Exhibit 11

EPA Region 10, Environmental Justice Analysis for proposed Outer Continental Shelf Permit No. R10OCS030000, Kulluk Drilling Unit (July 19, 2011)

July 19, 2011

Environmental Justice Analysis

for proposed Outer Continental Shelf

Permit No. R10OCS030000

Kulluk Drilling Unit

This document contains the Environmental Protection Agency (EPA) Region 10's Environmental Justice Analysis for a Clean Air Act (CAA) permit authorizing exploratory drilling in the Outer Continental Shelf (OCS) in the Beaufort Sea. Pursuant to CAA section 328, 42 U.S.C. § 7627, Region 10 is reviewing an application for an OCS minor source permit and two OCS Title V[1] permits for Shell Offshore, Inc. (Shell) for operations of the Kulluk drill rig in the Beaufort Sea.

Shell's proposal is subject to the air quality permitting requirements under the OCS provisions of Title 40, Code of Federal Regulations (C.F.R.), Part 55 (Part 55). Under these regulations, the applicable requirements depend on the source's relative location to shore. OCS sources located within 25 miles of a State's seaward boundary are subject to the Federal, and to the State and local requirements of the Corresponding Onshore Area (COA), which have been incorporated into EPA's OCS regulations at Part 55. OCS sources located beyond 25 miles of a State's seaward boundary are subject to only Federal requirements – i.e., COA requirements do not apply. In Shell's case, the State of Alaska is the designated corresponding onshore area and the air quality permitting requirements of the Alaska Department of Environmental Conservation (ADEC), which have been incorporated into Part 55 apply. See 40 C.F.R. 55.15 Appendix A.

Shell requested that Region 10 impose emission limits for operation on lease blocks that are both within and beyond 25 miles of Alaska's seaward boundary. For operations within 25 miles of Alaska's seaward boundary, Shell submitted a minor permit application pursuant to the COA's minor permit program in Title 18 of the Alaska Administrative Code, Chapter 50 (18 AAC 50). For operations beyond 25 miles of Alaska's seaward boundary, Shell submitted a Title V operating permit application under 40 C.F.R. Part 71 (Part 71). Shell is also requesting that EPA issue a Title V operating permit under 40 C.F.R. Part 70 for continued operation within 25 miles of the seaward boundary. These permits will be collectively known as the "Title V Permit."

[1] Shell's project is permitted as "synthetic minor" source, with enforceable limits restricting potential to emit (PTE) to below major source thresholds. EPA's rules applying to sources of air pollution on the OCS (40 CFR Part 55) do not include provisions requiring construction permits for minor sources. Because of this, Shell has applied for the required Title V air quality operating permit in advance of construction.

As discussed in more detail below, based on available information, Region 10 concludes that the activities proposed to be authorized under the Title V permit will not have disproportionately high and adverse human health or environmental effects with respect to air pollutants authorized under these permits on minority or low-income populations residing in the North Slope. In reaching this conclusion, Region 10 considered the impact on communities while engaging in subsistence activities in areas where such activities are regularly conducted.

It is important to note that the extent of an environmental justice analysis will vary according to the unique circumstances of each case. The permit at issue here is a Title V permit for a Title V temporary source that must assure compliance with the National Ambient Air Quality Standards (NAAQS) and that also establishes limits on the potential to emit of the source so as to avoid PSD review. The scope of the Environmental Justice Analysis conducted in this case is shaped by the type of permit at issue, the fact that Region 10 has received several OCS permit applications for operation in the OCS off the North Slope of Alaska, and the unique characteristics of the potentially affected communities, including the importance of subsistence activities to their lifestyle and cultural identity.

Environmental Justice in Permitting

Executive Order 12898 entitled "Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations" states in relevant part that "each Federal agency shall 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." Section 1-101 of Exec. Order 12898, 59 Fed. Reg. 7629, (Feb. 16, 1994). "Federal agencies are required to implement this order consistent with, and to the extent permitted by, existing law." *Id.* at 7632.

The Title V operating permit program does not generally impose new substantive air quality control requirements. Rather, the Title V operating permit program is generally a vehicle for ensuring that existing air quality control requirements are appropriately applied to facility emission units and that compliance with these requirements is assured. Accordingly, the primary means of addressing environmental justice issues in the Title V program is through increased public participation and review by permitting agencies, and conditions to assure compliance with applicable requirements. As discussed above, the Title V permit at issue in this case is unusual in that it requires the source, as a Title V temporary source, to meet the NAAQS and also establishes limits on the potential to emit. Region 10 has considered environmental justice concerns in this permitting action where possible in the context of assuring compliance with applicable requirements for the source, in particular assuring compliance with the NAAQS as a Title V temporary source and establishing PSD avoidance limits.

