

**ALASKA COALITION, ALASKA WATCH, ALASKA WILDERNESS LEAGUE,  
CENTER FOR BIOLOGICAL DIVERSITY, GREENPEACE, EARTHJUSTICE,  
NATURAL RESOURCES DEFENSE COUNCIL, NORTHERN ALASKA  
ENVIRONMENTAL CENTER, PACIFIC ENVIRONMENT, THE WILDERNESS  
SOCIETY, TRUSTEES FOR ALASKA**

December 21, 2006

Mr. John Goll  
Regional Director  
Alaska OCS Region, Minerals Management Service  
2801 Centerpoint Drive, #500  
Anchorage, AK 99503-5823

**RE: Comments on Chukchi Sea Planning Area Oil and Gas Lease Sale 193  
and Seismic Surveying Activities Draft Environmental Impact  
Statement**

Dear Mr. Goll:

I. INTRODUCTION

Our groups have asked that the Chukchi Sea be deleted from the Five-Year Plan. Please incorporate our comment letters on the plan and DEIS by reference. The Chukchi is one of the most productive areas of the Arctic Ocean and provides important habitat for many species of marine mammals, birds and fish. Not only is the Chukchi a productive intact habitat, it is vital to many Native subsistence users who have relied on its resources for thousands of years. The Chukchi is far from existing infrastructure, and it would present many technological challenges.

The Chukchi Sea is Alaska's most pristine Arctic Ocean resource. The region hosts endangered and depleted species, highly productive marine life and rich feeding and subsistence grounds for important marine species and the people who depend upon them. Yet not enough is known about the population, distribution, and behavior of many species in the region to justify the risks associated with OCS leasing, exploration and development. Too little is known about the resources of the Chukchi Sea, and adequate baseline studies are necessary before the Secretary can legitimately consider whether oil exploration and development are appropriate there. Moreover, there is no oil spill response technology available to remediate an oil spill during conditions present in the Chukchi during most of the year.

Marine ecosystems, marine mammals, sea birds, and coastal communities are all at risk from oil spills, noise and other disturbance and habitat impacts, which would inevitably occur during exploration and development. Devastating spills that cannot be cleaned up in broken ice risk endangered bowhead and other whales and migratory birds,

including the threatened spectacled and Steller's eiders. Oil pollution causes direct mortality, increases susceptibility to diseases in fishes, inhibits phytoplankton productivity, and interferes with reproduction, development, growth, and behavior of many species. In addition to the dangers of oil pollution, a number of other potential pollutants are common in offshore oil operations, including the dumping of toxic drilling muds and other chemicals involved in drilling

In addition, we are concerned about the impacts, especially to caribou and subsistence resources and activities, from a new overland pipeline and road across the National Petroleum Reserve-Alaska and other lands for the transport of oil from the Chukchi Sea. This pipeline could cross areas that were deferred from oil leasing under the Northwest NPR-A Integrated Activity Plan/ EIS in recognition of their high biological and subsistence values. The expansion of activity into these important and pristine areas justifies cancellation of Chukchi Sea Sale 193 (DEIS Alternative II, "No Lease Sale,") as well as deletion of the Chukchi Sea Program Area from the entire Five-Year Plan for 2007 to 2012.

## II. OVERARCHING PROBLEMS WITH THE DEIS

### A. MMS Should Not Be Considering Lease Sales in the Chukchi Before Completing the Five-Year Plan for 2007-2012.

Leasing large tracts in the Chukchi Sea represents a major departure from the status quo over the past decade or more and will cause significant impacts to an area where there are currently no active leases. Although public testimony from a multitude of interests have indicated that the current Beaufort leases and onshore development are "too much, too fast, too soon," MMS refuses to address the cumulative impacts of development and instead is pushing forward with an enormous lease sale in the Chukchi Sea. Although there was little interest in leasing this area over the life of the 2002-2007 5-Year Plan, as soon as industry indicated that they would like to prospect the Chukchi, MMS rushed to get out a lease sale as fast as possible. Indeed, MMS is preparing this lease sale before the new 5-Year Plan is complete.

