

## **CHAPTER 2.0**

### **TRADITIONAL KNOWLEDGE**

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## 2.0 TRADITIONAL KNOWLEDGE

### 2.1 INTRODUCTION

This chapter describes the approach to gathering traditional and contemporary knowledge of the Inupiat Eskimo of the North Slope communities of Barrow, Nuiqsut, and Kaktovik as it relates to the proposed development/production activities for the Northstar Unit. It discusses the cultural importance of the Inupiat subsistence lifestyle, Inupiat ties to and intimate knowledge of their environment, the importance of certain roles within the Inupiat subsistence culture, and provides an example of the proven reliability of Inupiat Traditional Knowledge.

Chapter 2 presents the approach to gathering and incorporating traditional and contemporary knowledge for each of the topics covered in Chapters 5 through 9 as a means to help evaluate potential effects of oil and gas development/production activities for the Northstar Unit.

During the past 10 years, biologists have begun to work more with indigenous peoples to integrate Traditional Knowledge into their research (Freeman and Carbyn, 1988:22; Freeman, 1992:11; Hobson, 1992:2; Albert, 1992:25). This interest in Traditional Knowledge is in recognition of the fact that biological studies in the Arctic typically are conducted as intensive, short-term efforts during the brief Arctic summer. In contrast, Traditional Knowledge represents the cumulative observations of people who have lived in the Arctic their entire lives. This knowledge frequently is expressed because of the strong interest Inupiat have in science and resource management (Albert, 1988:18; Albert, 1990:345). John Craighead George, representing the North Slope Borough (NSB) noted: *“There’s nothing mysterious about Traditional Knowledge. Wildlife biology is largely an observational science ... the person who has the most number of observational hours has the best data ... and the cumulative hours of observation of the whaling community just dwarfs anything that’s been done by the scientific community.”* (USDOJ, MMS, 1995:25).

Historically, Traditional Knowledge of local indigenous people has not been addressed adequately in environmental assessments or impact statements. Instead, environmental impact statements (EISs) have relied primarily on western scientific knowledge and analysis. In particular, the Inupiat Eskimo people of northern Alaska have been frustrated continually by what they perceive to be a lack of attention to and respect for information they have provided to federal and state agencies during the planning process for oil and gas lease sales and exploration and development projects.

George Ahmaogak, then Mayor of the NSB, summarized the issue of applying Traditional Knowledge in a paper delivered at a 1995 oil and gas workshop:

*“. . . Industry and government agencies must recognize the value of the Traditional Knowledge of local people. We, the ‘local people,’ the indigenous people of the U.S. Arctic, want our opinions heard, and we want our Traditional Knowledge to be*

*respected. Since we have lived here for many centuries, our people have learned much about the ice, snow, ocean currents, wildlife behavior, etc. In the past, there have been many instances where representatives of industry and/or government have come to us with the attitude that they 'know everything' and that our Traditional Knowledge is of little significance. Such an attitude is not only insulting, it is also incorrect. Our knowledge about the environment and its wildlife comes from direct observation over many lifetimes.*

*Let me also say that we are in favor of well done research to better understand the mysteries of the Arctic, however, we also feel that scientists and managers from government and industry must not neglect the Traditional Knowledge of the indigenous people. Our Traditional Knowledge is important to us in our everyday life, and it can often help all concerned parties to gain a better understanding of matters that are important in the exploitation of Arctic resources." (Ahmaogak, 1995:4-5).*

## **2.2 DEFINITION OF TRADITIONAL KNOWLEDGE**

In this EIS, Traditional Knowledge refers to the experience, familiarity, and awareness of the Inupiat Eskimo residents who have lived continuously for thousands of years off the land and waters of the North Slope (North Slope is defined as an area bounded by the northern foothills of the Brooks Range to the Alaskan Beaufort Sea coastline, from the Chukchi Sea coast to the Canada border). In a paper on Traditional Knowledge, Martha Johnson, Research Director at the Dene Cultural Institute, wrote:

*"Traditional environmental knowledge, or TEK, can generally be defined as a body of knowledge built up by a group of people through generations of living in close contact with nature. It includes a system of classification, a set of empirical observations about the local environment, and a system of self-management that governs resource use. The quantity and quality of traditional environmental knowledge varies among community members, depending upon gender, age, social status, intellectual capability, and profession (hunter, spiritual leader, healer, etc.). With its roots firmly in the past, traditional environmental knowledge is both cumulative and dynamic, building upon the experience of earlier generations and adapting to the new technological and socioeconomic changes of the present" (Johnson, 1992:4).*

