

October 2011

**Chukchi Sea OCS Oil & Gas Lease Sale 193
Record of Decision**

**U.S. Department of the Interior
Bureau of Ocean Energy Management
Washington, D.C.**

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INTRODUCTION

The Alaska Outer Continental Shelf (OCS) Region held Chukchi Sea Lease Sale 193 (Sale 193) on February 6, 2008. Following the sale, litigation was filed with the U.S. District Court for the District of Alaska. On July 21, 2010, the U.S. District Court for the District of Alaska found Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) failed to take a hard look at the Sale 193 Final Environmental Impact Statement (FEIS) and issued an Order remanding the Sale 193 matter to BOEMRE to satisfy its obligations under the National Environmental Policy Act (NEPA).¹ Pursuant to the amended Order, BOEMRE was instructed to address three concerns, as follows:

- Analyze the environmental impact of natural gas development.
- Determine whether missing information identified by BOEMRE in the Chukchi Sea Sale 193 FEIS, released June 2007, was essential or relevant under 40 CFR 1502.22.
- Determine whether the cost of obtaining the missing information was exorbitant, or the means of doing so unknown.

BOEMRE issued a Draft Supplemental Environmental Impact Statement (Draft SEIS) in October 2010 to address these concerns. In March 2011, BOEMRE announced that it would incorporate a very large oil spill (VLOS) analysis into its ongoing SEIS process. In May 2011, BOEMRE issued a Revised Draft SEIS that included an environmental effects analysis of a VLOS. The Final SEIS, released August 18, 2011, reflects consideration of public comments received and, together with the FEIS, provides the Secretary of the Interior (Secretary) with information and analysis to choose between lease sale alternatives and either affirm, modify, or cancel Sale 193.

¹ By Secretarial order dated June 18, 2010, the Minerals Management Service was renamed Bureau of Ocean Energy Management, Regulation and Enforcement. Effective October 1, 2011, BOEMRE will be reorganized into two agencies, the Bureau of Ocean Energy Management (BOEM) and the Bureau of Safety and Environmental Enforcement (BSEE).

BACKGROUND

In June 2007, the U.S. Department of the Interior (DOI) Minerals Management Service released the “Final Environmental Impact Statement for Oil and Gas Lease Sale 193 and Seismic-Surveying Activities in the Chukchi Sea,”² hereafter Sale 193 FEIS. The purpose of the proposed action addressed in the Sale 193 FEIS is (1) to offer for lease areas in the Chukchi Sea Planning Area of the Alaska OCS that might contain economically recoverable oil and gas resources, and (2) to allow exploration seismic-survey activities to determine the extent of economically recoverable oil and gas resources. The Sale 193 FEIS analyzes an oil exploration, development and production scenario that assumes recovery of 1 billion barrels (Bbbl) of oil. After the Secretary selected Alternative IV of the Sale 193 FEIS, Sale 193 was held in February 2008. However, the decision to hold the sale was the subject of litigation. On July 21, 2010, the United States District Court for the District of Alaska issued an Order remanding the Sale 193 matter to BOEMRE, now BOEM, to satisfy the aforementioned concerns.

In response to the Court’s directive, BOEM supplemented the Sale 193 FEIS with an analysis of the consequences of natural gas exploration and production. BOEM also examined whether the information gaps that were identified in the Sale 193 FEIS were relevant and necessary to evaluate reasonably foreseeable significant adverse effects. BOEM published its initial findings concerning natural gas development and the relevance and need for the incomplete or unavailable information in a Draft Supplemental EIS on October 15, 2010.

In the aftermath of the Deepwater Horizon blowout and oil spill in the Gulf of Mexico last year, many comments received on the Draft SEIS requested that BOEM perform an analysis to take into account the possibility of a very large oil spill (VLOS)—that is, a spill more than or equal to 150,000 barrels of oil—during exploration activities. Neither the Sale 193 FEIS (May 2007) nor the Sale 193 Draft SEIS (September 2010) analyzed a VLOS.

The Deepwater Horizon event also prompted BOEM to reassess the need for consideration of low probability but potentially catastrophic uncontrolled well blowouts. After releasing the Draft SEIS and receiving public comments, BOEM completed an analysis of possible flow rates throughout the most prospective locations in the Chukchi Sea Lease Sale 193 area. This analysis determined a high possible flow rate that, unimpeded, could result in an oil spill volume much larger than had been analyzed previously in the Sale 193 FEIS. In March 2011, BOEM announced a decision to incorporate a VLOS analysis into its Revised SEIS. The VLOS analysis is based on the estimated size of an unlikely but possible oil spill resulting from a hypothetical blowout scenario. A VLOS scenario is hypothetical, and is not an analysis of a well that any operator has actually proposed to drill. Any exploration or development plan submitted by an operator is required to include worst case discharge calculations specific to the wells proposed in the plan. These calculations take into account specific depth, pressure, oil and anticipated reservoir properties for the proposed wells and are expected to be lower than the hypothetical VLOS scenario used in the overall Sale 193 Final SEIS. To ensure sufficient opportunity for public and agency comment on its VLOS analysis, BOEM decided to issue a Revised Draft SEIS, which it released in May 2011.

² DOI, MMS, 2007a.

In preparing the Sale 193 Final SEIS, BOEM (1) responded to the public comments and (2) considered information from the USGS report “An Evaluation of the Science Needs to Inform Decisions on Outer Continental Shelf Energy Development in the Chukchi and Beaufort Seas, Alaska” wherever relevant to understanding the potential environmental impacts of each lease sale alternative. The Sale 193 FEIS satisfies the concerns addressed by the District Court in its remand order, provides a comprehensive analysis of the impacts from a VLOS, and gives the Secretary additional information and analysis to make a determination in this matter.

ALTERNATIVES CONSIDERED BY THE SECRETARY

The original FEIS for Chukchi Sea Lease Sale 193 contained three action alternatives and the no action alternative. These alternatives were again considered in the SEIS, with the inclusion of an analysis of possible natural gas production. The four alternatives analyzed in the June 2007 Sale 193 FEIS and August 2011 Sale 193 SEIS are described below.

Alternative I (Proposed Action). Alternative I, referred to as “the Proposed Action,” offers for lease 6,156 whole or partial blocks within the Chukchi Sea. This area covers approximately 34 million acres. Specifically excluded from the Proposed Action is the 25-mile buffer implemented by the Secretary in the Final OCS Leasing Program for 2007–2012. By selecting Alternative I, the Secretary would elect to offer for lease all 34 million acres of the Chukchi Sea made available by the Final OCS Leasing Program for 2007–2012. In as much as the sale has already been held and that sale only offered the 5,721 parcels identified in Alternative IV, full implementation of this Alternative is no longer feasible, and was not considered any further in responding to the Court’s Order in the current matter.

Alternative II (No Lease Sale)—This “no action” alternative is equivalent to not affirming Chukchi Sea Lease Sale 193. The opportunity to develop oil and gas resources that could have resulted from the Proposed Action analyzed in the Sale 193 FEIS would be precluded or postponed. This “no action” alternative also would avoid any potential environmental impacts associated with the other alternatives. Its implementation would require rescission or cancellation of all 487 leases awarded as a result of the February 2008 Lease Sale. BOEM has identified Alternative II as the environmentally preferable alternative in terms of the Chukchi Sea area analyzed.

Alternative III (Corridor I Deferral)—This alternative is the Proposed Action analyzed in the Sale 193 FEIS minus a corridor extending from the shore outward 60 miles or more along the entire coastward edge of the proposed sale area to protect bowhead whale habitat used for migration, feeding, nursing calves, and breeding. Alternative III would exclude approximately 1,765 whole or partial blocks comprising 9.1 million acres from the 6,156 whole or partial blocks and 34 million acres included in Alternative I. Should the Secretary select Alternative III, leases issued within most portions of Chukchi Sale 193 would be affirmed, but 12 leases issued on tracts within Corridor I would be rescinded or cancelled.

Alternative IV (Corridor II Deferral)—This alternative is the Proposed Action analyzed in the Sale 193 FEIS minus a corridor extending from the shore outward 25 to 50 miles along the entire coastward edge of the proposed sale area. Alternative IV would exclude 795 whole or partial blocks along the coastward edge of the sale area from the 6,156 whole or partial blocks

and 34 million acres included in Alternative I. The “Corridor II” deferral area is a subset of the Corridor I deferral area analyzed under Alternative III. This alternative was identified as the agency’s preferred alternative in the Sale 193 FEIS, and the acreage included in this alternative was offered for lease on February 6, 2008 in Sale 193.

Alternative IV remains BOEM’s preferred alternative in the Sale 193 Final SEIS. The agency’s preferred alternative takes into account factors beyond the environmental effects analysis provided in this Final SEIS. The agency’s preferred alternative is “the alternative which BOEM believes would best accomplish the purpose and need of the proposed action while fulfilling its statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors” (43 CFR 46.420(d)). Selection of Alternative IV would affirm the issuance of the leases pursuant to Sale 193 as held and be implemented by removing the suspension of operations imposed on the leases.

Of the three alternatives considered in the current matter, Alternative II is considered by BOEM to be the environmentally preferred alternative for Alaska under the analysis included in the SEIS. The environmentally preferred alternative is not the same as selecting a “preferred alternative” for implementation, but instead is determined by applying the criteria listed in Section 101(b) of NEPA. This section places a continuing responsibility on the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3. Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
4. Preserve important historic, cultural, and natural aspects of the national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice;
5. Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources. (National Environmental Policy Act, Sec. 101(b), [42 USC §4331]).

Because no oil and gas activities would occur under Alternative II (No Lease Sale), it would meet at least 5 of the 6 criteria under Section 101(b) (listed above), and would have the least adverse effects on the environment within the Chukchi Sea area.

While Alternative II would eliminate all potential risks to the Alaska OCS associated with oil and gas exploration and development in the Chukchi Sea, selecting this alternative would result in eliminating all sale-related benefits and could result in increased environmental risk to other areas of the United States outside the Chukchi Sea and to other areas of the globe that export to the United States. Compensating for the oil which would not be developed as a result of canceling this sale would require a variety of resources, including the importation of

foreign oil. Accordingly, Alternative II would not best achieve an appropriate balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities (Section 101(b) of NEPA, criteria 5), nor would it best satisfy BOEM's statutory charge "to make the OCS available for expeditious and orderly development, subject to environmental safeguards, in a manner which is consistent with the maintenance of competition and other national needs" (OCSLA, 43 USC 1331). For these reasons, Alternative II was not selected as the agency's preferred alternative.

BOEM also analyzed the differences in the environmental effects between the two action alternatives that it finds most viable (i.e., Alternative III and Alternative IV) in the Sale 193 FEIS and Sale 193 SEIS. Based upon this analysis, BOEM concluded that the differences between these alternatives are not sufficiently distinct to determine that the reduction in lease blocks in Alternative III would result in a clear reduction of environmental impacts. For example, selecting Alternative III (with the larger deferral area) could increase the potential distance between a platform and the shoreline, thereby reducing the potential for conflict with near-shore species and cultural activities, but this benefit could be offset by the increased length of pipelines and their associated environmental effects (e.g., increased potential for pipeline spills, greater pipeline construction impacts, etc.). Moreover, because the 12 leases issued in the Corridor I deferral area lie at the seaward edge of Corridor I, the nearest possible lease activity under Sale 193 would be 52 miles from shore, which is only approximately 12 miles closer to shore than if the entire Corridor I area were deferred. Finally, the lease stipulations for Sale 193 leases include certain mitigation measures to address a range of operational and environmental issues that minimize the differences in environmental impacts between the alternatives, as described in greater detail below. The proposed action alternatives table set forth below summarizes environmental effects of each alternative for both the oil and natural gas scenarios. Based on its consideration of all relevant factors, BOEM determined that, with the required environmental mitigation, Alternative IV would achieve the appropriate balance between environmental protection and the benefits of resource development. BOEM has selected Alternative IV as the agency's preferred alternative.