As the Environmental Appeals Board recently observed "[i]n the context of an environmental justice analysis, compliance with the NAAQS is emblematic of achieving a level of public health protection that, based on the level of protection afforded by the NAAQS, demonstrates that

minority or low-income populations will not experience disproportionately high and adverse human health or environmental effects due to exposure to relevant criteria pollutants." See. e.g., *Order Denying Review in Part and Remanding Permits, Shell Gulf of Mexico, Inc and Shell Offshore, Inc., Frontier Discoverer Drilling Units*, OCS Appeal Nos. 10-01 through 10-04, Slip. Op. 74 (December 30, 2010); see also *In re Shell Offshore Inc.*, 13 E.A.D. 357, 404-5 (EAB 2007) (Shell I); *In re Knauf Fiber Glass, GmbH*, 9 E.A.D 1, 15-17 (EAB 2000) (Knauf II); *In re AES Puerto Rico*, L.P., 8 E.A.D. 324, 351 (EAB 1999). This is because the NAAQS are health-based standards, designed to protect public health with an adequate margin of safety, including sensitive populations such as children, the elderly, and asthmatics. This is supported by the fact that "[t]he Agency sets the NAAQS using technical and scientific expertise, ensuring that the primary NAAQS protects the public health with an adequate margin of safety." *Id*.

The studies assessed by EPA in setting NAAQS and the integration of the scientific evidence presented therein have undergone extensive critical review by EPA, the Clean Air Scientific Advisory Committee (CASAC), and the public. Final Rule, 75 Fed. Reg. 6474, 6478 (Feb. 9, 2010). "The rigor of the review makes these studies, and their integrative assessment, the most reliable source of scientific information on which to base decisions on the NAAQS." *Id*. When setting the NAAQS, "[t]he Administrator's final decisions draw upon scientific information and analysis related to health effects, population exposures, and risks; judgments about the appropriate response to the range of uncertainties that are inherent in scientific evidence and analyses; and comment received from CASAC and the public." The NAAQS are also the underpinning for the State Implementation Plan process, which requires states to adopt rules and programs that will reduce emissions causing air pollution.

Operations Authorized Under the Title V Permit

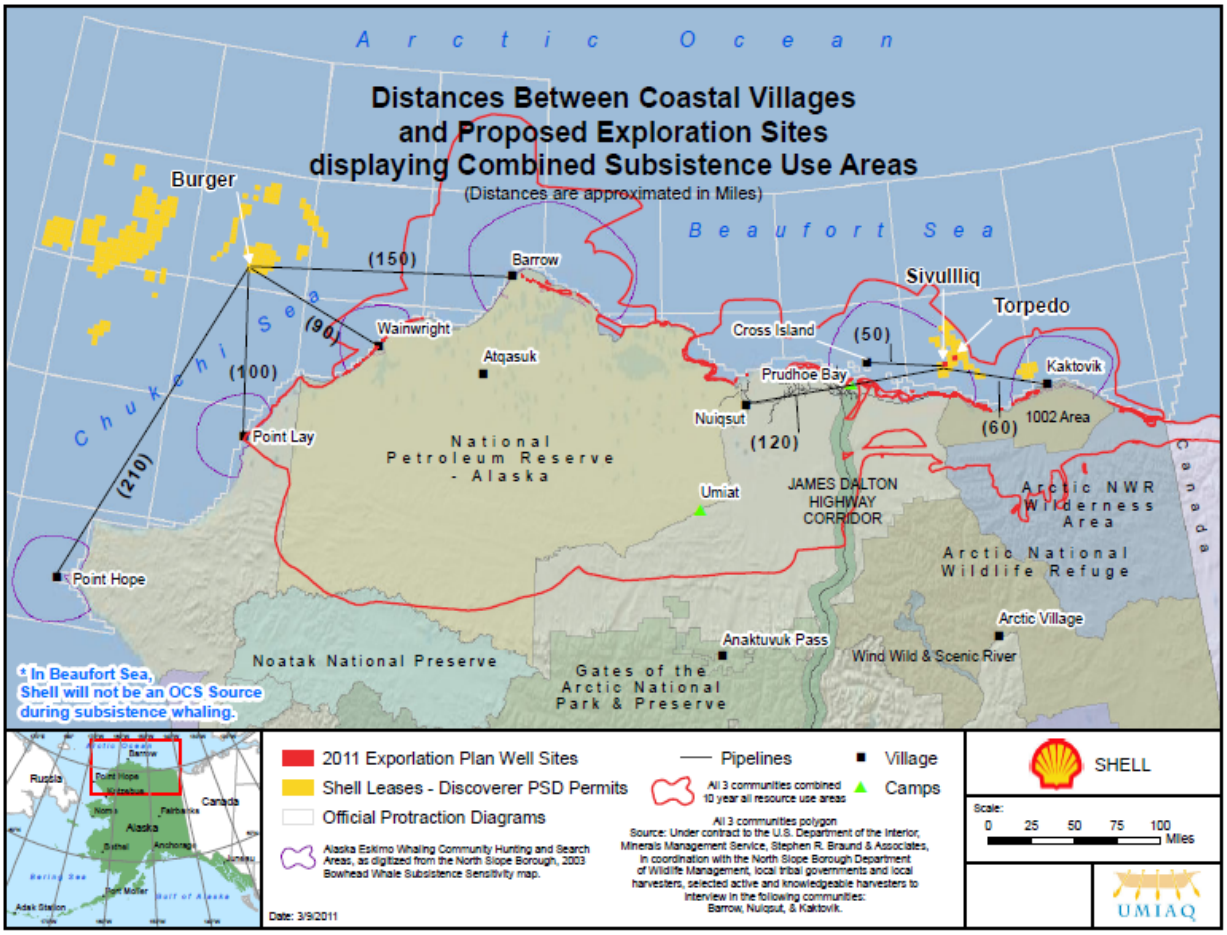
The Title V permit authorizes the operation of the Kulluk drilling unit to conduct air pollutant emitting activities for the purpose of oil exploration on select lease blocks in the Beaufort Sea off the North Slope of Alaska as authorized by the BOEMRE. All of the lease blocks are located in federal OCS waters. The Title V permit also provide for the use of an associated fleet of support ships (Associated Fleet), such as icebreakers, a supply ship, and an oil spill response fleet, in addition to the Kulluk drilling unit. Exploratory operations under the permit are authorized from July through November each year, and limit operation of the OCS source to 120 days.