A Canadian Gwich'in Indian addressed Traditional Knowledge when he said:

*"You need to have some faith in the people. They live on the land and know what is happening.... You can't verify or contradict Traditional Knowledge with western science. They are two different perspectives.... Radio collars do not tell you where caribou were twenty years ago." (Personal interview conducted by S. Braund, 1996).*

Traditional Knowledge is passed along relatively unchanged from generation to generation, but also adapts to reflect changes in technology and socioeconomic conditions. The term Traditional Knowledge

as used in this EIS includes contemporary, indigenous knowledge. This knowledge includes, but is not limited to, expertise on weather, sea ice, currents, fish and wildlife, historic and current uses of the land and water for subsistence activities and other traditional uses, and impacts of human activities on wildlife and the environment. As part of this EIS effort, four categories of Traditional Knowledge have been identified based on past testimony and information collected in project-specific community meetings.

- Information on the characteristics of the physical, biological, and human environment.
- Issues and concerns related to oil and gas activities based on Traditional Knowledge.
- Informed views related to the potential impacts of the proposed project based on Traditional Knowledge.
- Observations regarding project design, construction, and operation characteristics based on Traditional Knowledge.

### **2.3 SUBSISTENCE AS THE FOUNDATION OF TRADITIONAL KNOWLEDGE**

The importance of Traditional Knowledge is better understood and respected if its origins in the subsistence culture are made clear. North Slope Inupiat Eskimo culture, like other Alaska Native cultures, is characterized by the importance of harvesting, processing, distributing, storing, and consuming wild foods (SRB&A and PJUCS, 1993:3-5), and the ability to utilize resources for clothing, shelter, fuel, tools, and ceremonial items.

Within a culture based on the harvest of wild resources, the most significant beliefs and values revolve around three fundamental relationships: 1) the relationship between humans and the environment (including wild resources), 2) the relationship among human beings, and 3) the relationship between the people and their ancestry (SRB&A and PJUCS, 1993:4-5). The importance of the first two relationships stems from human dependence on one another and the environment for survival. The third relationship demonstrates the dependence on knowledge and skills passed from generation to generation and the belief that those who came before knew the correct and proper way to live.

The goal of subsistence is to maintain these relationships by harvesting in a manner respectful to the environment while accumulating resources that can be consumed and shared with other members of the community. Successful subsistence is not only resource harvesting by an individual for his own use, but includes the distribution of those resources through a network of social ties anchored by kinship. As Justice Thomas Berger, head of the Alaska Native Review Commission, wrote:

*"The traditional economy is based on subsistence activities that require special skills and a complex understanding of the local environment that enables the people to live directly from the land. It also involves cultural values and attitudes: mutual respect, sharing, resourcefulness, and an understanding that is both conscious and mystical of the intricate interrelationships that link humans,*

*animals, and the environment. To this array of activities and deeply embedded values, we attach the word 'subsistence,' recognizing that no one word can adequately encompass all these related concepts." (SRB&A and PJUCS, 1993:5)*

Thus, subsistence is far more than an economic means of production. The economy, social system, and ideology are all oriented around subsistence and integrated in a manner that constitutes a holistic cultural system characterized as subsistence.

## **2.4            SUBSISTENCE IN BARROW, NUIQSUT, AND KAKTOVIK**

Residents of Barrow, Nuiqsut, and Kaktovik (Figure 2-1) maintain a subsistence lifestyle demonstrating a strong reliance on natural resources combined with wage labor employment. In Barrow, 44 percent (%) of households obtained half or more of their meat and fish from subsistence activities. In Nuiqsut and Kaktovik, 62% to 66% of households, respectively, reported that half or more of their meat and fish came from subsistence harvests (Harcharek, 1993: NUI-32, KAK-32, BRW-34). In all three communities, significant amounts of time, energy, and money are spent on subsistence activities, including preparation, hunting, fishing, gathering, processing, storing, consuming, distributing, and celebrating the harvest. Additional information describing the reliance of these communities on wild resources appears in Section 7.3 of this EIS.