It was not appropriate for MMS to launch this lease sale planning process prior to completion of the pending Five-Year Plan because it is not proposing the "special-interest" focused sale envisioned, described and evaluated in that plan. MMS acknowledges that Sale 193 is beyond the scope of "special interest leasing" option that had been contained in the 2002-2007 Five year plan (DEIS at I-9).

This "cart before the horse" approach is confusing, is an irrational planning process and represents a major shift in current policy. While Lease Sale 193 is purportedly being offered under the 2002-2007 5 Yr. Plan, it represents an area much greater than that envisioned in this plan. DEIS at ES-i To further complicate matters, the proposed 2007-2012 5 Yr. Plan makes reference to different buffer areas and has led to confusion at public meetings in the communities that will face the majority of impacts in these areas. Despite this, and the fact that the most common public comment on the sale was "cancel the sale," DEIS at II-3, MMS continues to fast-track a lease sale that will

cause significant impacts to the ecology and communities of the Chukchi. Even members of the petroleum industry have asked that the sale at least be delayed. DEIS at II-4.

MMS should take the time to address these concerns before rushing Lease Sale 193 out the door.

#### B. General Lack of Information.

One of the most striking aspects of the draft EIS is the glaring lack of information for most fish and wildlife, ecological and cultural (human) resources and synthesis of the relevant information necessary for evaluating environmental impacts of oil and gas exploration and development. While the Chukchi is known to be a productive Arctic Ocean area, shockingly little is known about its resources. As a result of this absence of baseline data, the EIS does not serve its intended purpose of informing the public and decision maker of the impacts of the proposal. There should be no leasing in the Chukchi until better information is available.

While there was initial information collected in the late 1970's and early 1980's under the OCSEAP program, current surveys and comparisons with past data are necessary to establish the current conditions for pre-leasing and post-lease baseline studies required by OCSLA. This is especially crucial since rapid changes caused by global warming may render much of the data used by MMS for its description of the existing environment as well as in the impact analysis inaccurate as a baseline or for predicting post-lease impacts regarding fish and wildlife population numbers and trends, migrations, habitat use, subsistence resources and use, and cultural and other human impacts. Existing ecological relationships are also not well presented.

The conclusions of low and minor impacts asserted in the Executive Summary are substantially inappropriate given the MMS's own acknowledgement of inability to estimate impacts. Thus, the conclusions must be assumed to be politically motivated versus based on established scientific analysis.

The plan to lease the Chukchi Sea is particularly improvident given the lack of baseline scientific data, and fails to admit the significance of this lack of basic information. The Chukchi Sea EIS could not be considered scientifically thorough and many of its conclusions are also unwarranted given this lack of baseline scientific data. Given the inadequate science, one must conclude that the lack of baseline abundance, distribution, and behavior knowledge of most species in the Chukchi results would result in an inability for industry or MMS to monitor population changes or impacts. Moreover, the conditions in the Chukchi make development there more risky and risks more uncertain. As the draft EIS notes "no platform . . . has operated in environmental conditions equivalent to the Chukchi shelf." DEIS at IV-13.

Lack of baseline information would make it difficult to identify "special biological communities" that MMS states it will require industry to avoid. MMS states repeatedly (see, e.g., DEIS at IV-62-68, IV-372, V-20) that significant impacts could occur if development takes place near these special biological communities. MMS further

states that “The future MMS and the Corps’ review of proposals for offshore platforms and pipelines would make sure that the facilities avoid special biological communities....” DEIS at IV-68. However, the significant lack of baseline data would make locating these communities nearly impossible, except for those areas that are known currently. At the MMS Workshop on COMIDA (November 1-3, 2006) agency scientists had virtual consensus on the need for baseline data for most marine species utilizing the Chukchi. Data needed included a basic inventory of new species, particularly whale, that are moving into the region due to climate change; abundance of all species; distribution data for most species; and behavioral data, including calving and feeding areas, particularly for endangered species such as the bowhead.