COURT CONCERN NO. 1—ENVIRONMENTAL IMPACT OF NATURAL GAS DEVELOPMENT

To address the Court's first concern, and to better understand the effects of natural gas development, BOEM developed a natural gas production scenario reflecting the exploration, development, and production scenario described for oil in the Sale 193 FEIS. The natural gas production scenario and the anticipated effects of natural gas production on the environment and resources of the Chukchi Sea are fully described in the SEIS.

No additional public scoping was required or conducted for the SEIS process. BOEM reviewed the comments received on the Sale 193 Draft EIS as well as those on the Arctic Multiple-Sale Draft EIS³ to identify issues relevant to the analysis of gas production for the Chukchi Sea. Through this process, BOEM identified two additional gas production issues that are addressed in the Final SEIS (i.e., the potential for releasing hydrogen sulfide (H₂S) and the potential effects of a gas release accident). The Final SEIS also addresses topics of

³ USDOJ, MMS, 2008.

interest that have developed since the sale was held. These include the listing of the polar bear under the Endangered Species Act (ESA), the designation of polar bear critical habitat, the changed ESA status for other species (i.e., walrus, ice seals, yellow-billed loon), and the designation of three new essential fish habitats in Arctic Alaska.

Relevant to the discussion concerning the potential for natural gas development are several underlying factors:

1. There is no transportation system at the present time to deliver natural gas from Arctic Alaska to market. The abundant gas resources (proven and undiscovered) in northern Alaska will continue to be stranded until a large capacity gas transportation system is operational.
2. A large-diameter, overland gas pipeline system is the most feasible and economically viable project to move large quantities of gas from Arctic Alaska to outside markets. Several gas pipeline projects have been proposed by industry and/or supported by the Federal and State governments, although none have been constructed. At the present time, a North Slope gas pipeline, if constructed, is not expected to be operational until 2020 or later. Further, BOEM would not expect full-scale gas production from the Chukchi Sea Planning Area or available capacity in the gas pipeline until at least 2030.
3. Other gas transportation strategies (e.g., tanker transport of liquefied natural gas) would face more difficult technical, regulatory, and economic challenges than an overland gas pipeline project.
4. The economics of gas development alone are much less attractive than oil development alone or a gas development in conjunction with oil development. The main disadvantage results from the projected continuing price discount for natural gas relative to oil. Despite the low market price for gas, the development costs for new gas-only fields or oil and gas fields (i.e., platforms, wells, and pipelines) are very similar to the development costs for oil-only fields. This unfavorable cost-price relationship will likely continue to burden natural gas projects in Alaska.
5. Royalty Suspension Volumes (RSVs) are on a lease basis and are intended to encourage the development of both oil and gas resources if future hydrocarbon prices drop to very low levels as occurred in the 1990's. Current and projected prices are expected to exceed the RSV threshold; therefore, no RSV production is expected. If future oil and gas prices decline and drop below the RSV threshold for those leases containing both oil and gas resources, the RSVs will likely be depleted by the earlier oil production. On leases containing only gas resources, the RSVs would be available when gas is produced for sale.

These factors suggest that the first commercial gas production would only occur when industry can use existing oil production facilities, where the earlier oil production has already borne most of the underlying development costs supporting new infrastructure for gas production. Accordingly, the key components of the natural gas production scenario assumed by BOEM are:

1. Gas production is expected to be delayed until most of the recoverable oil is produced.

2. Gas production would briefly overlap declining oil production and last for another 20 years. Overall, the timeframe for all oil and gas activities (leasing to abandonment) could span 50 years.
3. Gas production would use the same oil production platform described in the Sale 193 FEIS scenario.
4. No additional exploration-related seismic surveys likely would be needed for gas development and production.
5. No additional exploration drilling would be conducted for gas production.
6. No new development drilling would be needed for gas development and production. Existing oil wells and gas injection wells would be used as gas production wells.
7. No in-field flowlines would be needed or constructed.
8. Pentanes and heavier gases, and possibly some of the butanes, would be separated from the gas stream and transported through the oil pipeline to market. Consequently, the gas pipeline would carry only lighter hydrocarbons.
9. No produced water discharges would occur. Any produced water would be treated and reinjected into the subsurface through existing disposal wells.
10. A gas pipeline from the platform to the shore facilities would be needed. The new pipeline would be constructed during open-water season along the same corridor as any oil pipeline. Shore-based facilities are assumed to be near Wainwright.
11. The oil production shore facilities would be expanded to accommodate gas processing. Administrative, maintenance, staff, buildings, and capabilities would continue to be used.
12. A gas pipeline from the shore facility across the National Petroleum Reserve – Alaska (NPR-A) to the main transportation hub near Prudhoe Bay would be needed. The pipeline across NPR-A would be constructed on risers (vertical support members) during winter along the same corridor as the oil pipeline to the existing Trans-Alaska Pipeline System (TAPS).
13. No hydrogen sulfide (H₂S) was recorded in any of the five historic wells drilled in open-hole conditions during 1989-1991: OCS-Y 1482 Klondike #1, OCS-Y 1275 #1 (Popcorn), OCS-Y 1413 #1 (Burger), OCS-Y 1320 #1 (Crackerjack), and Chevron OCS-Y 0996 #1 (Diamond) (Shell Gulf of Mexico Inc., 2009). Based on the absence of H₂S in any previously drilled exploration well in the Chukchi Sea, the Beaufort Sea, or the Canadian Beaufort Sea, H₂S is not expected in significant volumes in any natural gas produced from the Chukchi Sea Planning Area (Shell Gulf of Mexico Inc., 2009).

Under BOEM's gas production scenario, oil field operations would likely transition from oil production to gas production during the last 10 years of oil production. Construction of a new gas pipeline to shore, expansion of the shorebase facility, and construction of a gas pipeline across the NPR-A would occur during this transition period. As many as 30 existing oil production wells might then be converted to gas production wells.

An overland gas pipeline across the NPR-A would transport gas to the main transportation hub near Prudhoe Bay where an export pipeline is expected to originate. Several compression stations for the new overland gas pipeline would be constructed along the pipeline. These

facilities are likely to be co-located with anticipated oil and gas facilities along the pipeline route.

The BOEM analysis for the gas production scenario identified three general types of potential hydrocarbon releases. First, a loss of well control during natural gas production could lead to a release of natural gas into the environment. Although BOEM's gas production scenario does not entail the drilling of any new wells, it could include well workover operations. For purposes of analysis, BOEM estimates that one well control incident of a single well on the facility could occur, releasing 10 million cubic feet of natural gas for one day. Second, a gas pipeline could rupture. In such a rare event, the release of natural gas would cause a sudden decrease in pipeline pressure, which would automatically close valves on both ends of the ruptured segment of the pipeline, isolating the rupture and limiting the amount of natural gas released into the environment. Given the daily flow rate and the estimated total number of valves, BOEM estimates that approximately 20 million cubic feet would be released if a pipeline ruptured. Finally, gas could leak at the processing facility onshore. In this case, the greatest hazard from a sudden release of gas in a confined space would be the possibility of an explosion and fire that could injure or kill workers.

BOEM considers the release of gas incident to the loss of well control, pipeline rupture, or leak to be a potentially serious, although unlikely, event. Environmentally, the effects of a gas release would be substantially less than a release of crude oil. Being lighter than air, any gas released would rapidly rise and dissipate into the atmosphere, possibly with a one-time, localized gas explosion. In the aftermath of the Deepwater Horizon event, BOEM has adopted two new federal rules that will improve drilling safety by strengthening requirements for safety equipment, well control systems, and blowout prevention practices on offshore oil and gas operations, and improve workplace safety by reducing the risk of human error. While it must be recognized that accidents will occasionally happen, these new measures, coupled with the continuing inspection of facilities and enforcement of existing operating regulations, will help ensure safe oil and gas operations and reasonable development of this vital national resource.

The natural gas development and production scenario would apply to each of the three action alternatives—Alternative I (Proposed Action), Alternative III (Corridor I Deferral), and Alternative IV (Corridor II Deferral)—analyzed in the Sale 193 FEIS and supplemented by the Sale 193 Final SEIS. Any differences in the potential environmental impacts associated with each action alternative are directly traceable to the size and location of proposed deferrals. The alternative selected in 2008 for Chukchi Sea Sale 193 was Alternative IV.

The potential effects of both oil and natural gas development and production by resource category are summarized below for each of the action alternatives analyzed in the Sale 193 FEIS⁴ and Sale 193 Final SEIS. Alternative II (No Lease Sale) is not presented below

⁴ It should be noted that the significance thresholds were updated for the Water Quality, Air Quality, Subsistence Harvest Patterns, Sociocultural Systems, and Environmental Justice resource categories in the Final SEIS. BOEM applied the updated thresholds to the analysis of oil production and development in the FEIS and found that based on new significance thresholds, impacts from shore-based oil production activities may result in significant impacts to onshore Subsistence Harvest Patterns, Sociocultural Systems, and Environmental Justice.

because environmental effects are not anticipated, except for economics. The effects for economics described below would not occur under Alternative II.

Resource Area		Alt. I – Proposed Action (no deferral area)	Alt. III – Corridor I (largest deferral area)	Alt. IV – Corridor II (smaller deferral area)
Water Quality	Oil	Effects are expected to be moderate locally and low regionally. Discharges into the marine environment would be regulated by EPA through NPDES permitting and inspection requirements.	The removal of the deferred area would not significantly change the effects on marine water quality either negatively or beneficially.	The removal of the deferred area would not significantly change the effects on marine water quality either negatively or beneficially.
	Gas	Temporary and localized impacts from installing new gas pipelines and from small scale and infrequent deck drainage discharges. Very low impacts on regional water quality.	The larger deferral area increases the minimum length of pipeline to the nearest lease, which may increase impacts. Still very low, temporary, and localized impacts.	Smaller deferral area may increase potential for impacts relative to Alt I, but to lesser extent than Alt III. Impacts would remain temporary, localized and very low.
Air Quality	Oil	Effects are expected to be low, and air quality is expected to remain well within National Ambient Air Quality Standards and Prevention of Significant Deterioration incremental limits.	Effects to adjacent onshore areas would be lower under Alternative III than Alternative I because of the greater distance from shore of the nearest tract available for leasing. The difference in potential air quality effects, however, is small.	Effects on adjacent onshore areas are less than Alternative I, but not great as Alternative III. The difference in potential air quality impacts, however, is small.
	Gas	Minor impacts would occur from emissions of diesel marine engines and onboard generators. Small, local, and temporary impacts within compliance standards for Clean Air Act.	Larger deferral area could decrease impacts to communities from production platforms but also increase total emissions due to greater travel distances for marine vessels to the nearest lease; potential impacts remain minor.	Smaller deferral area could also decrease effect of platform emissions to communities yet increase total emissions from vessels; potential impacts remain minor.
Lower Trophic Organisms	Oil	Effect would be minor, with moderate impacts near drilling locations and from trenching for pipeline installation. A large oil spill contacting the coast could persist in tidal and sub-tidal sediments for tens of years with moderate effects on local trophic communities.	Effects would be due partly to possible discharges in nearshore areas and to oil spills that could contact the coastline next to the Spring Lead System. Larger deferral area would decrease the level of potential effects.	Effects would be the same as Alternative I.
	Gas	Adverse impacts would occur from installing an offshore pipeline and, to a lesser extent, from vessel anchoring. No significant impacts because recolonization of trophic communities is expected.	The pipeline in this alternative would have the greatest impact due to deferral area making the leases sold the greatest distance from shore. Still no significant impacts.	More potential for impacts than Alt I due to longer distance from platform on nearest lease to shore, but not as much as Alt. III. Still no significant effects.