## **2.5            NORTH SLOPE TRADITIONAL KNOWLEDGE**

Traditional Knowledge of the project area was gathered from whaling captains and their wives, elders, and other individuals who have spent a great amount of time on the land and sea participating in subsistence activities. Their subsistence experience generates community respect similar to that of advanced academic education in more urban cultures.

FIGURE 2-1 (Pg 1 of 2)

FIGURE 2-1 (Pg 2 of 2)



Whaling captains in particular hold a position of great respect in the community. From early apprenticeship through long training as a crew member, it takes many years to attain knowledge necessary to captain a whaling crew. Few whalers ever become captains. This position requires considerable hunting experience and expertise demonstrated by successful hunts, strong social alliances, and the accumulation of resources necessary to support a whaling crew. The whaling captain is responsible for providing the whaling boat, shoulder gun, darting gun, other whaling equipment, and supplies to sustain the crew throughout the whaling season. A 1983 survey in Alaska Eskimo whaling communities found that 62% of whaling captains and 73% of former whaling captains interviewed were on whaling crews for 15 years or more before they became captains, and 45% of active captains had been on a crew for 20 years or more before becoming captains (ACI and SRB&A, 1984:91).

Whaling captains' wives are their partners in preparing for the hunt, supporting the whalers, processing the animal, and hosting celebrations following a harvest. Wives and other female family members of dedicated hunters generally are very experienced in processing animals brought home from the hunt. Consequently, they are knowledgeable about variations in animal health at different seasons and harvest locations.

Women also participate in hunting, gathering, and fishing, spending considerable time on the land. These individuals are well respected in the community because of their skills, knowledge, and experience. As they grow older and more experienced, they become even more respected. Hence, when a whaling captain, captain's wife, hunter, or elder speaks, their words carry great respect within the community as bearers of collective cultural experience, knowledge, and wisdom. At times, when an elder has spoken on an issue, other members of the community may not make additional comment out of respect for the elder's wisdom, regardless of their personal opinion, as the elder is seen as a spokesperson for the community.

## **2.6 WESTERN SCIENCE VS. TRADITIONAL KNOWLEDGE - BOWHEAD WHALE ISSUE**

Federal and state agencies historically have relied on western scientific research and engineering expertise for decision-making on management and development of resources in the Arctic. In doing so, they often overlook the knowledge of local residents that is based on years, and often generations, of experience and observation. The clearest and most often cited example of the western science of decision-makers coming into conflict with the Traditional Knowledge of local indigenous residents had consequences for the Inupiat people. The case centered on Inupiat estimates of the Bering-Chukchi-Beaufort Seas' bowhead whale population, which conflicted with far lower estimates by western scientists. The outcome of the controversy highlights the value of collecting, using, and attributing due respect to Inupiat knowledge.

In 1977, the International Whaling Commission (IWC) considered the bowhead whale population so low it banned the subsistence harvest of bowhead whales for the 1978 season. This decision had a great effect on the Inupiat and Yu'pik Eskimos of Alaska, who had depended upon subsistence bowhead harvests for thousands of years, and the decision was made without their input. Without notice, the single most important cultural activity and largest source of food for several communities was prohibited by an

international commission relying exclusively on western science.

In response to the IWC moratorium, whaling captains from nine Alaskan whaling communities met in Barrow and formed the Alaska Eskimo Whaling Commission (AEWC). The AEWC attended IWC committee meetings and worked with the U.S. delegation to the IWC to build a case for rescinding the moratorium on subsistence whaling. In December 1977, the IWC removed the 1978 ban based on cultural and subsistence dependence on the bowhead by the Alaska Eskimos and implemented a 1978 quota of 12 whales landed or 18 struck, whichever occurred first. This represented the first quota on Alaska Eskimo bowhead whaling. In the view of local whaling captains, the quota was not only inadequate, it was based on erroneous scientific information related to the number of bowheads in the Bering-Chukchi-Beaufort Seas' stock. Local knowledge and observations indicated to whalers that the bowhead population was much larger than the IWC determined. Powerless to do otherwise, the AEWC deferred to western science while the U.S. Government began a bowhead census program.

Western scientific knowledge and Traditional Knowledge were at odds. Traditional Knowledge of indigenous whalers, built from centuries of observation and experience, disagreed with bowhead population estimates used by the western scientists who advised the IWC, a western-style resource management forum. The IWC relied exclusively on western science. Even in rescinding the moratorium, the IWC relied on a report on cultural aspects of aboriginal whaling in North Alaska prepared by an international panel of western social scientists (Bockstoce et al., 1979:1), rather than on any statements from Eskimo whalers themselves.