Leases to be authorized under the permit include all current lease blocks in lease sales 186 and 202 and within a majority of current lease blocks in lease sale 195 on the Beaufort Sea. The lease blocks are within 25 miles of Alaska's seaward boundary and beyond 25 miles of Alaska's seaward boundary. The nearest towns or villages are Kaktovik, Deadhorse and Nuiqsut, which are located 14, 44, 37 kilometers (8, 27 and 22 miles), respectively, from the closest lease block in the Beaufort Sea. Figure 1 depicts subsistence use areas in the Beaufort Sea.

The primary generators on board the Kulluk drilling unit will be equipped with selective catalytic reduction (SCR) and oxidation catalyst (OxyCat) emission control devices, to reduce nitrogen

dioxide (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), and particulate matter (PM). In addition to these emission controls, the Kulluk drilling unit will use ultra low sulfur diesel fuel (ULSD) to reduce emissions of sulfur dioxide (SO_2 To further reduce impacts on the ambient air, the Associated Fleet will be fueled by ULSD and be subject to operational restrictions, and some units will be equipped with controls, including OxyCat and SRC. Emissions from the Associated Fleet when located within 25 miles of the Kulluk, together with emissions from the Kulluk, are considered in conducting an ambient air quality analysis to determine whether emissions from the project will cause or contribute to a violation of the NAAQS.

Figure 1 Subsistence Use Areas Mapped Over Exploration Sites



Northern Iñupiat Communities [2]

[2] The demographic and health factors have been chosen because EPA commonly associates them with vulnerability or susceptibility to adverse health effects from air pollution. In 40 CFR Parts 50 and 58 Primary National Ambient Air Quality Standards for Nitrogen Dioxide it states, "The term susceptibility generally encompasses innate (*e.g.*, genetic or developmental) and/or acquired (*e.g.*, age or disease) factors that make individuals more likely to

The North Slope is bordered by the Arctic Ocean to the north and the Brooks Mountain Range to the south. In all it encompasses approximately 89,000 square miles of northern Alaska. The incorporated villages of the North Slope Borough (NSB) include Point Hope, Point Lay, Wainwright, Atqasuk, Barrow, Nuiqsut, Kaktovik and Anaktuvuk Pass. These communities are situated completely above the Arctic Circle and are considered remote villages, with no roads between them. Most of the communities are coastal villages located near the Chukchi and Beaufort Seas.

The nearest towns or villages to Shell's exploratory operations in the Beaufort Sea are Kaktovik, Deadhorse, and Nuiqsut, which are located 14, 44, and 37 kilometers (8, 27, and 22 miles), respectively, from the closest lease block in the Beaufort Sea.