Resource Area		Alt. I – Proposed Action (no deferral area)	Alt. III – Corridor I (largest deferral area)	Alt. IV – Corridor II (smaller deferral area)
Fish	Oil	Construction activities are anticipated to result in temporary and localized effects on fish and fish habitats, with recovery expected to occur in fewer than three generations. A large oil spill contacting intertidal or estuarine habitats used by fishes could result in significant impacts to some local breeding populations. Recovery to former status, likely by immigration, would require more than three generations.	Alternative III would move sources of potential effects farther away from important coastal and anadromous fish habitats. The increased distance between offshore development and coastal fish habitats could decrease the chance of spilled oil contacting the coastline, increase the weathering of spilled oil prior to contact, and increase the available spill response time.	Alternative IV would move sources of potential effects farther away than Alt. I, but not as much as Alt. II, from important coastal and anadromous fish habitats. Increased distance between offshore development and coastal fish habitats could decrease the chance of spilled oil contacting the coastline, increase the time for weathering of spilled oil prior to contact, and increase the available spill response time.
	Gas	Direct adverse impacts would occur via disturbance by vessels and introduction of noise. Indirect adverse impacts could occur via changes to seafloor, riparian, or wetland habitat. Impacts would be localized, temporary, and minor.	Highest potential for impacts among action alternatives due to longer distance from platform on nearest lease to shore impacts still localized, temporary, and minor.	More potential for impacts than Alt I due to longer distance from platform on nearest lease to shore, but not as much at Alt. III. Impacts still localized, temporary, and minor.
Essential Fish Habitat (EFH)	Oil	Seismic surveys and construction expected to result in minor effects to EFH for freshwater and marine salmon, Arctic cod, and saffron cod. A large oil spill or chronic small oil spills could impact EFH for Arctic cod and saffron cod, and could affect intertidal or estuarine habitats used by early life-history stages of Pacific salmon. Large or chronic small-volume spills would require 3 or more generations to recover.	Alternative III offers the most benefits to nearshore EFH by moving activities farther away from coastline where estuarine and freshwater salmon EFH exist. Larger deferral, however, could increase the length of pipeline, resulting in greater pipeline construction impacts to EFH, and a greater chance for pipeline rupture and subsequent spill.	Smaller deferral offers protection for coastal and marine fish habitat but not as much as Alt. III.
	Gas	Installing the offshore and onshore pipeline components could cause temporary and local impacts. Vessel noise could continue to cause temporary and minor impacts in production phase. No significant impacts expected.	Highest potential for impacts relative to Alt I due to longer distance from platform on nearest lease to shore. No significant impacts expected.	More potential for impacts than under Alternative I due to longer distance from platform on nearest lease to shore, but not as much at Alt. III. No significant impacts expected.

Resource Area	Alt. I – Proposed Action (no deferral area)	Alt. III – Corridor I (largest deferral area)	Alt. IV – Corridor II (smaller deferral area)	
Threatened & Endangered Marine Mammals	Oil	Noise associated with vessel traffic, aircraft traffic, and construction could have impacts. Prolonged exposure to freshly spilled oil could cause whale mortalities, but, based on available information, the number would be small. Significant impacts to polar bears could occur during a large oil spill, depending on the location of the spill.	Larger deferral would reduce potential conflicts between migrating bowhead whale populations and offshore oil and gas operations, but whales would still encounter some attenuated levels of noise from adjacent areas. Ancillary activities such as pipeline associated surveys and construction, support vessel and aircraft traffic would remain the same as described for Alternative I. Larger deferral could decrease the chance that oil could contact polar bears in the event of a spill.	Smaller deferral would reduce the potential for conflicts between migrating whale populations and offshore oil and gas operations, but not as much under Alternative III. Smaller deferral could decrease the chance that oil could contact polar bears in the event of a spill to a lesser extent than Alt. III.
	Gas	Noise associated with vessel traffic, aircraft traffic, and construction could have impacts. Section 7 consultation and compliance with MMPA take guidelines would help preclude level A or “harm” take or adverse effects to Critical Habitat. Impacts are expected to be minor.	Larger deferral area further protects polynyas and important near-shore areas from platform-related activities, but may also increase vessel and aircraft travel. May offer most protections overall.	Smaller deferral area designed in part to protect polynyas and important near-shore areas from platform-related activities. May also increase vessel and aircraft travel. Regulatory protections ensure impacts would remain minor.
Other Marine Mammals	Oil	Effects of full-scale industrial development would accumulate through displacement of marine mammals from their preferred habitats, increased mortality, decreased reproductive success, and changes in prey resources. Significant impacts could occur to belugas and/or walrus through the loss of large numbers of individuals in the event of a large oil spill	Larger deferral would move sources of potential adverse effects farther away from important coastal habitats. The increased distance could reduce the chance of spilled oil contacting marine mammals, which tend to use coastal habitats. Additional protection of the nearshore spring lead systems, parts of which would be deferred by the wider coastal corridor, would be beneficial to ringed and bearded seals.	Alternative IV would move sources of potential effects farther away than Alt. I, but not as much as Alt. II, from important coastal habitats. Increased distance between offshore development and coastal habitats could decrease the chance of spilled oil contacting the coastline, increase the time for weathering of spilled oil prior to contact, and increase the available spill response time.
	Gas	Noise is the primary concern, but potential impacts would be reduced by compliance with MMPA. No significant effects or level A or “harm” take expected.	Largest deferral area excludes platform-related activities, but would require the longest travel distances by support vessels and aircraft of the action alternatives. No significant effects or level A or “harm” take expected.	Smaller deferral area excludes platform-related activities, but would require proportionally longer travel distances by support vessels and aircraft than Alt. I. No significant effects or level A or “harm” take expected.

Resource Area	Alt. I – Proposed Action (no deferral area)	Alt. III – Corridor I (largest deferral area)	Alt. IV – Corridor II (smaller deferral area)	
Threatened & Endangered Birds	Oil	Disturbance, collision hazards, and oil/toxic pollution could result in the taking of threatened Steller's and spectacled eiders, and Kittlitz's murrelets. OCS activities in the Ledyard Bay Critical Habitat Unit (LBCHU) could result in decreased use of the LBCHU by molting spectacled eiders.	Under this alternative, disturbance, collision hazards, and oil/toxic pollution are less likely to adversely modify the LBCHU compared to Alternative I. Larger deferral could also reduce the chance of spilled oil contacting bird habitat.	Under this alternative, disturbance, collision hazards, and oil/toxic pollution are less likely to adversely modify the LBCHU compared to Alternative I.
	Gas	Potential impacts could occur through habitat loss, disturbance, and displacement. Impacts would be minimized by section 7 consultation, and are not expected to reach significance.	Larger deferral area would move actions the farthest distance of the action alternative from coastal areas occupied by birds, further reducing potential for impacts.	Smaller deferral area would move actions farther from shore than under Alt I, reducing potential for impacts.
Terrestrial Mammals	Oil	Disturbance associated with ice-road and air-support traffic along pipeline corridors and near other onshore-support facilities would affect caribou, muskoxen, grizzly bears, and arctic foxes. Habitat alteration associated with gravel extraction (mining) to support the construction of gravel pads for onshore facilities is possible. Effects could also come from potential oil spills contacting coastal areas used by caribou for insect relief, and for scavenging by grizzly bears and Arctic foxes.	Larger deferral would reduce the chance of spilled oil contacting coastal habitats, increase weathering of spilled oil prior to contact with coastal habitats, and increase available spill-response time.	Small deferral would reduce chance of spilled oil contacting coastal habitat compared to Alternative I, but not as much as Alternative III.
	Gas	Proposed activities could disturb caribou, muskoxen, grizzly bears, and arctic foxes. Impacts temporary. Significant effects not expected.	Potential impacts the same as those for Alt I.	Potential impacts the same as those for Alt I.
Vegetation and Wetlands	Oil	Effects would be concentrated offshore, with no impacts on onshore and inland vegetation and wetlands. Negligible impacts on the ecological functions, species abundance, and composition of wetlands and plant communities, except for a large oil spill contacting coastline.	Effects of Alternative III would be the same as Alternative I.	Effects of Alternative IV would be the same as Alternative I
	Gas	While impacts from construction activities could cause long-lasting or even permanent effects, impacts would be highly localized and not significant on a regional scale.	Potential impacts the same as those for Alt I.	Potential impacts the same as those for Alt I.

Resource Area	Alt. I – Proposed Action (no deferral area)	Alt. III – Corridor I (largest deferral area)	Alt. IV – Corridor II (smaller deferral area)	
Subsistence Harvest Patterns	Oil	Effects on subsistence-harvest patterns could occur as a result of oil spills, seismic survey activity, and construction-related activities. Oil spills could cause multiyear suspensions or curtailments of subsistence activities for some marine mammal resources. Oil production could cause a significant impact to land-based subsistence activities for villages near the shore based facility.	Larger deferral would reduce sources for chronic noise and disturbance impacts on subsistence resources, subsistence whaling, and other marine mammal hunting. Deferral would also allow more time to respond to a spill. However, this alternative does not result in a reduction of impacts from oil production on land-based subsistence harvest patterns.	Reductions in noise, disturbance, and oil-spill effects from this deferral would provide the same types of resource benefits as described in Alternative III but at a reduced level, because the area deferred is smaller. However, this alternative does not result in a reduction of impacts from oil production on land-based subsistence harvest patterns.
	Gas	No significant reductions to animal populations. However, proposed activities could disturb subsistence resources and alter their local availability to harvesters for a substantial portion of a subsistence season potentially resulting in a significant impact.	Deferral area would move activity the largest distance from the coastline of the action alternatives, further reducing potential to disturb subsistence resources or conflict with harvest. However, this alternative does not result in a reduction of impacts from gas production on land-based subsistence harvest patterns.	Deferral area would move actions farther from the coastline than under Alt. 1, reducing the potential for disturbance to subsistence resources or conflict with harvest. However, this alternative does not result in a reduction of impacts from gas production on land-based subsistence harvest patterns.
Sociocultural Systems	Oil	Displacement of social patterns could occur as a result of social system adaptation to chronic disruptions. In addition, social patterns could be affected by a growing cash economy sector from offshore exploration support activities as it impacts existing subsistence practices in Chukchi Sea coastal villages. A significant impact may occur to the villages closest to the shore based facility.	Effects would be reduced in comparison to Alternative I. A significant impact may still occur from oil and natural gas production to the villages closest to the shore based facility.	Effects are the same as for Alternative III. A significant impact may still occur from oil and natural gas production to the villages closest to the shore based facility.
	Gas	Some disruption to sociocultural systems could occur, especially if development occurs near a coastal community, where disruptions would have a tendency to displace existing social patterns. These disruptions would be a continuation of the disruption from oil development and production and no additional significant impact is expected.	Potential impacts the same as those for Alt I.	Potential impacts the same as those for Alt I.

Resource Area		Alt. I – Proposed Action (no deferral area)	Alt. III – Corridor I (largest deferral area)	Alt. IV – Corridor II (smaller deferral area)
Archaeological	Oil	Archaeological resources, either onshore or offshore, are expected to be identified through examination of cores, where applicable, and/or through required site-specific surveys before any activities are permitted, thereby avoiding or mitigating effects.	Effects of Alternative III would be the same as Alternative I.	Effects of Alternative IV would be the same as Alternative I.
	Gas	Potential for construction activities to cause irreversible adverse impacts to currently unknown archaeological resources. Such effects could be significant. Standard protocols and mitigation measures would greatly reduce this potential.	Larger deferral area can increase potential for archaeological disturbance as a result of the need to construct a longer pipeline from the platform to the shore. Standard protocols and mitigation measures would reduce this potential.	Smaller deferral area; therefore, more potential for archaeological disturbance than Alt. I, but less potential for archaeological disturbance than Alt. 3. Standard protocols and mitigation measures would reduce this potential.
Environmental Justice	Oil	Alaskan Iñupiat Natives could be disproportionately affected by disturbance impacts from seismic activity, vessel, aircraft, construction noise, and oil spills because of their reliance on subsistence foods. A significant impact on the Alaskan Iñupiat Native community is possible due to impacts to subsistence from oil and natural gas production and on-shore construction.	Noise, disturbance, and oil spill effects under Alternative III are expected to be reduced relative to those described for Alaskan Iñupiat Natives under Alternative I. A significant impact on the Alaskan Iñupiat Native community is possible due to impacts to subsistence from oil and natural gas production and on-shore construction.	Smaller deferral would provide the same types of resource benefits as described in Alternative III for Alaskan Iñupiat Natives but at a reduced level. A significant impact on the Alaskan Iñupiat Native community is possible due to impacts to subsistence from oil and natural gas production and on-shore construction.
	Gas	Significant impacts to Alaska Iñupiat Natives could occur through impacts to subsistence resources and sociocultural systems.	Potential impacts the same as those for Alt I.	Potential impacts the same as those for Alt I.
Economics	Oil	Increases in North Slope Borough (NSB) property taxes receipts would average about 25% above current level, and increases revenues to the State of Alaska of about <0.3%. Total employment and personal income could increase approximately 6% over the 2003 baseline for the NSB and 2% over the 2005 baseline for the rest of Alaska.	Effects of Alternative III would be the same as Alternative I.	Effects of Alternative IV would be the same as Alternative I.
	Gas	Gas development and production activities would generate economic activity. Increases in employment, personal income, and revenues to the government would occur in the NSB, the rest of AK, and the rest of the U.S.	Potential impacts the same as those for Alt I.	Potential impacts the same as those for Alt I.