The examples of unknowns are staggering. For instance, in the case of fish, the draft EIS reveals,

several data deficiencies remain. Information of current distribution and abundance . . . estimates, age structure, population trends, or habitat use areas are not available for fish populations in the northeast Chukchi Sea.

DEIS at III-28. The draft EIS goes on to note that “another important data gap is the lack of information concerning discrete populations for arctic fishes.” Id. Moreover, [s]everal species are known only from a single specimen of each species; others are known from perhaps a handful of specimens collected years to decades ago. Population information is entirely lacking for such species.” Id.

The catalogue of unknowns goes on. The draft EIS lists the current status of the following species in the Chukchi as unknown:

- black-legged kittiwake
- northern fulmar
- parakeet, least and crested auklets
- black guillemot
- ivory gull
- Arctic tern
- Kittlitz’s murrelet

Baseline information, including mapping of current habitat use is necessary for the analysis of potential impacts on these species, many of which feed in the proposed Sale 193 area and nest in the adjacent Chukchi Sea units of the Alaska Maritime National Wildlife Refuge – including the “Ann Stevens- Cape Lisburne” sub-unit, Cape Thompson and Chamisso. Under the Alaska National Interest Lands Conservation Act, this refuge’s purposes include fulfilling the international treaty obligations of the United States, including treaties for the conservation of whales, polar bears, and migratory birds, yet this issue was ignored by the DEIS. Description of national parks, preserves, refuges and conservation system units and special areas such as Kasegaluk lagoon that may be affected directly or through cumulative effects need to be provided in the existing environment section.

The maps of feeding areas for Common and Thick-billed murre colonies at Cape Lisburne and Cape Thompson fail to identify the fact that these two areas are Chukchi Sea units of the Alaska Maritime Refuge (Fig. III.B-7). Furthermore, neither trends in habitat use nor past and current use is provided.

There are no reliable estimates of the stocks of ringed seals, spotted seals, ribbon seals, polar bears, Pacific walrus, and minke whales or information on their current feeding, resting, and migration habitats. Pacific Right whale use of the Chukchi Sea should also be addressed. Current maps of gray whale, Pacific walrus, beluga, polar bear, and other marine mammal feeding and migration areas are needed. Recent information should be compared with past information on benthic feeding areas for Gray whales and walrus, including important areas for these species in the Chukchi polynya and sea ice edge (see maps in Phillips, R.L. 1987, Summary of geology, processes, and potential geohazards in the Northeastern Chukchi Sea at 21-31 in: D.A. Hale (ed.), Chukchi Sea Information Update. NOAA Ocean Assessments Division, Alaska Office. (OCS Study MMS 86-0097)).

Wildlife habitat data for the Chukchi Sea was also synthesized and mapped in the past (see Marine Mammals in Arctic Alaska, Land Mammals of Arctic Alaska, and Birds of Arctic Alaska in P.A. Miller, D.A. Smith, and P.K. Miller, 1993, Oil in Arctic Waters: The untold story of offshore drilling in Alaska. 122 pp).

Even in the case of the endangered bowhead whale many crucial facts are unknown. For instance, it is unknown whether some of the population summers in the Chukchi. Moreover, “there are major question about bowhead whale feeding that remain to be answered.” DEIS at III-48. In the end, MMS’s conclusion for all marine mammals is that “because lack of data on marine mammal distributions and habitat use in offshore areas of the Chukchi Seas, it is uncertain what the level of effects would be in offshore areas.” DEIS at II-40. This type of conclusion undermines NEPA’s goal of encouraging informed decision making and it is contrary to OCSLA’s requirements for pre-leasing and post-leasing data. In the absence of basic information, MMS should not go ahead with its leasing plan.