As discussed below, a review of demographic characteristics shows that these communities have a significantly high percentage of Alaska Natives, who are considered a minority under EO 12898, and a significant percentage of individuals who speak a language other than English at home.

Subsistence foods from traditional practices such as hunting (marine mammals, terrestrial and birds), fishing, and whaling are an important component of the Iñupiat diet.[3] In 2004, the Alaska Department of Fish and Game reported that over a 25 year period residents in the North Slope Borough harvested an average of 434 pounds of subsistence food per capita. [4]

Subsistence activities also play an important cultural role. In the words of the Environmental Director of the Iñupiat Community of the Arctic Slope (ICAS), speaking at the Environmental Justice Session held during the 2011 Alaska Forum on the Environment, "For thousands of years, our people have depended on a subsistence lifestyle for a large majority of our food, and also for our cultural and spiritual health. Through the subsistence hunt, we not only provide food for our families, but we also carry on the ancient traditions that have been passed down to us by our parents and grandparents. Our subsistence activities define who we are and bind us together as a community. We therefore depend on the land and sea for our survival and we hold the deepest and most profound respect for the natural resources that have sustained us for so many years.

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experience effects with exposure to pollutants. The severity of health effects experienced by a susceptible subgroup may be much greater than that experienced by the population at large. Factors that may influence susceptibility to the effects of air pollution include age (*e.g.*, infants, children, elderly); gender; race/ethnicity; genetic factors; and preexisting disease/condition (*e.g.*, obesity, diabetes, respiratory disease, asthma, chronic obstructive pulmonary disease (COPD), cardiovascular disease, airway hyperresponsiveness, respiratory infection, adverse birth outcome) (ISA, sections 4.3.1, 4.3.5, and 5.3.2.8). Factors that may influence susceptibility and vulnerability to air pollution include socioeconomic status (SES), education level, air conditioning use, proximity to roadways, geographic location, level of physical activity, and work environment (*e.g.*, indoor versus outdoor) (ISA, section 4.3.5)" http://www.epa.gov/ttnnaaqs/standards/nox/fr/20100209.pdf

[3] Wernham, Inupiat Health and Proposed Alaskan Oil Development: Results of the First Intergrated Health Impact Assessment/Environmental Impact Statement for Proposed Oil Development on Alaska's Notrth Slope, 2007.

[4] Wolfe, R. J. 2004. Local traditions and subsistence: a synopsis of twenty-five years of research in Alaska. Technical Paper No. 284. Alaska Department of Fish and Game, Division of Subsistence, Juneau, Alaska.

Our very survival as a people depends on our ability to safeguard and protect the resources that have provided for us for thousands of years."

Nuiqsut residents have reported traveling up to 96 kilometers (60 miles) offshore to the north and as far east as Camden Bay to hunt for bowhead whale. Subsistence use areas extend to the west to Cape Halkett for seal. Kaktovik residents reported offshore subsistence use of 56 kilometers (35 miles) out for bowhead and walrus; along the coast their use extends as far east as the Mackenzie River Delta in Canada (fish and waterfowl) and to the west as far as the Return Islands near the Kuparuk River Delta (waterfowl).[5] As discussed in more detail below, available information and analysis of the emissions from the Kulluk and the Associated Fleet, in conjunction with background air quality data, show that the NAAQS will continue to be met in all areas more than 500 meters from the Kulluk drill ship, and will be below the NAAQS in the on-shore communities in the Beaufort Sea.

Demographics[6]

In an effort to assess the potential for disproportionate impacts on minority and low-income populations in vicinity of the activities proposed to be authorized under the Title V permit, Region 10 has considered available demographic information for the North Slope Borough with respect to two reference populations--the state of Alaska and the United States of America.

Table 1 Population, Age and Race

Location	Total Population	Under 5	Over 65	American Indian or Alaska Native	Asian	White	African American	Hispanic or Latino
North Slope Borough	7,385	9.50%	4.20%	68.40%	5.90%	17.10%	0.70%	2.20%
State of Alaska	626,932	7.60%	5.70%	15.60%	4.00%	69.30%	3.50%	4.10%
United States	3.1B	6.80%	12.40%	0.90%	3.60%	75.10%	12.30%	12.50%

(2000 US Census)

In total, the eight villages in the North Slope Borough are comprised of 7,385 people. The populations range in size from 228 to 4,581 residents. In comparison to the rest of the Alaska, these eight villages have a slightly higher number of children under 5 yet a slightly lower number

[5] Stephen R. Braund & Associates. Report of Traditional Knowledge Workshops – Point Lay, Barrow, Nuiqsut, and Kaktovik. Chukchi and Beaufort Seas National Pollutant Discharge Elimination System Exploration General Permits Reissuance. 2011.