In order to mitigate operational and environmental risks, the leases in Corridor I are subject to the same stipulations as apply to all other Sale 193 leases. These include:

- Protection of biological resources – including potentially requiring lessees to conduct supplemental surveys and alter operations if new information becomes available;
- Orientation programs to familiarize personnel involved in exploration, development, and production activities with environmental, social, and cultural issues;
- Environmental requirements regarding the placement of pipelines;
- Requirements that fuel barges carrying 100 barrels or more be surrounded by oil-spill-containment boom throughout the transfer operation, as a precautionary measure;
- Measures to minimize effects to Spectacled and Steller’s eiders during exploration activities.

Moreover, BOEM has required in special stipulations applicable to “Corridor I” leases that operators implement additional mitigation measures including:

- a site-specific monitoring program during periods of subsistence use for bowhead and beluga whales, ice seals, walruses, and polar bears to assess and consider the extent of behavioral effects due to operations;
- conflict avoidance mechanisms to protect subsistence whaling and other Marine Mammal subsistence harvesting activities.

These stipulations are subject to agency enforcement actions in the event of noncompliance, including the assessment of civil penalties, shut-in of the facility, or the suspension of operations. The agency may also seek judicial relief, such as court orders for specific performance of the contract obligation.

Based upon the analysis contained in the Sale 193 FEIS and the Sale 193 SEIS, BOEM believes the regulatory requirement under NEPA to fully analyze the effects of natural gas exploration and development is satisfied pursuant to the Court’s remand order.

COURT CONCERN NO. 2 AND NO. 3—DETERMINATION OF THE RELEVANCE OF INCOMPLETE OR UNAVAILABLE INFORMATION ON THE EVALUATION OF REASONABLE FORESEEABLE EFFECTS

To address the Court’s second and third concerns, BOEM catalogued all statements within the Sale 193 FEIS that referred to incomplete or unavailable information and then conducted a structured analysis of the missing or unavailable information under the relevant regulation, 40 CFR 1502.22. The BOEM’s analysis and methodology are detailed in the Sale 193 Final SEIS, Appendix A.

The incomplete or unavailable information was considered relevant if it could aid in the evaluation of reasonably foreseeable significant adverse impacts as stipulated by the Council on Environmental Quality (CEQ) regulation at 40 CFR 1502.22 and following the significance criteria described for each resource (as amended) in the Sale 193 SEIS. All such information determined relevant was then evaluated to determine whether it was essential to a reasoned choice among alternatives. BOEM determined the information, to be essential, must

provide a distinction between two or more alternatives. Lastly, if incomplete or unavailable information was determined to be relevant and essential, BOEM would then evaluate the potential means for obtaining the information to determine if its overall costs would be exorbitant or the means of obtaining it is unknown. Finally, if costs would be exorbitant or means to obtain the information is unknown, the CEQ regulations require that BOEM explain the scientific methods or models used as a substitute for the essential information.

The BOEM catalogued all statements within the Sale 193 FEIS that acknowledged incomplete or unavailable information. This list includes statements identified by the plaintiffs in litigation as well as additional statements independently identified by BOEM analysts for the purpose of this analysis. Each statement of incomplete or unavailable information then underwent a robust, structured review process to ensure consistency with 40 CFR 1502.22. The review process is described more extensively in the Sale 193 Final SEIS, Appendix A. As BOEM examined each statement of incomplete or unavailable information from the Sale 193 FEIS, BOEM made one or more of the following determinations:

- **There is sufficient information available to support sound scientific judgments and reasoned managerial decisions, even without the information identified as incomplete or unavailable.** This concept recognizes that while there will always be some level of incomplete information (especially regarding dynamic ecosystems), there is often enough information to formulate and support sound scientific judgments. Scientists frequently agree on larger issues and trends despite the lack of a particular item of information. For example, while scientists may not know each cause of natural mortality for bowheads, it is well known (and more important) that this population as a whole is growing. Also, some information is simply not of a type that would alter scientific judgments or affect decision-making. Some information simply is not significant or relevant enough to be considered essential to a reasoned decision among alternatives. For example, additional information about the winter food habits of a whale that is only present within the area considered for leasing during summer months may not be significant or relevant enough to be considered essential to a reasoned decision among alternatives. A discussion of BOEM's recently completed, ongoing, and planned OCS studies is included in the Final SEIS.
- **The presumption that adverse effects would certainly occur under the specific circumstance to which the incomplete information applies.** For instance, it is already presumed that a large oil spill could cause significant adverse impacts to wildlife and other resources, through myriad direct and indirect effects. Thus, it is not essential for the decision-maker, who is already made aware of the probability and severity of these potential impacts, to understand every particular mechanism through which these adverse impacts could occur. Additional information specific to how spilled oil may affect the functioning of a whale's blowhole, for example, is not required for an understanding of the probability and severity of risks associated with each alternative.
- **Commonality of potential impacts among all alternatives other than the no action alternative lessens the utility of incomplete information to the decision-maker.** For example, in the unlikely event of a large oil spill, it is well-understood that environmental impacts could be severe. If the severity of potential impacts would be nearly identical under any action alternative; very specific types of information relevant to species,

particular life history traits, or behavior do not help substantially in distinguishing among alternatives.

- **Existing environmental laws and regulations mitigate or preclude significant adverse effects on particular resources.** For example, comprehensive regulatory standards under the Clean Air Act are sufficient to mitigate or preclude air quality impacts from reaching a level of significance. Incomplete information regarding air quality issues is in this sense less useful to the decision maker, who is assured that no matter which alternative he or she selects, significant adverse effects to air quality will be avoided.
- **Certain items of presently missing or incomplete information will be known (and used to avoid or minimize adverse impacts) at a later stage of OCS Lands Act environmental review.** The OCS Lands Act creates a four-stage process for planning, leasing, exploration, and development and production of oil and gas resources in Federal waters. The first two stages (the 5-Year Program stage and the Lease Sale stage) are largely programmatic in nature. The pending decision pertains to Stage 2, the lease sale stage. It is inherent in the process that information such as the specific locations or times of development and production activities (proposals for which are examined in Step 4) are not known at lease sale stage (Step 2). Instead, BOEM would thoroughly review specific development & production plans at Step 4, if and when a project proponent submits a plan. Thus, while certain information may, in fact, be essential at a later stage of the process required under the OCS Lands Act, such information may not be essential to a reasoned choice among alternatives at this lease sale stage.

Upon completion of this review, BOEM determined that while many instances of incomplete or unavailable information were broadly relevant to the important issues at hand, none were essential for a reasoned choice among alternatives considered for leasing OCS lands for oil and gas development under Chukchi Sea Lease Sale 193. Because BOEM determined that none of the instances of incomplete or unavailable information was essential to a reasoned choice among alternatives, it was not necessary to evaluate whether the overall costs of obtaining the information would be exorbitant or if the means to obtain it was unknown.

Since none of the incomplete or unavailable information referred to in the Sale 193 FEIS was determined essential to a reasoned choice among alternatives, BOEM concludes that none of the incomplete or unavailable information could have reasonably led to a different decision than that made for the Final Notice of Sale for Chukchi Sea Sale 193, dated January 2, 2008.

The U.S. Environmental Protection Agency (EPA), Region 10, in a letter dated November 29, 2010, stated it was satisfied with BOEM's methodical and understandable analysis of incomplete or missing information.

VERY LARGE OIL SPILL (VLOS) ANALYSIS

In March 2011, BOEMRE, now BOEM, announced a VLOS analysis would be included in the SEIS process for Chukchi Sea Lease Sale 193. BOEM took this action in response to the public comments raised on the Draft SEIS. The potential environmental effects of a low-probability, high impact event—a hypothetical VLOS in the Chukchi Sea Program Area—

were first analyzed in the Sale 193 Final Revised Draft SEIS (September 2010), and this analysis was finalized in the Sale 193 Final SEIS.

To facilitate analysis of the potential environmental impacts of a VLOS in the Chukchi Sea, BOEM developed a VLOS scenario based upon a hypothetical oil discharge model that estimates the highest possible uncontrolled flow rate that could occur from any known prospect in the Sale 193 area. Scenarios are conceptual views of the future and represent possible sets of activities. The scenarios serve as planning tools that make possible an objective and organized analysis of events. Because the VLOS is a hypothetical discharge that assumes the highest possible uncontrolled flow rate from an unspecified prospect, it is important to distinguish this very unlikely scenario from what would be expected to occur as a result of any of the specific action alternatives in the Sale 193 Final SEIS.

The VLOS scenario is sometimes confused with worst-case discharge (WCD) analyses, which are used to evaluate an Exploration Plan (EP) or a Development and Production Plan (DPP). These calculations are similar to the extent that they are performed by BOEM using similar assumptions and identical analytical methods. However, these calculations differ in several important ways:

- **Very Large Oil Spill.** Rather than analyzing a specific drilling proposal, the VLOS model selected a prospect within an area that potentially maximizes the variables driving high flow rates. Therefore, the VLOS scenario represents an extreme case in a flow rate and discharge period that, in turn, represents the largest discharge expected from any site in the subject area.
- **Worst-Case Discharge.** Site-specific WCDs at sites identified in a submitted EP or DPP in the subject area would typically result in much lower initial rates and aggregate discharges if discharge periods are held equal. The calculations also differ in their purpose. Whereas the VLOS scenario is a planning tool for NEPA environmental impacts analysis, a WCD is the calculation required by 30 CFR Part 250 to accompany an EP or DPP and provide a basis for an Oil Spill Response Plan.

Comparison between a VLOS analysis and a WCD analysis.

Characteristic	VLOS	WCD
Geographic Area of Focus	A broad area described by the Chukchi Sea Program Area	A specific location described by an EP or DPP
Reason for Analysis	The VLOS scenario is hypothetical and is provided as a general planning tool for the entire Program Area	A WCD always accompanies an industry EP or DPP for a specific site, and provides the basis for an Oil Spill Response Plan.
Regulatory Basis	A VLOS scenario serves to respond to CEQ regarding a low probability, high impact event.	The WCD calculation is required by 30 CFR Part 250.
Estimated Flow Rate	Maximizes estimated flow rate to represent the largest potential discharge estimated from any site in the entire Program Area.	Maximizes estimated flow rate to represent the largest potential discharge from one actual (known) drilling location. This will typically mean lower aggregate discharges than a VLOS.

The BOEM VLOS discharge model assumes an uncontrolled release of crude oil from a hypothetical well that climbs rapidly after the initial event to over 61,000 barrels per day. After peaking in Day 1, the flow rate declines rapidly over the next 40 days as the reservoir is depressurized, then begins to flatten, falling to just over 20,000 barrels per day by Day 74 when flow is stopped by completion of a relief well. Total flow under the scenario at the end of the discharge period is 2,160,200 barrels of crude oil.