In terms of monitoring and mitigating impacts, without key information, such as distribution, abundance and breeding area knowledge, it is not possible to know how species are adapting their behavior or what the impacts are. Requiring industry to monitor when there is no baseline data or historical data to compare current findings with would render monitoring plans worthless in terms of assessing impacts. The draft EIS states, “Population-monitoring studies for key species need to be implemented in areas where significant industrial activities are likely to occur, so that it will be possible to compare future impacts with historical patterns and thus determine the magnitude of any potential effects.” Draft EIS at \_\_\_\_\_. While such studies are advisable, and required by OCSLA, MMS’s premise-- that an adequate baseline can be established--is incompatible with the current leasing schedule. MMS and other agencies confirmed the lack of baseline data at the science meetings in November of 2006. Therefore, the EIS fails to effectively acknowledge the significance of missing or insufficient data on the abundance,

distribution, foraging and breeding behavior of numerous species. In sum, the EIS fails to adequately assess potential impacts and cannot possibly estimate population level impacts or significant impacts.

The map of caribou calving areas (Fig. III.B-4) referred to in the text (DEIS p. III-84) actually shows bowhead whales. Caribou insect relief habitat is also critical and up to date and historical information should also be shown.

The DEIS contains inadequate information about affected physical environment in the Chukchi Sea as well as explanations of how physical hazards to oil and gas activities, including existing marine and coastal oceanographic conditions; sea ice (including changes in pack ice, shorefast ice, and various broken ice conditions); air temperature; precipitation; wind speeds; hydrological factors including freshwater drainage into ocean and sources of fresh water human and industrial uses; existing air quality including greenhouse gas emissions; existing water quality; various hazards including earthquakes, streudal scour, pressure ridge, gravel, coastal current sand; rates of current shoreline erosion, subsea and tundra permafrost and rates of melt, and climate change trends for all these conditions; potential petroleum resources; and potential renewable energy resources.

There is also no integration of any of the important physical features, such as sea ice, with fish and wildlife habitat use, such as populations of Pacific walrus and other species and how this is changing over time. Little physical information is mapped, and what is presented is either outdated (without the context of maps derived from new data for comparison of conditions given climate change), e.g. ice gouge density map is from 1982 and 1987 (Fig.III.A-4) or incomplete (some data on ice leads shown in Fig. III.A-14 does not include the entire Chukchi Sea area, may obscure the actual physical conditions of leads during any one season, and does not make a comparison with earlier ice conditions). Some examples of existing information include:

Alaska Department of Environmental Conservation, 2006, *North Slope Nearshore and Offshore Breakup study literature search and analysis of conditions and dates*. Summary only: <http://www.dec.state.ak.us/spar/ipp/docs/IceTOC.pdf> (Accessed December 21, 2006); CD available from ADEC Anchorage.

Zhang, X. and J.E. Walsh, 2006, Toward a seasonally ice-covered Arctic Ocean: Scenarios from the IPCC AR4 Model simulations. *Journal of Climate*, Vol. 19: pp. 1730-1747.

Subsistence use areas are not shown for Barrow, Atqasuk, Wainwright or Point Lay in the DEIS (Map 4 refers to web links for information about these communities but does not synthesize the current information for the DEIS). It is impossible for a reader without a high speed internet connection to use this information. Furthermore, based on a random check of links this one was not working on December 21, 2006 ([http://www.co-north-slope.ak.us/acmp/resource\\_atlas.htm](http://www.co-north-slope.ak.us/acmp/resource_atlas.htm)).

Even though impacts on subsistence are a major issue for local Inupiat communities, as well as of national concern as an environmental justice issue and due to

ANILCA title 8 and subsistence purposes of the Alaska Maritime refuge, there is inadequate basic information provided about these resources so that a credible analysis of effects of oil and gas activities on these resources could be done. The lack of mapped fish and wildlife, environmental and subsistence resource and use data, as well as such information with overlays of expected oil and gas activities, renders the EIS inadequate. Such techniques of presentation of information are standard practice, even by MMS in the past. Mapped information is readily understood by the general public. There were no maps in the executive summary showing the proposed alternatives or resources at stake, nor was a short summary document even produced for wide public distribution to local communities or the general public.