[6] Data was gathered from the 2000 US Census via American Fact Finder at http://factfinder.census.gov/home/saff/main.html?_lang=en

of people 65 and older. EPA's Final Report Integrated Science Assessment for Oxides of Nitrogen – Health Criteria (ISA)[7] specifically identified children[8] (defined here as under 18 years old) and older adults (65+ years) as being particularly vulnerable to NO_2 impacts. [9] Sixty-eight percent of all people classify themselves as Alaskan Natives, making them the majority population in the North Slope Borough. This number is significantly higher than the Alaskan Native/ Native American population in both the State of Alaska and the United States a as whole. Asians comprise the second largest minority group in this area making up nearly 6% of the total populace.

Table 2 Social Characteristics

Location	Total Population	Population 25 & Over	High School or Higher	Associate's Degree	Bachelor's Degree or Higher	Speak a language other than English at home
North Slope Borough	7,385	52.58%	77.40%	3.90%	17.00%	49.90%
State of Alaska	626,932	60.54%	88.30%	7.20%	24.70%	14.30%
United States	3.1B	63.45%	80.40%	6.30%	24.40%	17.90%

(2000 US Census)

A little more than half of the population in the North Slope is over 25 year of age. Within this group, 77.40% of residents report earning at least a high school diploma. This number is slightly lower than both reference populations. Education level is a factor that may influence susceptibility and vulnerability to air pollution. Limited formal education is a barrier to employment, health care and social resources, and can increase the risk of poverty, stress, and

[7] Integrated Science Assessment for Oxides of Nitrogen – Health Criteria (Final Report), Section 4.3, U.S. Environmental Protection Agency, Washington DC, EPA/600/R-08/071, 2008

[8] *Children are particularly vulnerable to adverse health effects from air pollution because:*

- Children's lungs are still developing. This period of growth and development of the lungs is a critical time period for health effects from exposure to air pollution. Exposures to air pollutants during this time can have life-long effects on the lungs, including lung capacity, the diameter of the airways, and the number and types of cells that line the airways. It is important to note that airways develop through adolescence.
- Children breathe in more air than adults compared to their body weight, leading to a higher dose of air pollution.
- Children's airways are narrower than adults, making them more susceptible to air pollution.

[9] U.S. Environmental Protection Agency, Supplemental Statement of Basis PSD Permit Application for Avenal Energy Project, 2011. *http://www.epa.gov/region9/air/permit/avenal/Avenal-SuppStatemtBasisEjAnalysisApdxFinal-Eng3-2-11.pdf*

impacts from environmental stressors. [10] Over 20% of people over 25 have earned at least an Associate's degree. Nearly half the people who reside in the North Slope speak a language other than English at home, which is significantly higher than those in the State of Alaska and the United States of America.

Table 3 Economic Characteristics

Location	Total Population	Population In Labor Force	Individuals Below Poverty	Children 5-17 Below Poverty
North Slope Borough	7,385	72.20%	9.10%	9.00%
State of Alaska	626,932	71.30%	9.40%	10.30%
United States	3.1B	63.90%	12.40%	15.40%

(2000 US Census)

Seventy-two percent of those 16 and older are reported as being in the labor force. This indicates that there are employment opportunities for residents within the Borough. Less than 10% of all North Slope residents live in poverty, a number that is somewhat less in proportion to those in the United States. The percent of children 5-17 living below poverty in the North Slope is 9% which is less than the number of children of the same age living in poverty in both the state of Alaska and the United States.

Health[11]

The 2009 Alaska Native Health Status Report issued by the Alaska Native Tribal Health Consortium provides an overview of health conditions in this region.

Between 2004-2007, the leading causes of death in Alaskan Natives living in the Arctic Slope were cancer, heart disease, suicide, unintentional injury and chronic obstructive pulmonary disease (COPD). This is fairly consistent with the death rates of Alaskan Natives across the state. Cancer is the leading cause of death for Alaska Native people, accounting for 1 out of

[10] U.S. Environmental Protection Agency, Supplemental Statement of Basis PSD Permit Application for Avenal Energy Project, 2011. *http://www.epa.gov/region9/air/permit/avenal/Avenal-SuppStatemtBasisEjAnalysisApdxFinal-Eng3-2-11.pdf*

[11] Alaska Native Tribal Health Consortium: Alaska Native Epidemiology Center. Alaska Native Health Status Report 2009 *http://www.anthc.org/chs/epicenter/upload/01_HSRintro.pdf*

The Arctic Slope Service area as defined by Alaska Native Tribal Health Consortium covers the North Slope Borough with the exception of Point Hope, which falls under the Northwest Arctic service area. Point Hope is located the furthest distance from the activities proposed for authorization under the permits. The health statistics for the Northwest Arctic Service Area do not differ significantly in most respects from the statistics presented here for villages that are located much closer to the proposed activities. Please visit the Alaska Native Health Status Report for more details.

every 5 deaths. The Alaska Native cancer death rate was 30% greater than for U.S. Whites. Heart disease is the second leading cause of death for Alaska Native people.[12]

Over the 2 year period 2005-2007, more than 30% of adults in the North Slope area were classified as obese. There are nearly three times (58% vs. 20%) as many Alaska Native people in this area who are current smokers than that of Alaska non-Natives.