For purposes of analysis, BOEM assumed the hypothetical VLOS to commence between July 15 and October 31. These dates coincide with the open water drilling season. Under NTL 2010-N06, all exploration plans must specify as accurately as possible the time it would take to contract for a rig, move it on site, and drill a relief well. BOEM estimates the discharge would be stopped within 74 days of the initial event. The 74-day period is the longest of three time periods considered by BOEM for completing a relief well.

BOEM assumes in its hypothetical VLOS scenario an extensive spill recovery and cleanup effort for the purposes of determining the environmental impacts from the cleaning effort. A variety of clean-up techniques could be utilized, ranging from in-situ burning to mechanical recovery to dispersants. Severe weather could interfere with or temporarily preclude each of the methods. The presence of ice and broken ice would present significant challenges with respect to oil spill response and could interfere with or even preclude the use of certain response techniques and equipment. Spill response and clean up efforts could involve establishing between 5 and 10 staging areas and using 15 to 20 large skimming vessels, dozens of planes and helicopters, and a significant number of responders. The use of dispersants and in-situ burning would be decided by the Federal-On-Scene Coordinator, and would likely concentrate on the source of the flow or be conducted to protect sensitive resources. Booming would occur, dependent upon the location of the potentially impacted shoreline, environmental considerations, and agreed-upon protection strategies involving the local potentially impacted communities. About 100 booming teams could monitor and operate in multiple areas.

As ice formation progresses, the focus of the response would shift to placing tracking devices in the forming ice sheet to follow the oil as it is encapsulated into the ice sheet. Once the ice sheet becomes solid and stable enough, recovery operations could resume by trenching through the ice to recover the oil using heavy equipment. This would most likely occur in areas closer to shore because the ice will be more stable. In late spring and early summer, as the ice sheet deteriorates larger ice-class vessels could move into the area and begin recovery or in-situ burning operations as the oil is released from the ice sheet. The ice may prevent the oil from spreading rapidly. As the ice sheet decays, oil encapsulated in the ice would begin surfacing in melt pools, at which time responders may have additional opportunities to conduct in-situ burn operations. Smaller vessels could eventually re-commence skimming operations in open leads and among ice flows, most likely in a free skimming mode (without boom) along the ice edge.

The environmental effects of a VLOS are summarized below for each of the three action alternatives analyzed in the Sale 193 FEIS and Sale 193 Final SEIS. The full discussion of the potential environmental effects of a VLOS is contained in the Final SEIS, as are examples of possible environmental effects. Moreover, contingency and spill response planning relating to specific proposed activities under leases issued under Sale 193 would be evaluated

in the context of those proposed operations. Alternative II (No Lease Sale) is not presented below because environmental effects to the area analyzed are not anticipated for the No Lease Sale alternative.

Resource Area	Alt. I – Proposed Action (no deferral area)	Alt. III – Corridor I (largest deferral area)	Alt. IV – Corridor II (smaller deferral area)
Water Quality	Hydrocarbon contamination would degrade water quality in violation of State and Federal criteria, thus causing significant impacts.	This deferral area would result in the most distance between the coastline and the near-shore leases, further reducing the potential for contamination of nearshore and coastal waters. Impacts to offshore water quality would remain the same as under Alt I.	This deferral area would increase the distance between the coastline and near-shore leases as compared to Alt. I, reducing the potential for contamination of nearshore and coastal waters. Impacts to offshore water quality would remain the same as under Alt I.
Air Quality	Significant adverse impacts to air quality would result from an initial explosion, evaporative emissions from offshore oil, and subsequent response vessels.	Potential impacts the same as those for Alt I.	Potential impacts the same as those for Alt I.
Lower Trophic-Level Organisms	A VLOS would cause acute and, for some species, significant impacts to lower trophic-level organisms and communities, and would adversely affect food webs.	Potential impacts the same as those for Alt I.	Potential impacts the same as those for Alt I.
Fish	Direct and indirect effects of a VLOS can lead to significant impacts on certain fish species. Effects on each population would depend on a variety of factors.	This deferral area would result in the most distance between the coastline and the near-shore leases, further reducing potential for impacts to nearshore and estuarine fish, including anadromous fish. Impacts to fish in offshore areas would remain the same as under Alt I.	This deferral area would increase the distance between the coastline and near-shore leases as compared to Alt. I, reducing the potential for impacts to nearshore and estuarine fish, including anadromous fish. Impacts to fish in offshore areas would remain the same as under Alt I.
Essential Fish Habitat	EFH for Arctic cod, saffron cod, and all five species of Pacific salmon would be significantly impacted.	This deferral area would result in the most distance between the coastline and the near-shore leases, further reducing potential for impacts to nearshore and estuarine EFH. Impacts to fish in offshore areas would remain the same as under Alt I.	This deferral area would increase the distance between the coastline and near-shore leases as compared to Alt. I, reducing the potential for impacts to nearshore and estuarine EFH. Impacts to fish in offshore areas would remain the same as under Alt I.

Resource Area	Alt. I – Proposed Action (no deferral area)	Alt. III – Corridor I (largest deferral area)	Alt. IV – Corridor II (smaller deferral area)
Cetaceans	Cetaceans could experience a variety of direct and indirect effects. Significant effects to some cetacean species (including bowhead whale) could occur under certain circumstances.	This deferral area would result in the most distance between the coastline and the near-shore leases further reducing the potential for impacts to species (including bowhead and beluga whales) that migrate through or otherwise use the spring lead system and/or nearshore areas. Impacts to cetaceans in offshore areas would remain the same as under Alt I.	This deferral area would increase the distance between the coastline and near-shore leases as compared to Alt. I, reducing the potential for impacts to species (including bowhead and beluga whales) that migrate through or otherwise use the spring lead system and/or nearshore areas. Impacts to cetaceans in offshore areas would remain the same as under Alt I.
Polar Bears	Polar bears could be affected by a VLOS in several ways. Polar bears are particularly sensitive to oiling. Significant impacts would occur if large numbers of polar bears are contacted or otherwise affected.	This deferral area would result in the most distance between the coastline and the near-shore leases further reducing the potential for impacts to polar bears using nearshore or coastal habitat. Impacts to polar bears using offshore sea ice would remain the same as under Alt I.	This deferral area would increase the distance between the coastline and near-shore leases as compared to Alt. I, reducing the potential for impacts to nearshore and coastal habitat. Impacts to polar bears using offshore area sea ice would remain the same as under Alt I.
Marine and Coastal Birds	Exposure to oil can negatively impact marine and coastal birds in a variety of ways. Those species which tend to congregate in potentially affected areas are most susceptible to significant impacts.	This deferral area would result in the most distance between the coastline and the near-shore leases, further reducing the potential for impacts to large aggregations of birds in important nearshore or coastal areas. Impacts to birds using offshore areas remain the same as under Alt I.	This deferral area would increase the distance between the coastline and near-shore leases as compared to Alt. I, reducing the potential for impacts to large aggregations of birds in important nearshore or coastal areas. Impacts to birds using offshore areas would remain the same as under Alt I.
Ice Seals	Ice seals would experience adverse impacts from direct exposure to oil, long-term exposure to contaminants and from decreased availability of prey species. Any population-level impacts would be recovered within three generations.	This deferral area would result in the most distance between the coastline and the near-shore leases, further reducing the potential for impacts to habitat used by spotted, bearded and ringed seals. Impacts to seals in offshore areas remain the same as under Alt I.	This deferral area would increase the distance between the coastline and near-shore leases as compared to Alt. I, reducing the potential for impacts to habitat used by spotted, bearded and ringed seals. Impacts to seals in offshore areas would remain the same as under Alt I.

Resource Area	Alt. I – Proposed Action (no deferral area)	Alt. III – Corridor I (largest deferral area)	Alt. IV – Corridor II (smaller deferral area)
Pacific Walrus	Significant impacts to walrus could occur if large scale contamination of prey and habitat persisted for years.	This deferral area would result in the most distance between the coastline and the near-shore leases, further reducing the potential for contact with certain areas where walrus may congregate.	Deferral area would increase the distance between the coastline and near-shore leases as compared to Alt. I, reducing the potential for contact with certain areas where walrus may congregate.
Terrestrial Mammals	A VLOS could adversely impact a variety of terrestrial mammals. However, full recovery of population numbers would occur within two years.	This deferral area would result in the most distance between the coastline and the near-shore leases, further reducing the potential for contact with terrestrial mammal habitat.	Deferral area would increase the distance between the coastline and near-shore leases as compared to Alt. I, reducing the potential for contact with terrestrial mammal habitat.
Vegetation and Wetlands	Localized but potentially long-term impacts to potentially affected vegetation and wetlands habitat. Inland and marsh areas would only be affected if the presence of spilled oil coincided with a storm surge event.	This deferral area would result in the most distance between the coastline and the near-shore leases, further reducing the potential for contamination of nearshore, estuarine, and intertidal areas and the vegetation they support.	Deferral area would increase the distance between the coastline and near-shore leases as compared to Alt. I, reducing the potential for contamination of nearshore, estuarine, and intertidal areas and the vegetation they support.
Economy	A large scale oil spill response effort triggered by a VLOS would generate short-term cleanup and restoration jobs and related income. A VLOS could also have negative long-term impacts on potential future economic activities in the area, including on future energy resource development.	Potential impacts the same as those for Alt I.	Potential impacts the same as those for Alt I.
Subsistence Harvest Patterns	A VLOS could cause significant adverse impacts by diminishing, displacing, and/or contaminating subsistence resources. This would have a direct, adverse impact on local communities using subsistence resources. Concerns about contamination could persist many years, long after actual harvest disruption.	This deferral area would result in the most distance between the coastline and the near-shore leases, further reducing the potential for contamination of important subsistence areas along the U.S. Chukchi coast. Deferral corridor may also reduce the potential for impacts to certain resources important for subsistence.	This deferral area would increase the distance between the coastline and near-shore leases as compared to Alt. I, reducing the potential for contamination of important subsistence areas along the U.S. Chukchi coast. Deferral corridor may also reduce the potential for impacts to certain resources important for subsistence.

Resource Area	Alt. I – Proposed Action (no deferral area)	Alt. III – Corridor I (largest deferral area)	Alt. IV – Corridor II (smaller deferral area)
Sociocultural Systems	Disruption to, and displacement of, sociocultural systems would be compounded by long term impacts to subsistence resources and practices.	This deferral area would result in the most distance between the coastline and the near-shore leases, further reducing the potential for impacts to subsistence resources and harvest areas, and therefore reducing the potential for disruption of sociocultural systems.	This deferral area would increase the distance between the coastline and near-shore leases as compared to Alt. I, reducing the potential for impacts to subsistence resources and harvest areas, and therefore reducing the potential for disruption of sociocultural systems.
Archaeological Resources	Onshore spill response and cleanup is the aspect of a VLOS with the most potential to affect archaeological resources.	Potential impacts the same as those for Alt I.	Potential impacts the same as those for Alt I.
Environmental Justice	Disproportionately high adverse environmental and health impacts to Alaska Iñupiat Natives would occur via impacts to subsistence, sociocultural systems, and health.	This deferral area would result in the most distance between the coastline and the near-shore leases, further reducing the potential for impacts to subsistence resources and harvest areas, and thereby reducing the potential for disproportionate, high impacts to Iñupiat communities.	This deferral area would increase the distance between the coastline and near-shore leases as compared to Alt. I, reducing the potential for impacts to subsistence resources and harvest areas, and thereby reducing the potential for disproportionate, high impacts to Iñupiat communities.

If it were to occur, a VLOS event could cause significant adverse environmental impacts to many of the environmental resources in the Chukchi Sea region. The majority of environmental resources are anticipated to recover over the long term, although recovery in the Arctic ecosystem may take longer than in other regions such as the Gulf of Mexico. Some vulnerable animal populations could suffer lasting, population-level impacts under certain circumstances. Long-term reductions in local animal populations would disrupt subsistence-harvest patterns and displace sociocultural systems. While intervention, response and cleanup efforts could mitigate spill volume and certain environmental effects, the significant and perhaps irreversible adverse impacts associated with a VLOS event in the Chukchi Sea highlight the need for effective spill prevention and response capabilities.