Furthermore taxpayers are already spending funds to compile such information including for Barrow subsistence for the stated purpose of MMS's "evaluation of potential effects of OCS exploration and development in the Beaufort Sea OCS region, as needed for future Environmental Assess and Environmental Impact Statement analyses," (Braund, S.R., et al. 2005, Subsistence mapping Nuiqsut, Kaktovik, and Barrow. Pp. 111 – 112 in: Alaska OCS Region, Tenth information transfer meeting and Barrow information update meeting: Final Proceedings, OCS Study MMS 2005-036.). That said, it is essential that such information be presented within the proper context, as discussion at that presentation indicated that lifetime subsistence use areas must be shown on maps if "contemporary subsistence use" is portrayed.

There is a lack of information in the draft EIS's discussion of the existing environment on subsistence uses in Russia and Canada that depend on potentially impacted Chukchi Sea resources such as Bowhead whales. In addition the cumulative impacts of such oil and gas activity on these communities need to be described. Some relevant past studies include Myrmin, M.I., The Communities of Novoe Chaplino; Serenkiki, Uelen, and Yanrakinnot, and H.P. Huntington. 1999, *Traditional knowledge of the ecology of beluga whales in the Northern Bering Sea, Chukotka, Russia*. Arctic, Vol. 52(1): pp. 62-70; Justice Thomas R. Berger, 1977, *Northern Frontier, Northern Homeland: The Report of the Mackenzie Valley Pipeline Inquiry*.

Baseline data on existing changes to subsistence resources and uses and predictions of future changes caused by climate change need to be included. While the short, generalized paragraph regarding traditional knowledge on climate change in the entire Bering Sea and Chukchi Sea regions (DEIS p. III-9) introduces the topic, information for each local community is also needed, as well as for the marine and coastal waters in order to conduct an impact analysis. See sources we list in the climate change section.

### C. The DEIS Does Not Adequately Address Mitigation Measures.

Under NEPA, an agency must describe and analyze the effectiveness of proposed mitigation measures. See 40 C.F.R. § 1502.16(h) (stating an EIS "shall include discussions of ... [m]eans to mitigate adverse environmental impacts"). "The requirement

that an EIS contain a detailed discussion of possible mitigation measures flows both from the language of the Act and, more expressly, from CEQ's implementing regulations." Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 351 (1989). "Mitigation must 'be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated.'" Neighbors of Cuddy Mountain v. United States Forest Serv., 137 F.3d 1372, 1380 (9th Cir. 1998) (quoting Carmel-By-the-Sea v. United States Dep't of Transp., 123 F.3d 1142, 1154 (9th Cir. 1997) (quoting Robertson, 490 U.S. at 353)). The proposed mitigation measures and their analysis in the draft EIS fall short in many respects.

Most notably, the draft EIS admits "the potential mitigation measures for various resources associated with the Chukchi Sea were identified for some resource categories but not included for analysis in this EIS." DEIS at II-5. This is a blatant violation of NEPA law. See, e.g., Neighbors of Cuddy Mtn., 137 F.3d at 1380.

Where mitigation measures are discussed, there is a lack of analysis and an over reliance on their effectiveness. In the case of oil spill response technology, there is no effective oil spill clean up technology. The only technology MMS cites as being practicable for removing oil from broken ice conditions is in situ burning. This method has serious environmental impacts, none of which are dealt with in the draft EIS. If these measures are expected to be allowed, as clearly they are by their repeated citation in the draft EIS (DEIS at IV-37, 46, 52, 226), then the draft EIS must include analysis of their impacts. Given the lack of effective oil spill clean up methods, MMS should not continually rely on the future oil spill response plans as mitigation.

In many areas, MMS states that mitigation will consist of monitoring requirements and the agency makes reference to "adaptive management". As discussed above, however, there is a dearth of information on the resources of the Chukchi. Without baseline data, monitoring is nearly meaningless and adaptive management is impossible.

Mitigation and monitoring activities are a clearly mandated component of leasing programs under the OCSLA. Accordingly, the design, impacts of the measures themselves, such as aerial flights or other vessel traffic, and effectiveness of these measures need to be comprehensively assessed in the public NEPA review of the proposed lease sales and seismic survey activities. Yet, even for the most controversial resources, such as endangered bowhead whales, only vague references to past EIS stipulations are given (DEIS at II-30). Those past plans did not have requirements for monitoring during the development phases.