More than 30% of pregnant Alaskan Native women in the area had access to adequate prenatal care between 2006-2007. However these numbers are lower than the state average of 46%. In the Arctic Slope, 6% of children were born with a low birth weight compared to a statewide average of 5%.

Overall, from 1990 to 2007, there has been a large increase in the prevalence of diabetes for Alaskan Natives statewide. The percent of rate increase has jumped to 117% over the 17 year time frame. This increase is present in Arctic Slope region, with a 158% increase.

Infrastructure development has been a health concern for Alaskans. The percent of housing units with water and sewer service varies by major rural regional health corporation, from 58% to 98%. In 2008 it was reported that 94% of the Alaskan Natives in the Arctic Slope region had access to water and sewer service. This is well above the percentages of Alaskan Natives statewide.

There is a higher incidence of outpatient visits for upper respiratory problems in the Arctic Slope service area than in the rest of Alaska. In fact, in 2006 diseases of the respiratory system were the leading cause for inpatient hospitalization at Samuel Simmons Memorial Hospital in Barrow. Respiratory issues range from the common cold (acute) to pneumonia (severe).[13]

EPA has identified people with respiratory problems to be potentially at greater risk of experiencing adverse health effects from NO_2 and SO_2. This was taken into consideration when setting the new NAAQS standards. 75 Fed. Reg. 6481 (February 9, 2010); 75 Fed. Reg. 35527 (June 22, 2010).

Table 4 Health Overview

Health Indicators	Arctic Slope	Alaskan Natives Statewide	Year
Obese (BMI 30+)	37%	31%	2005-2007

[12] Id.

[13] Alaska Native Tribal Health Consortium: Alaska Native Epidemiology Center. Regional Health Profile: Arctic Slope, 2009. *http://www.anthc.org/chs/epicenter/upload/Regional_Health_Profile_ASNA_1109.pdf*

Health indicators presented are for villages that are located closer to the proposed activities. Please visit the Alaska Native Health Status Report for more details.

Current Smokers	58%	41%	2005-2007
Adequate Prenatal Care	37%	46%	2006-2007
Low Birth Weight	6%	5%	2006-2007
Diabetes: % Rate of Increase since 1990	158%	117%	2007
Outpatient Visit for Upper Respiratory Problems	12%	8%	2005

(ANTHC 2009)

Community Outreach

Oil and gas operations in the Chukchi and Beaufort Seas are of great interest to the Northern Iñupiat communities. Region 10 has taken several measures to provide meaningful involvement for the communities of concern potentially impacted by the draft Title V permit. Recognizing the challenges and special considerations that are required in communicating with people in more than one culture for whom English is a second language, in May 2009, Region 10 issued the North Slope Communications Protocol establishing communications guidelines to specifically support meaningful involvement of North Slope communities in Region 10 decision-making. The goal of the protocol is to improve the agency's effectiveness in working with North Slope communities.

Early public information meetings were held in Kaktovik and Barrow during the week of June 13, 2011. Invitations went out to communities across the North Slope to encourage participation in the centrally located Barrow meeting. Those who could not travel to the meeting were able to participate via teleconference. Region 10 is holding a comment period on the draft Title V permit and, in anticipation of a significant degree of public interest in the draft permit, the agency is also scheduling a public hearing on the North Slope with a teleconference line available for other communities to call in. Region 10 will consider all comments received at the hearings or during the public comment period prior to taking final action on the draft Title V permit. Region 10 specifically solicits public comment on this Environmental Justice Analysis.

Note that the draft Title V permit requires Shell to have a plan for communicating to the North Slope communities on a periodic basis regarding when exploration activities are expected to begin and end at a drill site, the location of the drill site, and applicable restrictions on activities in the vicinity of Shell's exploration operations.