To that end, and in response to the Deepwater Horizon blowout and resulting oil spill in the Gulf of Mexico, BOEMRE (now reorganized into BOEM and BSEE) has undertaken an aggressive overhaul of the offshore oil and natural gas regulatory process to increase safety and improve responsible oil and gas development while reducing the probability of spills. The reforms strengthen requirements for everything from well design and workplace safety to corporate accountability in order to minimize the risk that an oil spill will occur and to require effective response measures in the unlikely event of a blowout. These additional measures are described below.

NEW REGULATORY REQUIREMENTS AND PROVISIONS SINCE SALE 193

Following the Deepwater Horizon event, BOEMRE promulgated and implemented new rules, standards, and guidance to strengthen safety, spill prevention, and subsea containment and spill response. DOI has also implemented structural reforms and changes to improve the effectiveness of offshore oil and gas oversight. These new standards and reforms are briefly described below.

Enhanced Drilling Safety

- Permit applications for drilling projects must meet new standards for well-design, casing, and cementing, and be independently certified by a professional engineer per BOEMRE's new Drilling Safety Rule⁵. BOEMRE strengthened drilling standards in the exploration and development stages, for equipment, safety practices, environmental safeguards, and oversight. The Drilling Safety rule includes strengthened requirements for well control equipment including blowout preventers (BOPs) and the control systems that activate them.
- Operators must demonstrate that they are prepared to deal with the potential for a blowout and worst-case discharge per 2010 NTL-06⁶. This includes submitting well-specific information (in conjunction with Exploration Plans, Development and Production Plans) that includes:
 - An estimated flow rate, total volume, and maximum duration of the potential blowout;
 - A discussion of the potential for the well to bridge over, the likelihood for surface intervention to stop the blowout, the availability of a rig to drill a relief well, and rig package constraints;
 - Estimates of the time it would take to contract for a rig, move it onsite, and drill a relief well; and
 - A description of the assumption and calculations used to determine the volume of a worst case discharge scenario.
- New guidance, through 2010 NTL-10⁷, requires a corporate compliance statement and review of subsea blowout containment resources for offshore drilling.

Enhanced Workplace Safety

- RE imposed requirements that offshore operators maintain comprehensive safety and environmental programs. This includes performance-based standards for offshore drilling and production operations, including equipment, safety practices, environmental safeguards, and management oversight of operations and contractors. Companies will now have to develop and maintain a Safety and Environmental Management System (SEMS)⁸ per BOEMRE's Workplace Safety criteria.

⁵ Enhanced Drilling Safety interim final rule published in the Federal Register on October 14, 2010 (75 FR 63346).

⁶ 2010 NTL-06 became effective June 18, 2010.

⁷ 2010 NTL-10 became effective Nov. 9, 2010.

⁸ Safety and Environmental Management System final rule published in the Federal Register on October 15, 2010 (75 FR 63610).

Taken together, the reforms will help ensure that operators on the United States OCS can safely and responsibly develop oil and gas resources. BOEM and BSEE are enforcing these enhanced safety standards and are working with companies to ensure compliance.

Re-organization

To ensure more focused, proactive oversight and enforcement of offshore oil and gas development requirements, on October 1, 2011, BOEMRE separated its offshore resource management and its safety and environmental enforcement roles into separate, independent organizations:

- The Bureau of Ocean Energy Management (BOEM) will be responsible for managing development of the nation's offshore resources, including oil, gas and renewable resources.
- The Bureau of Safety and Environmental Enforcement (BSEE) will independently and rigorously enforce safety and environmental regulations.

Ocean Energy Safety Advisory Committee

This committee is a permanent advisory body of the nation's leading scientific, engineering, and technical experts established to provide critical guidance on improving offshore drilling safety, well containment, and spill response.

Recruitment/Inspections

The BOEMRE has been working to expand and enhance its inspection program to ensure that operators are following all laws and regulations and is hiring and training professionals and environmental scientists to develop programs and expand capacity. BSEE will continue to implement this after October 1, 2011.

Interagency Working Group on Coordination of Domestic Energy Development on Permitting in Alaska

In addition to the steps above initiated by DOI and BOEMRE, President Obama announced on July 12, 2011, the formation of a new, high-level interagency working group to coordinate on energy development in Alaska. Through Executive Order No. 13580, President Obama established the Interagency Working Group on Coordination of Domestic Energy Development and Permitting in Alaska to help ensure the safe, responsible, and efficient development of oil and natural gas resources in Alaska, both onshore and on the Alaska OCS, while protecting human health and the environment, as well as indigenous populations. The Interagency Working Group includes senior officials from the Departments of the Interior, Defense, Commerce, Agriculture, Energy, Homeland Security, the Environmental Protection Agency, and the Office of the Federal Coordinator for Alaska Natural Gas Transportation Projects. The central tasks of the working group are to: facilitate orderly and efficient decision-making processes with cross-agency collaboration regarding the evaluation of permits and the conduct of rigorous environmental reviews; foster a coordinated approach to collaboration with stakeholders outside the federal government; ensure that decisions are

made in light of long-term considerations including oil spill prevention, preparedness and response, and the development of necessary infrastructure to adequately support energy development in Alaska.

ADMINISTRATIVE ACTIONS SINCE SALE 193

Polar Bear: The polar bear was listed as threatened in May 2008, and critical habitat was designated in November 2010.

Section 7 of the Endangered Species Act requires federal agencies to ensure that the activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or to destroy or adversely modify its critical habitat. The BOEMRE and the U.S. Fish and Wildlife Service (USFWS) reinitiated Section 7, Endangered Species Consultation on the listing of the polar bear as threatened on June 27, 2008. In September 2009, the USFWS issued a Biological Opinion concluding that consultation. In August 2011, BOEMRE again reinitiated consultation with the USFWS regarding the designation of polar bear critical habitat. The BOEM retains authority under the OCS Lands Act to apply additional mitigation measures on OCS lease activity as necessary to ensure protection of designated critical habitat consistent with the USFWS Biological Opinion. The Biological Opinion is expected prior to the next drilling season, which starts in July 2012. No activity will be permitted or otherwise allowed under the leases until the Biological Opinion is issued.

Ringed and Bearded Seal: The National Oceanic and Atmospheric Administration (NOAA) Fisheries Service is proposing to list four subspecies of ringed seals, found in the Arctic Basin and the North Atlantic, and two distinct population segments of bearded seals in the Pacific Ocean, as threatened under the Endangered Species Act (Federal Register Volume 75, Number 237 (Friday, December 10, 2010)). The proposed listings cite threats posed by diminishing sea ice, and for ringed seals, reduced snow cover. Both species are closely associated with sea ice, particularly during the reproduction and molting stages. NOAA's forecasts predict that this ice will be substantially reduced within this century and there is potential for the spring and summer ice edge to retreat to deep waters of the Arctic Ocean basin. The BOEM is consulting with the National Marine Fisheries Service (NMFS) under Section 7 of the ESA on ringed and bearded seals, and may apply additional mitigation measures on OCS activities to ensure appropriate protection.

Pacific Walrus: The USFWS has determined that listing the Pacific walrus as threatened or endangered species is warranted under the ESA, but that listing is precluded by higher priority species. The "warranted but precluded" finding was published in the Federal Register on February 10, 2011. The Pacific walrus is now designated as a candidate species. The BOEM will continue ongoing informal consultation to ensure that it stays up to date on information related to the Pacific walrus and continues to meet MMPA as well as ESA obligations.

Yellow-billed Loon: The USFWS has determined that listing the yellow-billed loon as a threatened or endangered species is warranted under the Endangered Species Act, but that listing is precluded by other higher priority species. The "warranted but precluded" finding was published in the Federal Register on March 25, 2009. The yellow-billed loon is now designated as a candidate species. BOEM will continue ongoing informal consultation to

ensure that it stays up to date on information related to the yellow-billed loon and continues to meet its ESA obligations.

Essential Fish Habitat Designations: The Northern Pacific Fishery Management Council (NPFMC) Arctic Fishery Management Plan (2009) identified four commercial target species in the Arctic Alaska: Arctic cod, saffron cod, and snow crab (opilio crab). In accordance with the Magnuson-Stevens Fisheries Conservation and Management Act, in July 2011 BOEMRE submitted to NMFS a consultation document addressing the effects of the proposed action.

PUBLIC INVOLVEMENT AND COMMENTS RECEIVED ON DRAFT SEIS AND REVISED DRAFT SEIS

On October 15, 2010, BOEM released the Draft SEIS (dated September 2011) to the public for a 45-day comment period ending November 30, 2010. In November 2010, BOEM held public hearings and government-to-government consultations. BOEM received more than 150,000 email comments and several hundred letters and postcards on the Draft SEIS. On May 27, 2011, BOEM released the Revised Draft SEIS (dated May 2011) to the public with a 45 day public comment period ending July 11, 2011. In June 2011, BOEM held public hearings in affected Alaska communities and government-to-government consultations. By the end of the comment period, BOEM received approximately 360,000 comment letters or cards on the Revised Draft SEIS.

Comments were received from:

- Alaska Native organizations (Native Village of Point Hope, Native Village of Kotzebue, and Iñupiat Community of the Arctic Slope, Alaska Eskimo Whaling Commission, Arctic Slope Regional Corporation, Koniag, Inc.)
- Alaska State and local governments
- Non-governmental organizations (Earthjustice, Northern Alaska Environment Center, Umiaq, Pew Environment Group, Ocean Conservancy, Oceana, Wilderness Society, and others)
- Industry, businesses, and trade organizations (Shell, ConocoPhillips, Statoil, Alaska Oil and Gas Association, Resource Development Council, Fairbanks Chamber of Commerce and others)
- The public at large.

The vast majority of comments were form letters (or derivations) from:

- Individuals associated with environmental groups (e.g., Earthjustice, Alaska Wilderness Society, Alaska Wilderness League, Natural Resources Defense Council, Oceana, National Wildlife Federation, Defenders of Wildlife, etc.) expressing opposition to the sale

or

- Individuals associated with industry, business, or trade organizations (e.g., Consumer Energy Alliance, Labor Union Local 357, Fairbanks, Alaska, etc.) expressing support.

All comments received on the Sale 193 Draft SEIS and Sale 193 Revised Draft SEIS were considered by BOEM in preparing the Sale 193 Final SEIS. Appendix E of the Sale 193 Final SEIS includes a summary of comments, categorized by issue, and BOEM's response.

ARCTIC SCIENCE

BOEM analysts reviewed current scientific literature and identified new information relevant to environmental conditions and resources in completing their analysis in the Sale 193 Final SEIS. This new information was incorporated into the analysis of effects for each resource and is considered in the conclusions reached. In total, analysts reviewed over 230 new studies and reports in reaching their conclusions in the Final SEIS. As part of that review, BOEM analysts examined the June 23, 2011, United States Geological Survey (USGS) report entitled "An Evaluation of the Science Needs to Inform Decisions on Outer Continental Shelf Energy Development in the Chukchi and Beaufort Seas, Alaska." (USGS Report)⁹

The USGS Report was conducted at Secretary Salazar's request, as an independent assessment of the science needed to understand the resilience of Arctic coastal and marine ecosystems to OCS resource development activities. The Secretary asked the USGS to summarize available information, knowledge gaps, and research needed to inform future decisions on energy development in the Chukchi and Beaufort seas. USGS published its report after the Draft SEIS and the Revised Draft SEIS for Lease Sale 193 were published. The report is considered and addressed in the Final SEIS.

