mooney	New York, NY
E-4757	Mariam Shubbak	Las Palmas, Spain
E-4758	Jill Sim	Covesville, VA
E-4759	Lisa Marshall	Houston, TX
E-4760	Fern Dews	North Canton, OH
E-4761	Eleanor Triboletti	Berkley, CA
E-4762	Terri Memeo	San Jose, CA
E-4763	Teresa Judkins (see L-0034)	Barrow, AK
E-4764	Patricia Burke	San Juan, Puerto Rico
E-4765	Ani Sandoval	Williston, VT
E-4766	Deborah Wells	Buena, NJ
E-4767	Jason Scullion	Carnation, WA
E-4768	Alicia Parlette	Lancaster, OH
E-4769	Mary White	Birmingham, MI
E-4770	Jose Ivan Cancel	San German, Puerto Rico
E-4771	Molly Morgan	Milwaukee, WI
E-4772	Lauren Stanulis	Lititz, PA

Log #	Name	Location
E-4773	Karyn Kakiba-Russell	West Covina, CA
E-4774	Rominjn Wind	Brooklyn, NY
E-4775	Helen Reinhold	Southampton, NY
E-4776	Ellen Meyers	Newton, MA
E-4777	Claire Conover	Piscataway, NJ
E-4778	Robert Blackiston	Sewell, NJ
E-4779	Harry Quade	Baltimore, MD
E-4780	Albert Torres	Denver, CO
E-4781	David Jr. Barlew	Knozville, TN
E-4782	Melissa Popoluski	LaPorte, IN
E-4783	Sherry Denton	Wilson, NC
E-4784	Robert Taylor	Los Angeles, CA
E-4785	Bryan Wyberg	Coon Rapids, MN
E-4786	Naomi Worcester	Portland, OR
E-4787	Elizabeth Paige	Santa Rosa, CA
E-4788	Jeff Frontz	Columbus, OH
E-4789	Jeff Frontz	Columbus, OH
E-4790	Diana Carey	Santa Monica, CA
E-4791	Russell Fowler	Swansboro, NC
E-4792	Virginia Sui	Honolulu, HI
E-4793	Nova Montgomery	Tarpon Springs, FL
E-4794	Tammy Shortridge	Aberdeen, NC
E-4795	Karen Mangham	Hampton, GA
E-4796	Holly Hilt	Attica, MI
E-4797	Virginia Velasquez	Las Vegas, NV
E-4798	Michelle Meacham	Miami Shores, FL
E-4799	Gwen Baluss	Juneau, AK
E-4800	Laurie McDonough	Cumberland, RI
E-4801	J. Koepp	Milwaukee, WI
E-4802	Anne Oppenheimer	Plantation, FL
E-4803	Eileen Tuthill-Howell	Camden, DE
E-4804	Jemma Sinclaire	Ft. Lauderdale, FL
E-4805	Corey Rennell	Anchorage, AK
E-4806	Karen Naifeh	San Mateo, CA
E-4807	Eric & Rebecca Helm	McHenry, IL
E-4808	Johnny Despinis	Peru, IL
E-4809	Stacy Mullins	Brunswick, GA
E-4810	Leon Pereira	Kaneohe, HI
E-4811	Debra Brown	Salemburg, NC
E-4812	M. Chinchilla	Key West, FL
E-4813	Joseph Akpik	Atkasuk, AK
E-4814	Vivian Newman	South Thomaston, ME
E-4815	Lara Hammond	Thousand Oaks, CA
E-4816	Shaindel Beers-Finley	Wauconda, IL

Log #	Name	Location
E-4817	Leslie Paxton	Garden Grove, CA
E-4818	Stephanie Kifowit	Aurora, IL
E-4819	Steve Schwartz	Oakhurst, CA
E-4820	Cecilia Nyholm	Ridgecrest, CA
E-4821	Cathrin Gordon	Tucson, AZ
E-4822	Angie Sheldon	Mequm, WA
	9-23-02	
E-4823	Abigail Shuman	Lititz, PA
E-4824	Nathan Brick	Columbia, SC
E-4825	Connie Mutel	Solon, IA
E-4826	Helen Lembeck	Chula Vista, CA
E-4827	Roger Cole	Forest Ranch, CA
E-4828	Kathy Ruben	Marlton, NJ
E-4829	Danielle Nattress	Orlando, FL
E-4830	Cheryl Chard	Albuquerque, NM
E-4831	Jeff Warren	Portland, OR
E-4832	Sheila Ward	Trujillo Alto, Puerto Rico
E-4833	Susan LoFurno	Webster, NY
E-4834	David Alkalay	Rego Park, NY
E-4835	Rachel Matthews	Oakland, CA
E-4836	Trisha Lyman	Rio Rancho, NM
E-4837	K. Taira	Springfield, IL
E-4838	Elizabeth Jobson	Lake Hill, NY
E-4839	Sherry VonSenden	San Antonio, TX
E-4840	Richard W. Hartmann	Honolulu, HI
E-4841	Kari DeAngelis	Norwalk, CT
E-4842	Jamie Stark	Campbellcroft, Canada
E-4843	Suzanne Rebecchi	Kansas City, MO
E-4844	Lanette Hendren	Mountain View, CA
E-4845	Aminya Hepp	Canberra, Australia
E-4846	Reva Coffey	Pine Knot, KY
E-4847	Robert Ricciotti	Randolph, NJ
E-4848	Maureen Barber	Lake Worth, FL
E-4849	Kevin Haro	Brookfield, WI
E-4850	Lisa Skube	Portland, OR
E-4851	Kim Fortin	Minneapolis, MN
E-4852	Luciane Lindquist	VA
E-4853	Stephanie Schipper	San Francisco, CA
	9-25-02	
E-4854	Maryanne McDonough	Bremerton, WA
E-4855	Claudia Knapp	Roselle Park, NJ
E-4856	Martha Bushnell	Boulder, CA
	9-26-02	
E-4857	Claire Lupton	Charlestown, MA
E-4858	Michelle Pappe	San Francisco, CA
	9-27-02	
E-4859	Gordon Barrett	Saratoga, CA
E-4860	Zelma H. Weisfeld	Ann Arbor, MI
	9-28-02	
E-4861	Ann Gregg	Olympia, WA
E-4862	Catherine Duncan	Richwood, NJ
E-4863	Leesa Youtsey	Albuquerque, NM
	9-29-02	
E-4864	Margaret Adams	Sherman Oaks, CA
E-4865	Travis Lyle	York, PA
E-4866	Tracy Jordan	Galivants Ferry, SC
	9-30-02	
E-4867	Brenda Maurice	Coinjock, NC
E-4868	Christina Strasdas	Salt Lake City, UT
E-4869	Deborah Arnason	Naples, FL
	10-1-02	
E-4870	Mo Adshead	Reading, United Kingdom
E-4871	Maurizio Ferrari	Gloucerstershire, United Kingdom