Air Impacts Analysis

Pursuant to Section 328 of the CAA, 42 U.S.C. § 7627, EPA promulgated air quality regulations applicable to OCS sources, which regulations are set forth in Part 55. Under these regulations, Shell must obtain an OCS permit for these projects prior to conducting exploratory drilling in the OCS and has applied for Title V permits and a COA minor source construction permit, which is referred to here as a Title V permit. This section addresses Region 10's consideration of environmental justice impacts directly related to air quality, focusing on whether the issuance of the draft Title V permit would have disproportionately high and adverse human health or environmental effects on Alaska's northern Iñupiat communities along the Beaufort Sea living and engaging in subsistence activities in areas closest to the activities proposed to be permitted.

NAAQS

National Ambient Air Quality Standards or NAAQS are health-based standards that have been set at a level such that their attainment and maintenance will protect public health, including sensitive individuals, with an adequate margin of safety.[14] See Section 109(b) of the CAA. As required by the applicable OCS, COA, and Title V regulations, the terms and conditions of any final permit issued must ensure that activities authorized by this permit will not cause or contribute to a violation of the NAAQS standards. See 40 C.F.R. §§ 55.13(f), 71.2 (definition of applicable requirement), and 71.6(e).

EPA generally uses two NAAQS designation categories as outlined in 40 CFR part 81, attainment/unclassifiable or nonattainment. The North Slope Borough is in an area currently designated as attainment/unclassifiable for all of the NAAQS. This means that the North Slope has sufficient data to determine that the area is meeting the NAAQS or that due to no data or insufficient data, EPA cannot make a determination.[15]

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[14] Sensitive individuals include children, the elderly and people with respiratory disease

[15] CAA 107(d) Designations

(1) Designations generally

(A) Submission by Governors of initial designations following promulgation of new or revised standards

By such date as the Administrator may reasonably require, but not later than 1 year after promulgation of a new or revised national ambient air quality standard for any pollutant under section 7409 of this title, the Governor of each State shall (and at any other time the Governor of a State deems appropriate the Governor may) submit to the Administrator a list of all areas (or portions thereof) in the State, designating as—

(i) nonattainment, any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant,

(ii) attainment, any area (other than an area identified in clause (i)) that meets the national primary or secondary ambient air quality standard for the pollutant, or

(iii) unclassifiable, any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

In 2010 EPA promulgated new 1-hour standards for NO_2 and SO_2. In issuing the new standards EPA specifically considered the exposure of sensitive subpopulations, including the Alaskan Natives that reside on the North Slope. 75 Fed. Reg. 6482 (Feburary 9, 2010). 75 Fed Reg. 35527 (June 22, 2010).

On Shore Impacts

As discussed in more detail in Region 10's ambient air quality analysis, Shell used the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) system to model the impacts of the emissions proposed to be authorized under the permit. Region 10 has reviewed Shell's analysis and concluded that it is consistent with EPA OCS and Title V permitting requirements.

Emissions from the Kulluk and the Associated Fleet were modeled for concentration levels along the Beaufort Sea. Maximum modeled concentrations from the Kulluk occur 500 meters from the hull and decline rapidly from that point. The maximum modeled concentration in the local communities of Nuiqsut, Deadhorse and Kaktovik are minimal as shown in Table 5 below. Note that EPA has established Significant Impact Levels or SILs under the PSD "major source" preconstruction program to characterize air quality impacts from sources that undergo PSD review. The SILs are threshold levels for the ambient concentration resulting from a source's emissions for a given pollutant and averaging period below which the source is considered too small to cause or contribute to a violation of the NAAQS. Although this source is not subject to PSD review, a comparison of the impact of emissions to be authorized under the draft Title V permit in comparison to the SILs is instructive. The modeled concentrations from the Kulluk and the Associated Fleet are well below the SILs in all three communities.

Table 5 Modeled Impacts at Nearest Communities

(considering impacts from the Kulluk only)

Pollutant	Averaging Period	Kulluk Impacts ($\mu g/m^3$) at			SIL ($\mu g/m^3$)
		Nuiqsut	Deadhorse	Kaktovik	
NO_2	1-hour	0.04	0.02	0.3	**8**
	Annual	0.03	0.02	0.1	**1**
PM-2.5	24-hour	0.2	0.1	0.5	**1.2**
	Annual	0.004	0.004	0.01	**0.3**
PM-10	24-hour	0.3	0.2	0.5	**5**
SO_2	1-hour	0.4	0.5	0.7	**8**

	3-hour	0.2	0.2	0.3	**25**
	24-hour	0.05	0.03	0.1	**5**
	Annual	0.001	0.001	0.002	**1**

Total Concentrations

The total modeled concentrations include monitored background concentrations and maximum concentration from the Kulluk and the Associated Fleet. These modeled impacts are based on conservative assumptions, such as Shell accounting for the potential overlap of drilling plumes by assuming all four wells are drilled at the same location, when in actuality, the drilling of four wells at a fixed location, and the overlap of plumes, will not occur. For the background values, Shell used monitoring data from Prudhoe Bay, Deadhorse and Edicott near the Beaufort Sea. Results of the modeling indicate the total modeled impacts under the draft Title V permit, including consideration of background air quality data, are well below the NAAQS. Table 6 below shows the total modeled concentrations for each of the nearest communities while the source is in operation, as compared to the NAAQS.