The USGS Report examined more than 400 scientific publications, workshop findings, scientific policy documents and web sites, and included information from meetings with more than 40 individuals and organizations that have research or science assessments on Arctic resource issues. The USGS developed over 50 findings and an equal number of recommendations during the course of its examination. One of the report conclusions is that more information is needed on how climate change is impacting physical, biological, and social conditions in the Arctic and affecting resource-management strategies. Because climate conditions in the Arctic have been undergoing remarkable changes, particularly during the last 20 years, USGS asserts that a more refined regional understanding of climate change would help clarify development scenarios. It suggests more scientific focus on (1) physical parameters, such as storm frequency, intensity, and circulation patterns, and (2) species response to environmental change, for which periodic population and distribution surveys could provide key data.¹⁰ The report does not assess what amount of information is necessary at the various stages of the OCSLA decision making process.

In the Sale 193 Final SEIS, BOEM analysts, using the most current information, considered potential effects from climate change including: (1) increased noise and disturbance due to

⁹ Available at <http://pubs.usgs.gov/circ/1370/>

¹⁰ BOEMRE, as well as industry, collect this type of data on an ongoing basis and consider the information gained by new data in its modeling of hypothetical oil spills. BOEMRE data tends to be more regional whereas industry data tends to be more site specific. New information collected is be used in future modeling, as well as the analysis of exploration plans and development plans and production plans; it is also available for oil spill response. Changes in the environment that are ongoing today will be considered by future modeling efforts. The model is updated periodically as new information is collected and available.

increased shipping; (2) decreases in ice cover with potential for resultant changes in prey-species concentrations and species distribution; (3) changes in subsistence-hunting practices; and (4) northward expansion of species. BOEM's cumulative analysis of development impacts accounts for reasonably foreseeable changes to background conditions, including changes associated with climate change.

Analysis in the Final SEIS also addresses potential cumulative impacts associated with ocean acidification. Although the scientific evaluation of the effects of climate change science is continuously developing, and more information on climate change may be available in the future to better predict impacts, this analysis provides sound scientific judgment for a reasoned leasing decision.¹¹ The Final SEIS recognizes that as specific proposals are developed for exploration or development and production, "BOEM would undertake an obligatory review of required exploration and development plans based on the most current environmental information and specific project details." BOEM is continuously acquiring new data to augment analyses for future decision making.

The USGS report also recognizes the importance of oil spill risk assessment, preparedness, and response for any future oil and gas development scenario. While USGS believes there have been significant advances in spill-risk evaluation and response knowledge, it found this knowledge has not advanced to the levels available in the Gulf of Mexico. Specifically, the USGS states that increased data collection for inputs to spill models (oceanographic, weather, ecological) would greatly benefit the decision-making process. The USGS reports that more information is needed for contingency planning and emergency response in the Arctic, especially in view of a changing climate. These USGS report recommendations on oil spill risk, response and impacts are considered in responses to comments received by BOEM on the SEIS (summarized in the Final SEIS, Appendix E, Response to Comments, Issue 33, Very Large Oil Spill (VLOS) Scenario, Issue 34, Oil Spill Trajectory Modeling, Issue 35, Spill Response and Clean Up, and Issue 36, Consideration of USGS Report).¹² The comment

¹¹ BOEM's recently completed OCS studies and planned and ongoing studies, which are identified in the Final SEIS, Appendix E, Response to Comments, Issue 36, Consideration of the USGS Report, will provide the decision-maker substantial information about climate change and identifies areas where Federal agency collaboration and involvement in research will occur and BOEM's mechanism for addressing these needs (i.e., Technical Assessment and Research (TAR) Program). Such studies and collaboration include large scale circulation (USGS Recommendation 3.01), the changing ice regime (USGS Recommendation 3.02), change in coastal geomorphology (USGS recommendation 3.06A), fully integrated climate change models (USGS Recommendation 4.01.A), storm projections (USGS Recommendation 4.01.B), ocean circulation (USGS Recommendation 4.01.C), response of species to changes (USGS Recommendation 4.01.D), climate change trajectory (USGS Recommendation 4.01.E).

¹² BOEM's recently completed OCS studies, together with its planned and ongoing studies, are identified in the Final SEIS. Appendix E, Response to Comments, Issue 36, Consideration of the USGS Report, will provide the decision-maker substantial information about oil spill response and identifies areas where Federal agency collaboration and involvement in research will occur and BOEM's mechanism for addressing these needs (i.e., Technical Assessment and Research (TAR) Program). Coordinated Organization of Spill Preparedness Data (USGS Recommendation 5.01), Updated Spill Data, Reexamination of Statistical Approaches. (USGS Recommendation 5.03), Understand Oil-in-Ice Weathering (USGS Recommendation 5.04), Improve Physical Oceanographic and Meteorological Data (USGS Recommendation 5.06), Develop Mechanical Recovery Systems for Oil Under Ice (USGS Recommendation 5.11), Chemical Analysis of In-situ Burning (ISB) (USGS Recommendation 5.14.A), Dispersants Effects Analysis (USGS Recommendation 5.15), Predict Effectiveness of Dispersant (USGS Recommendation 5.16), Understand Toxic and Sublethal Effects of Dispersants (USGS Recommendation 5.18), and Test Remote-sensing Operations for Spill Response (USGS Recommendation 5.19).

responses explain that BOEM subject matter experts develop reasonable estimates of quantities, timeframes, locations, etc., to provide the public and the decision maker with a basic picture of what an oil spill response and potential response impacts would look like. The existing level of detail in the SEIS accomplishes the goal of assessing the impact of a spill. More precise estimates of weather downtimes, staging area locations, boom deployment locations, and appropriate response techniques are expected to be considered at later decision points relating to site specific analysis of specific proposed activities. Indeed, attempting to incorporate multiple scenarios based on site specific conditions would likely result in unrealistically focused environmental effects analyses at the leasing stage.

BOEM's robust Environmental Studies Program (ESP) in the Arctic has advanced the information base in the Chukchi Sea to a considerable extent since the original lease sale with over 230 new studies considered in this SEIS. The ESP research planning is a highly collaborative process, including interaction with the North Slope Science Initiative, Arctic Council Working Groups, Interagency Arctic Research Policy Committee, and National Oceanographic Partnership Program, and seeks opportunities to coordinate with other groups and entities as appropriate. Since 2007, the ESP has developed a new suite of studies and invested more than \$45 million in new data collection in all the following fields of interest: meteorology, ice dynamics and oceanography, benthic fauna and sedimentation, marine mammals, fish, birds, and social systems. In addition to agency-funded research, other institutions have also continued to expand the knowledge base of ecosystem processes in the Chukchi Sea. The potential to explore and develop domestic oil and gas reserves creates the incentive for existing lessees to continue to acquire additional Arctic information. Indeed, exploration of existing leases has the ability to advance that goal in a measured way. Through research developed and administered by industry, the National Science Foundation (NSF) and academia, and the North Slope Borough (whose research budget was expanded through an agreement with Shell announced October 28, 2010) the scientific knowledge base will continue to grow. This continuing research will inform prospective decisions regarding potential exploration, development and production activities in the Chukchi Sea Planning Area. Although studies are ongoing to acquire additional information relevant to exploration and development in the Chukchi Sea, BOEM subject matter experts found that available information currently exists to reasonably inform a determination of impacts for the Sale 193 leasing decision and that the USGS Report did not disclose any new information on gaps that presented a different picture from that already understood by BOEM.

The BOEM went through the USGS Report issue by issue to determine if the Report identified any knowledge or information gaps of which it was unaware, or which required additional analysis prior to making a decision on Lease Sale 193. The BOEM found, as explained in the Final SEIS, that the USGS Report "serves to validate BOEMRE's annual review of available data and knowledge gaps which identifies studies for funding through BOEMRE ESP [Environmental Studies Program] at the National and Regional levels." Table E-2, Appendix E of the SEIS, identifies ongoing or planned studies that have been initiated, managed, and funded by BOEM Environmental Studies Program or BOEM Technology Assessment and Research (TAR) Program. The table demonstrates how BOEM studies relate to recommendations and identified data gaps of the USGS report. Table E-2 includes (1) the USGS Recommendation Number (from the report), (2) the key concept addressed by the

Additional studies, also listed in Table E-2, will be available as well to the decision-maker should exploration lead to development in the Chukchi.

recommendation, (3) relevant ongoing and planned studies at BOEM, (4) recent relevant BOEM study reports, and finally (5) BOEM comments on the given recommendation. Also in its review, BOEM found that data gaps identified in the USGS report were also identified in BOEM's analysis on missing and incomplete information in Appendix A of the SEIS. In fact, in some instances BOEM found that it had actually already addressed knowledge gaps identified by the USGS. For example, USGS recommendation 3.06.C addresses the need to better integrate local traditional knowledge. The SEIS bibliography identifies eight bibliographic references on traditional knowledge that were used in conducting the Final SEIS analysis. Overall, in its review of the USGS Report, BOEM found the knowledge gaps identified are consistent with BOEM's understanding of the state of the science in the Arctic and did not require additional analysis nor impair a reasoned choice between the alternatives at the lease sale stage.

CONSULTATION WITH NATIVE ALASKAN GOVERNMENTS

BOEM held government-to-government consultations on the Draft SEIS to meet the requirements of Executive Order 13175, Consultation and Coordination with Indian Tribal Governments. The BOEM representative met with the Native Villages of Kotzebue (November 1, 2010), Point Lay (November 3, 2010), Wainwright (November 4, 2010), and Barrow (November 5, 2010), and with the Iñupiat Community of the Arctic Slope (November 5, 2010). No government-to-government consultation was held with the Native Village of Point Hope on the Draft SEIS in 2010 because the village had to cancel the meeting due to conflicts. It was later agreed that a government-to-government consultation would be held in Point Hope in June 2011; that consultation was held and also addressed the Revised Draft EIS.

BOEM held government-to-government consultations on the Revised Draft SEIS with the Native Villages of Kotzebue (June 21, 2011), Point Hope (June 22, 2011), Barrow (June 27, 2011), Point Lay (June 28, 2011), and Wainwright (June 30, 2011); with the Iñupiat Community of the Arctic Slope (June 27, 2011); and also met with members of the Tanana Chiefs Conference (June 23, 2011).

The BOEM analysis in the Final SEIS incorporates the views of Native Alaskan groups based on the consultations and considers the subsistence lifestyle and traditional local knowledge expressed by the Alaska Native people in the local communities.

MITIGATION AND MONITORING

The FEIS for Lease Sale 193, released in June 2007, analyzed seven standard lease stipulations (listed below). All seven of the stipulations were selected by the Secretary and are incorporated into the leases resulting from Lease Sale 193. The complete text of the stipulations is contained in Attachment A. The stipulations include the following subject areas:

- Protection of biological resources
- Orientation program
- Transportation of hydrocarbons
- Industry site-specific monitoring for marine mammal subsistence resources

- Conflict avoidance mechanisms to protect subsistence whaling and other subsistence-harvest activities
- Pre-booming requirements for fuel transfers
- Measures to minimize effects on spectacled and Steller's eiders from exploration drilling

The Sale 193 leases will also be subject to new rules and guidance, which BOEMRE promulgated to strengthen safety and spill prevention following the Deepwater Horizon event. These new rules and guidance, listed below, are discussed in greater detail above and in Attachment B.

- Drilling Safety Rule: This new rule strengthens requirements for safety equipment, well control systems, and blowout prevention practices in offshore oil and gas regulations.
- Safety and Environmental Management Systems (SEMS) Rule: This new rule requires operators to develop and implement a comprehensive SEMS for identifying, addressing, and managing operational safety hazards and impacts; promoting both human safety and environmental protection; and improving workplace safety by reducing risk of human error.
- NTL 2010-N06: This new NTL requires operators to demonstrate that they are prepared to deal with the potential for a blowout and worst-case discharge.
- NTL-2010-N10: This new NTL requires a corporate compliance statement and review of subsea blowout containment resources for offshore drilling.