The government bowhead census, conducted by the National Marine Fisheries Services, consisted mainly of aerial counts of passing bowheads during spring migration. The National Marine Fisheries Services estimated a population of 2,264 animals in 1978. The Inupiat and Yu'pik whalers and elders from the Alaska Eskimo whaling communities maintained there were substantially more bowheads than the count along the shorefast ice indicated. Whalers and elders said there were additional bowheads that migrated further offshore, as well as other bowheads that could not be seen.

The NSB took responsibility for the bowhead census in 1981 and added acoustic techniques. By 1988, the bowhead census yielded a "best estimate" of approximately 7,500 bowheads. The IWC concluded in 1994 that the best available estimate of current bowhead population size for 1993 was approximately 8,000 and by 1996 (using 1993 bowhead census data), the IWC Scientific Committee's best estimate was 8,200. Based on cultural and subsistence needs and on bowhead population data, the IWC gradually has increased the quota through the years from the 1978 IWC quota (for nine recognized whaling communities at the time) of 12 whales landed or 18 struck to the current 4-year block quota (1995-1998) of 204 bowhead whales with between 65 (1998) and 68 (1995) strikes per year for 10 communities. After nearly 20 years and millions of dollars, the AEWC and the NSB were able to document what had been said all along, that the bowhead population was sufficient to sustain an Alaska Eskimo subsistence harvest based on a legitimate cultural dependence on the animals.

In addition to the conflict over different bowhead population estimates, Barrow elders pointed out other examples of Traditional Knowledge either disputed or doubted by western scientists. These examples

included that bowheads are not afraid of ice and will swim in ice-covered waters; bowheads pass Point Barrow on a wide front, not confining themselves to the open leads; bowheads can break the ice to breathe; bowheads are sensitive to manmade noise; and some bowheads split from the main population during spring migration and go up the Russian coast, thus not passing the census station at Point Barrow (Albert, 1988:20-21; Albert, 1992:25). Each of these five additional, disputed points has been verified at great cost by western scientists.

## **2.7 TRADITIONAL KNOWLEDGE WORK PLAN**

A Traditional Knowledge work plan was developed to guide the collection of Traditional Knowledge and its incorporation into this EIS. The work plan was developed with the assistance of an informal peer review group assembled by the NSB and other cooperating agencies. It contained the following three elements:

- A review of Traditional Knowledge provided by North Slope organizations' and residents' past testimony on proposed oil and gas lease sales and exploration and development projects.
- Collection of Traditional Knowledge from residents of Barrow, Nuiqsut, and Kaktovik.
- Incorporation of Traditional Knowledge in a meaningful way into appropriate sections of the EIS.

### **2.7.1 Review of Past Testimony**

During EIS Scoping Meetings held in the spring of 1996 in the North Slope communities of Barrow, Nuiqsut, and Kaktovik, it was pointed out frequently that residents of the North Slope have been providing testimony and written comments on the same issues and concerns regarding oil and gas leasing and operations for the last 20 years. Residents strongly recommended that previous testimony be reviewed because what would be said on this project had been said many times before. The method used represents an initial effort to extract Traditional Knowledge related to general Alaskan Beaufort Sea oil and gas development from past testimony and from community meetings.

Available written and taped transcripts were collected from previous meetings related to state and federal oil and gas lease sales, proposed oil exploration and development projects, and other relevant topics. A listing of historic sources of testimony utilized for this EIS is shown in Table 2-1. A Traditional Knowledge database was developed to catalogue testimony. The database was organized using the following four general categories of information:

TABLE 2-1

- Source of testimony (project name, date of meeting/hearing, and location).
- Person providing testimony (name and address).
- Subject of testimony (key words for issue/development impact).
- Specific quotes of individual testimony.

The Traditional Knowledge database is organized into three linked tables as listed below.

- Bibliography - transcript document identification, date of testimony, title of report, location of hearing, author, data type (i.e., oral testimony).
- Speaker Information - transcript document identification, speaker's name, speaker's title or affiliation, speaker's residence, location of hearing.
- Quotes - transcript document identification, speaker's name, transcript page number, transcript paragraph number, quote text, reader [person entering data], key words, related key words, primary impact, secondary impact.