Table 6 Total Modeled Impacts at Nearest Communities

(Includes background concentrations)

Pollutant	Averaging Period	Total Impacts (µg/m^3) at			NAAQS (µg/m^3)
		Nuiqsut	Deadhorse	Kaktovik	
NO_2	1-hour	94	94	21	**188**
	Annual	11	11	1	**100**
PM-2.5	24-hour	17	17	7	**35**
	Annual	4	4	3	**15**
PM-10	24-hour	53	53	53	**150**
SO_2	1-hour	14	29	10	**196**
	3-hour	180	29	11	**1,300**
	24-hour	25	22	4	**365**
	Annual	4	4	2	**80**

CO	1-hour	1,943	1,924	2,075	**40,000**
	8-hour	1,211	1,199	1,274	**10,000**

The pollutants and averaging periods closest to the NAAQS are 1-hour NO_2 emissions, 24-hour PM_{10} and $PM_{2.5}$ emissions and annual $PM_{2.5}$ emission. At Kaktovik, located 14 km (8 miles) from the closest lease block, the total maximum modeled concentrations (with Shell's Discoverer in operation and considering background concentrations) are—as a percentage of the NAAQS—11% for the 1-hour NO_2 NAAQS, 20% for the 24-hour $PM_{2.5}$ NAAQS, 35% for the 24-hour PM_{10} NAAQS, and 20% for the annual $PM_{2.5}$ NAAQS. At Nuiqsut, located 37 km (33 miles) from the closest lease block, the total maximum modeled concentrations are, 50% for the 1-hour NO_2 standard, 48% for the 24-hour $PM_{2.5}$ standard, 35% for the 24-hour PM_{10} standard, and 26% for the annual $PM_{2.5}$ NAAQS. It should be noted that a majority of the total impacts are a result of background concentrations.

The total maximum modeled concentrations demonstrate that the NAAQS will be attained at all locations beyond the 500 meter boundary and will be below the standard in the Beaufort Sea North Slope communities and in the areas where the communities conduct subsistence activities.

U.S. Department of Interior Environmental Justice Analysis

The U.S. Department of Interior's Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) conducted an environmental justice assessment related to oil and gas lease sales 183, 195 and 202 within the Beaufort Sea. This analysis looked at the broader range of potential impacts from oil and gas activities. In a final Environmental Impact Statement (EIS) for these lease sales, BOEMRE stated the following impacts could occur from routine permitted activities:

> Chronic disruptions to sociocultural systems likely would occur, but these disruptions are not likely to cause permanent displacement of ongoing traditional activities of harvesting, sharing, and processing subsistence resources. No "disproportionately high adverse effects" as defined by the Environmental Justice Executive Order would likely occur from planned and permitted activities associated with any of the three [lease blocks 186, 195 &202] proposed OCS lease sales evaluated in this EIS.[16]

[16] U.S. Department of the Interior, Materials Management Service, Beaufort Sea Planning Area, Oil and Gas Lease Sales 186, 195, and 202, Final Environmental Impact Statement, OCS EIS/EA, MMS 2003-001, at www.mms.gov/alaska/ref/EIS%20EA/BeaufortMultiSaleFEIS186_195_202/2003_001vol1.pdf.

BOEMRE also noted the potential impact to subsistence harvest resources but concluded that no resource or harvest area would likely become unavailable or experience an overall decrease as a result permitted activities.

Conclusion

As indicated above, there is a significantly high population of Alaskan Natives in the North Slope, as well as a high population of individuals that speak a language other than English at home. These characteristics combined with the health profile of residents may increase vulnerability or sensitivity to air emissions as compared to the reference populations.

Based on available information, Region 10 concludes that the activities proposed to be authorized under the draft Title V Permit will not cause or contribute to air quality levels in excess of health-based standards for SO_2, CO, PM_{10}, $PM_{2.5,}$ Ozone or NO_2. Region 10 therefore concludes that there will not be disproportionately high and adverse human health or environmental effects with respect to these air pollutants on minority or low-income populations residing in the coastal communities closest to the proposed operations. In reaching this conclusion, Region 10 has also considered the impact on these communities while engaging in subsistence activities in areas where such activities are regularly conducted.