

### 3 Summary

#### Environmental Oil Spill Sensitivity Atlas for the West Greenland Coastal Zone

This Atlas was produced as a part of the preparations for exploratory drilling offshore Greenland. The objective of the project is to produce an overview of resources vulnerable to oil spills, for example biological resources (fish, birds etc.), and a tool to respond to an oil spill. The project covers the region between 62° N and 68° N in West Greenland.

The following elements are included in the project

- coast types,
- oceanography, ice and climate,
- biological resources (fish, birds etc.),
- fishing and hunting,
- selected areas (e.g. seabird breeding colonies),
- archaeological sites,
- logistics and oil spill response methods.

As the oil spill sensitive resources are very different in character (e.g. seabird breeding colonies, important fishing areas, and archaeological sites), it has been common practice to calculate an index value of the sensitivity of a specific area, in order to compare areas with different characteristics. The index calculations are based on a Canadian system, which has been used in Lancaster Sound. An overview of the methods used in the Atlas is given in Chapter 6.

The coastline is divided into areas (coastlines and groups of islands) approx. 50 km long. Each area has been ranked in one of four degrees of sensitivity based on the index calculation that includes abundance and sensitivity of a number of environmental or community elements (e.g. different birds and marine mammals, hunting areas, and archaeological sites).

Besides the general classification of coastal sensitivity, the maps of the Atlas also show smaller selected areas. They have been selected as being of particular significance, particularly vulnerable to oil spills, and as being of a size where an effective oil spill response can be performed.

As a part of the project, classification of the coastline morphology has been conducted from aerial photographs, e.g. the occurrence of rocky shores and beaches. An index value of the self-cleaning ability of the coast after an oil spill has been calculated, based on this classification in combination with shoreline exposure to waves and ice. For example, oil on a rocky coast exposed to wave action will be cleaned faster than oil on a beach in a protected lagoon.

Based on all the information, appropriate methods to respond to oil spills in the different areas have been assessed.

Chapter 8 in the Atlas contains overview information, primarily in 1: 3.5 million scale maps, and Chapter 9 contains detailed information in 1: 250,000 scale maps. Chapter 7 is a users guide common to Chapter 8 and 9.

Chapter 8 contains maps showing the sensitivity of the offshore areas and with each of the elements used in the classification (fishing areas, fish, birds, and marine mammals). A number of maps show ice conditions and the most important biological resources and their use, e.g. deep sea shrimp and Greenland halibut.

Chapter 9 contains 34 maps in the scale 1: 250,000 showing index values for coastal sensitivity and symbols for the elements of the classification (hunting and fishing areas, fish, birds, marine mammals and archaeological sites). The maps also show the selected areas. Each map has a description of biological resources and human use of the area.

Chapter 9 also contains 34 maps showing coast types, logistics, and proposed methods to oil spill response for each area.

A community consultation phase was carried out during the project. A draft version of the Atlas was presented and discussed with local communities and user organizations in April 2000, and new information was incorporated.

The Danish Energy Agency initiated the Atlas in consultation with the Government of Greenland's Bureau of Minerals and Petroleum.

The project was carried out by the National Environmental Research Institute, the Geological Survey of Denmark and Greenland, the Greenland Institute of Natural Resources, the University of Copenhagen (Institute of Geography), the Greenland National Museum, The Greenland Secretariat of the Danish National Museum, Danish Meteorological Institute, AXYS Environmental Consulting Ltd. and SL Ross Environmental Research Ltd.