These tables interconnect through matching subjects or data fields. By connecting fields together, data can be placed into the proper reference for answering questions. These questions are known as “queries.” A query can be as simple as, “*What sea ice issues were raised?*” or as complicated as, “*Which people in Kaktovik were concerned with transportation issues, what did each person have to say, and what is the title or affiliation of each person?*” The database manipulates the data and produces an answer to a query. Answers can then be arranged into an order most useful for the database user.

Information from the database has been incorporated directly into various sections of this EIS to assist in addressing project impacts from a Traditional Knowledge perspective, as well as a western science perspective. The Traditional Knowledge database contains information from selected public testimony for lease sales and related topics on the North Slope since 1979 and testimony (oral and written) collected during the scoping process for this EIS. The Traditional Knowledge database developed from this effort will ultimately be transferred to some appropriate North Slope entity for maintenance and expansion as additional relevant hearing transcripts and other materials become available. To date, the database has been made available to the Barrow Arctic Science Consortium under a contract with the Minerals Management Service.

## **2.7.2 Collection of Traditional Knowledge Related to the Alaskan Beaufort Sea and Project Area**

A special effort was made to collect Traditional Knowledge relevant to this EIS from the affected communities within time and resource constraints. The search focused on aspects of oil and gas development in the Alaskan Beaufort Sea and on BP Exploration (Alaska) Inc.'s (BPXA's) proposed project. The information obtained does not reflect the more comprehensive range of Traditional Knowledge that residents possess on a variety of subjects. The effort to collect Traditional Knowledge related specifically to the project area involved the four steps described below.

### **2.7.2.1**     *Contact with Community Representatives*

Phone calls were made and/or letters were sent to community representatives in Barrow, Nuiqsut, and Kaktovik informing them of the purpose of the Traditional Knowledge element of the EIS and plans for village meetings. Communications in Barrow were coordinated through the Barrow Whaling Captains Association. Communication with Nuiqsut was coordinated through the City Vice-Mayor, Kuukpik Corporation, and the Nuiqsut Whaling Captains Association. The Kaktovik representative requested that all EIS communications be coordinated through the Mayor.

### **2.7.2.2**     *Preparation of Questions to Obtain Traditional Knowledge*

Specific questions were used for Barrow, Nuiqsut, and Kaktovik community meetings to gather Traditional Knowledge on the Alaskan Beaufort Sea and the project. Questions came from three sources. First, questions were prepared by individuals responsible for preparation of this EIS. Second, questions were developed from review of past testimony. Third, BPXA provided questions related to the BPXA proposed project design, construction, and operation.

### **2.7.2.3**     *Data Collection Trips to Communities*

Traditional Knowledge was collected from the communities as described below. Community residents coordinated and/or communicated with as part of the EIS process are listed in Table 2-2.

**Kaktovik - June 19-21, 1996:** Discussions were held with representatives of the City of Kaktovik. The intent to use Traditional Knowledge in the EIS was discussed, along with the effort to summarize past testimony on oil and gas development. However, agreement was not reached between the City and the lead and cooperating agencies on the terms of collecting Traditional Knowledge in Kaktovik.

**Nuiqsut - July 30-August 1, 1996:** An initial trip was made to Nuiqsut to discuss the use of Traditional Knowledge in the EIS, along with discussion on plans to summarize past testimony on oil and gas development. Meetings were held with representatives of the City of Nuiqsut, the Kuukpik Corporation, and the Nuiqsut Whaling Captains Association. These groups requested that the intent and approach to Traditional Knowledge be reviewed in initial meetings, discussed within the community, and that follow-up meetings be scheduled with the whaling captains and other community members to collect Traditional Knowledge and answer questions.

**Nuiqsut - August 13-16, 1996:** Meetings were scheduled to ask Traditional Knowledge questions of the Nuiqsut whaling captains on August 14 and in a general community meeting on August 15. Seven of the ten community whaling captains attended the August 14 meeting and provided a great deal of information based on their knowledge and experience. This meeting provided valuable information on historical use of the project area, concentrations of fish and wildlife, and experience with oil spill cleanup drills.