All practical means to avoid or minimize environmental harm from the alternative selected have been adopted with the selection of the seven stipulations and through the regulations in place. Additional, site-specific mitigation may be deemed necessary by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service to further avoid impacts to species protected by the Marine Mammal Protection Act or to listed species and critical habitat under the Endangered Species Act. No activity associated with the leases issued under Sale 193 will be permitted or otherwise allowed until consultation regarding polar bear critical habitat pursuant to Section 7 of the Endangered Species Act has concluded. Any measures identified by the FWS for protection of polar bear critical habitat will therefore be available for incorporation into any future plan or permit approvals before the 2012 exploration season begins. The BOEM and/or BSEE can also condition any exploration plan approvals on adoption of reasonable measures imposed by the FWS.

SUMMARY

Based upon BOEM's analysis as articulated under the Sale 193 FEIS and Sale 193 SEIS, I have concluded the following relative to the Court's three concerns:

- A. Natural gas development and production would represent only a small percentage of the effects of Sale 193 and would not affect any coastal uses or resources substantially differently than originally described in the Sale 193 FEIS.

- B. There is incomplete or unavailable information about the Arctic and Arctic species, but that information is not essential for a reasoned choice between the alternatives identified in the Sale 193 FEIS.
- C. Because the incomplete or unavailable information is not essential for a reasoned choice among the alternatives for Sale 193, there is no need to determine whether the cost of obtaining the missing information is exorbitant or the means of doing so is unknown.

Relative to BOEM's VLOS analysis, I have concluded the following:

- A. There is a low probability that a VLOS event will occur as a result of this lease sale.
- B. If a VLOS event were to occur, it could cause significant adverse environmental impacts to most of the examined environmental resources in the Chukchi Sea region. While the majority of environmental resources are anticipated to recover over the long term, some vulnerable animal populations could suffer lasting, population-level impacts under certain circumstances.
- C. Long-term reductions in local animal populations could cause disruptions to subsistence-harvest patterns and sociocultural systems.
- D. While intervention, response, and cleanup efforts could minimize spill volume and mitigate certain environmental effects, the significant and perhaps irreversible adverse impacts associated with a VLOS event in the Chukchi Sea highlight the need for effective spill prevention. Since the Deepwater Horizon event, BOEM has taken a hard look at existing safety technologies and practices, and implemented a number of new regulations to improve the effectiveness of government oversight of offshore energy exploration and development and spill response. These changes in safety, accident prevention, blowout containment, and spill response are substantial and necessary; they significantly minimize the likelihood and magnitude of adverse environmental impacts.

Accordingly, based upon the above conclusions, I am prepared to make a decision concerning Lease Sale 193. The Court has directed that I reexamine Lease Sale 193 for the purposes of affirming the sale, canceling the sale, or modifying the sale. My decision concerning Sale 193 entails consideration of many important factors, including:

- **Potential environmental impacts.** The Sale 193 FEIS and Sale 193 SEIS analyze potential effects to nearly 20 distinct environmental resources. My decision-making process places particular emphasis on the environmental resources most valued by stakeholders, namely subsistence-harvest patterns, threatened and endangered species, other marine mammals, and the economy.
- **The results of Sale 193.** In accordance with the District Court's remand Order, the Sale 193 SEIS reevaluates the original Lease Sale 193 decision in light of

supplemental information and analysis. The same alternatives analyzed in the Sale 193 FEIS, including alternatives contemplating large deferral corridors, are carried forward for analysis in the Sale 193 SEIS. The environmental analysis in the Sale 193 SEIS is not limited to the results of Sale 193 (i.e., which parcels are leased and which parcels are not leased). However, the actual locations of the leases are relevant to aspects of this decision.

- **National energy policy.** The decision regarding Sale 193 implicates issues beyond the Chukchi Sea region and the scope of NEPA analysis. The OCSLA identifies the OCS as a vital national resource that should be available for expeditious and orderly development, subject to environmental safeguards, in a manner which is consistent with the maintenance of competition and other national needs. Reducing the Nation's reliance on imported oil and gas is an important issue that must be considered in this matter.

A decision to affirm Lease Sale 193 preserves the opportunity to explore and possibly develop the leases issued in Chukchi Sea Lease Sale 193. This option is Alternative IV, the Preferred Alternative, analyzed in the Sale 193 FEIS and Sale 193 Final SEIS. Alternative IV would include all the same terms, conditions and stipulations as specified for the Sale 193 under the Final Notice of Sale, issued January 2, 2008. A decision to affirm the sale would expose the marine, coastal, and human environment of the Chukchi Sea to potentially harmful environmental effects from offshore oil and gas development and production, but these effects all appear manageable because of the applicable laws, regulations, and stipulations that apply to the Chukchi Seas leases.

A decision to cancel Lease Sale 193, analyzed in the Sale 193 FEIS and Sale 193 Final SEIS as Alternative II (No Lease Sale), would result in no offshore exploration, development, or production from the leases awarded in Chukchi Sea Lease Sale 193. Alternative II would be the environmentally preferred alternative for the program area under NEPA because none of the potentially harmful environmental effects of OCS activities to Alaska's marine, coastal, and human environment from offshore oil and gas development and production would occur, including to valuable subsistence resources and the lives of local residents. Moreover, if the sale is cancelled there would be significant costs associated with cancelling the Sale 193 leases and none of the potential economic benefits from oil and gas leasing would accrue to local communities, the North Slope Borough, the State of Alaska, and the Federal Government.

A decision to modify Lease Sale 193 would involve deferring additional areas from leasing. One of the alternatives considered by BOEM under Sale 193 FEIS and the Sale 193 Final SEIS was Alternative III (Corridor I Deferral), which would have removed 9.1 million acres from the proposed lease sale area had it been adopted. The deferral area under Alternative III extends outward 60 miles or more along the coastline. Of the 487 leases issued as a result of Lease Sale 193, only 12 leases actually lie within the Alternative III deferral area. These 12 leases all lie on the seaward edge of the deferral area. In essence, if these 12 leases are removed from the sale, it would result in moving the nearest possible lease activity from approximately 52 miles from the coast to about 64 miles from coast.

If I decide to affirm Lease Sale 193, exploration and development could lead to significant increases in domestic oil and gas production, and yield substantial Federal and state revenue from OCS lease payments, taxes, and other fees associated with the increase in economic activity. Chukchi development and the availability of associated infrastructure could also complement the development of fields in the NPR-A, which this Administration has made a high priority. Chukchi development could also help keep the Trans-Alaska Pipeline operating beyond the time in which it would otherwise shutdown if declining oil production from Prudhoe Bay and other North Slope fields is not replaced. Exploration and development activity in the Sale 193 area offers the potential for significant employment in connection with offshore activities as well as related infrastructure projects, which may significantly benefit the local and state economies. Taken together, the economic benefits could be significant both within the region and nationwide.

If I decide to cancel or rescind the sale, the Department would have to find it was in error in issuing the leases. To do this, the Department would have to refund over \$2.662 billion in high bonus bids and all rental monies collected to date.

If I decide to modify Lease Sale 193, one option would be to cancel the 12 leases lying within the Corridor I Deferral area. The deferral included subsistence areas used for hunting bowhead whales, beluga whales, and walruses; and critical habitat for the threatened spectacled and Steller's eiders. The deferral was developed, in part, as a potential way to reduce conflicts between subsistence users and oil and gas operations by moving leasing further offshore. Although Alternative III (Corridor I Deferral) was not selected for Sale 193, the area was protected by mitigation measures required in applicable lease stipulations. There are seven lease stipulations in effect for the Sale 193 leases, including mitigation measures specifically applicable to all leases in the Corridor I area. Stipulation 4 requires lessees proposing to conduct exploration operations, including ancillary seismic surveys, on a lease within the deferral area during periods of subsistence use related to bowhead whales, beluga whales, ice seals, walruses, and polar bears, to conduct a site-specific monitoring program approved by BOEM. All other Sale 193 mitigation stipulations also apply to Corridor I leases, and address a range of issues, including but not limited to protection of biological resources and measures to minimize the effects to Spectacled and Steller's eiders during exploration activities.

All stipulations are subject to agency enforcement actions in the event of noncompliance, including the assessment of civil penalties, shut in of the facility, or the suspension of operations. The agency may also seek judicial relief, such as court orders for specific performance of the contract obligation.

The 12 leases that would be canceled if I select this option were sold for just over \$2.2 million. Adopting Alternative III as an option, however, is unlikely to notably change the overall environmental protection scenario for the Sale 193 area, as the 12 leases in Corridor I comprise a relatively small share of the total area, lie to the extreme seaward edge of the deferral area, and will only decrease the distance from shore of the closest possible oil production activity from 64 miles to 52 miles. Also, while comments received on the Sale 193 FEIS and Sale 193 Final SEIS documents expressed a general preference for selecting the Corridor I deferral area, none offered a rationale or analysis regarding the marginal benefit of the Corridor I deferral, given the small number of leases issues in that corridor.

Many of the significant environmental impacts identified by FEIS and Final SEIS are associated with shore-based facilities and the pipeline if the leases ever reach the production phase of oil and natural gas development. The BOEM has existing stipulation measures which will require a lessee filing a development and production plan to protect the resources that may be potentially significantly impacted. Specifically, Stipulation 2 ensures that all workers associated with the leases will receive an orientation to increase their sensitivity to the Iñupiat culture in order to avoid sociocultural impacts. Additionally, Stipulation 5 requires lessees to conduct activities in a manner that does not cause unreasonable conflicts between lease activities and subsistence activities. These mitigation measures will be a good starting point in mitigating any potential impacts. The BOEM will also use the intervening years before production could occur to analyze potential mitigation measures to reduce the impact of shore-based facilities and pipelines on subsistence harvest patterns and on sociocultural systems. If a lessee submits a development and production plan, BOEM will have an opportunity to again balance the impacts to the Native Villages, considering the new mitigation measures possible, with the benefits of increased oil and gas production from this frontier region.

Because oil and natural gas will remain crucial to meeting national energy needs, developing domestic reserves in the Chukchi Sea will help augment the Nation's energy supplies and contribute significantly to the Nation's energy security, helping to meet President Obama's goal¹³ of cutting oil imports by a third by 2025, in part by increasing safe and responsible domestic oil production.

DETERMINATION

The OCS is a vital national resource reserve held by the Federal Government for the public, which should be made available for expeditious and orderly development, subject to environmental safeguards, in a manner which is consistent with the maintenance of competition and other national needs (OCS Lands Act §1332). In keeping with this Congressional policy and upon further review and analysis, I believe BOEM has fully considered the potential effects of this action, considered potential mitigation of these impacts through deferral of sensitive offshore acreage and stipulations attached to the leases, and has rationally articulated the relevant factors in selecting the agency's preferred alternative. Looking at all of factors together, I conclude that the benefits from affirming the lease sale outweigh the potentially harmful environmental effects analyzed in the Sale 193 FEIS and Sale 193 Final SEIS. I arrive at this determination having considered the immediate and lasting improvements BOEMRE has made in drilling safety, spill prevention, and spill response, and also having considered the importance of developing reliable domestic sources of energy to the security and economic health of the Nation. Accordingly, I have determined that the agency preferred alternative, which is to reaffirm Chukchi Sea Lease Sale 193 in its entirety, including deferrals and stipulations and other environmental safeguards, is in the best interest of the Nation.

¹³ Blue Print for a Secure Energy Future, March 30, 2011.

DECISION

It is my decision to affirm Lease Sale 193 subject to the terms, conditions and stipulations as specified for Lease Sale 193 under the Final Notice of Sale, issued January 2, 2008, with the understanding that no activity under leases issued may be permitted or otherwise allowed until consultation regarding polar bear critical habitat pursuant to Section 7 of the Endangered Species Act has concluded. This decision preserves the opportunity to explore and possibly develop leases issued in Chukchi Sea Lease Sale 193. The decision to affirm Lease Sale 193 is Alternative IV in the Sale 193 FEIS and Sale 193 Final SEIS.

A handwritten signature in cursive script that reads "Ken Salazar". The signature is written in black ink and is positioned above a horizontal line.

Ken Salazar
Secretary of the Interior