Table 2-2 (Pg 1 of 2)

Table 2-2 (Pg 2 of 2)



**Barrow - August 27-28, 1996:** At the fall meeting of the Barrow Whaling Captains' Association held August 27, 1996, BPXA provided a summary description of its proposed project. Following BPXA's presentation, the goal of integrating Traditional Knowledge into the EIS was explained. Times were scheduled with whaling captains to discuss Traditional Knowledge and BPXA's proposed project the following day and evening. A total of four whaling captains contributed information.

Trip summaries were prepared for each of the data collection community meetings. In some cases, participants allowed meetings to be taped, and information was recorded on maps. Information gathered was incorporated into the Traditional Knowledge database. The majority of information collected in these community meetings concerned sea ice, currents, storms, fish, wildlife, historic use of specific lands and waters, contemporary subsistence activities and use areas, and aspects of project design.

### **2.7.3 Use of Traditional Knowledge in the EIS**

#### **2.7.3.1 *Categories of Traditional Knowledge Collected***

Information collected was divided into four categories of Traditional Knowledge:

- Information on Characteristics of the Physical, Biological, and Human Environments - Primarily baseline environmental characteristics, this information represents what is normally thought of as Traditional Knowledge.
- Issues and Concerns Related to Oil and Gas Activities Based on Traditional Knowledge - While not directly Traditional Knowledge, issues and concerns reflect Traditional Knowledge of the environment and potential impacts of proposed development, including specific information about oil and noise impacts.
- Informed Views Related to the Potential Impacts of the Proposed Project Based on Traditional Knowledge - This information was offered in testimony or specifically asked for in interview questions. These views reflect Traditional Knowledge of the environment and potential impacts of proposed development.
- Observations Regarding Project Design, Construction, and Operation Based on Traditional Knowledge - In reviewing BPXA's proposed project, observations and suggestions were made on project design, construction, and operation. The intent of these observations and suggestions was to improve safety and avoid or minimize impacts.

#### **2.7.3.2 *Incorporation of Traditional Knowledge into the EIS***

Traditional Knowledge from the past testimony database and 1996 community data collection efforts was reviewed for incorporation into the EIS. Information on characteristics of the physical, biological, and human environments, and the effects of oil and noise on these environments, was incorporated into the affected environment sections of Chapters 5 through 9. Issues and concerns related to oil and gas development and informed views related to the potential impacts of the proposed project were incorporated into discussions of environmental consequences. Observations regarding project design, construction, and operation characteristics also were incorporated into environmental consequences sections.

Specific quotes from individuals were incorporated and cited in some instances. In other cases, an observation or concern may have been shared by several individuals and was paraphrased into a statement followed by a citation of the group representing those individuals.

The cooperating agencies committed to collecting and incorporating Traditional Knowledge in preparing the EIS in part to meet requirements outlined in Executive Order 12898 regarding Environmental Justice (see Section 1.4.7 of the EIS for Environmental Justice requirements). Interaction with affected communities should require active community participation, recognize community knowledge, and utilize cross-cultural formats and exchanges. The methods used to collect and incorporate Traditional Knowledge into preparation of the EIS help meet these objectives.

The format for incorporating Traditional Knowledge into this EIS was influenced by two major objectives: ease of locating Traditional Knowledge within sections of the EIS and ability to compare Traditional Knowledge with western science. Within Chapter 5 (Physical Environment), Chapter 6 (Biological Environment), Chapter 7 (Human Environment), Chapter 8 (Effects of Oil), and Chapter 9 (Effects of Noise), incorporation of Traditional Knowledge is accomplished through a “stand-alone” section of Traditional Knowledge on specific topics, and general incorporation along with western science information throughout the remainder of the chapter, allowing a comparison of scientific and traditional information. Within Chapter 7 (Human Environment), Traditional Knowledge primarily addresses subsistence resources and activities, and is included with information from the NSB and Alaska Department of Fish and Game research, which rely on Traditional Knowledge. Traditional Knowledge that is directly applicable to Chapter 8 (Effects of Oil) appears to be limited to a few observations regarding historical offshore oil spills in the Alaskan Beaufort Sea. However, knowledge of the local environment is used to describe severe weather conditions that may hinder effective oil spill response and potential effects on fish and wildlife.

A general summary of where information related to Environmental Justice and Traditional Knowledge can be found in the EIS is presented in Table 1-3. In addition, an index of the location of Traditional Knowledge on specific topics can be found at the back of the EIS index.

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