This past open-water season, ConocoPhillips Alaska Inc. (CPAI) conducted seismic testing in the Chukchi without monitoring the 120 dB exclusion zone for cow/calf pairs that was required to mitigate impacts on the bowhead whale. CPAI received a preliminary injunction from the United States District Court for the District of Alaska after arguing, in part, that aerial monitoring of the Chukchi was too difficult.

Clearly these are controversial issues that should be addressed in the draft EIS on the proposed lease sale.

MMS clearly realized that it needed additional information for Chukchi Sea leasing activities when it held the workshop titled “Chukchi offshore monitoring in drilling area” on November 1-3, 2006 in Anchorage. MMS described the purpose of this workshop “to review existing research; to identify information needs; and to recommend research monitoring concepts, experimental designs, and scope of field studies to address MMS needs for environmental monitoring of potential Outer Continental Shelf oil and gas exploration and development,” in its “Notice of MMS Workshop.” This workshop therefore covered issues rightly to be addressed in the NEPA DEIS, such as mitigation, necessary monitoring, etc. MMS’s workshop was held after the DEIS had been released to the public, did not have required public notice in the Federal Register, and as we understand it, there was no attendance by local community representatives (except a paid representative of Shell Oil). The proceedings of this meeting were not available for consideration in our review of the DEIS. Workshop observers noted that the scientists discussed the lack of ecological information for the Chukchi Sea. The OCSLA requires adequate pre-leasing baseline information and post-leasing monitoring of impacts and therefore the NEPA analysis should adequately address these issues given the controversial nature of the lease sale.

Similarly, the National Marine Fisheries Service held the “Arctic Ocean Open Water Seismic Meeting” on October 23-25, 2006, also during the Chukchi Sea Sale 193 *and Seismic Surveying Activities* [emphasis added] draft EIS comment period. This meeting also failed to have a federal register notice, public announcements or invitations. However, it addressed issues of seismic impacts related to leasing programs, and may have discussed cumulative impacts of seismic disturbance on bowhead whales in the Beaufort and Chukchi Seas. Still, that meeting covered bowhead whale impacts, not those of other marine mammals, birds, or fish. Given that National Marine Fisheries Service is a cooperating agency on the Chukchi Sea Sale 193 DEIS, it is incumbent upon the agency to conduct public review and comment as well as agency review as part of the on-going NEPA review. The lack of local outreach and participation by the federal agencies in both of these workshops belies the claims the these past workshops and projects that are not as relevant to Sale 193 analysis of impacts meet Environmental Justice requirements (DEIS at V-83 to 84). Moreover, the results of these recent meetings should have been analyzed in the draft EIS.

#### D. The DEIS Does Not Address the National Need.

MMS fails clearly to describe the national need for the proposed action. It does not show that potential oil and gas production will meet a significant national energy need. It does not even give a prediction of how much oil might be produced. MMS states that “future production from this frontier area is unlikely to ever reach the full economic potential as estimated by petroleum-resource assessments (USDOJ, MMS, 2005) DEIS at IV-7. It fails to explain how the potential “one large oil field” that it assumes will be developed, DEIS at IV-3; IV-7, will make more than a drop in the bucket

of our national energy consumption nor how this justifies the potential damage to the pristine area if a major spill should take place.

MMS states that “After 30 years of leasing in the Alaska OCS, there are no commercial oil or gas fields located on Federal OCS lands (DEIS at V-6). Perhaps it is time to stop wasting federal funds on an ineffective pursuit that causes real environmental justice harm to the Alaska Native people in the region. Given the great distance of the Chukchi Sea from existing production infrastructure of the Trans-Alaska Pipeline, “Sale 193 does not meet OCSLA’s goals for “orderly” development of the OCS. The national interest in the OCS waters also consists of the living resources, and given the lack of current information about the human and biological environment it is currently impossible to conduct the necessary “balancing” of these values of the potential energy resources.

E. The DEIS Does Not Contain An Adequate Analysis of Alternatives.

The purpose of an EIS is to “rigorously explore and objectively evaluate[s] all reasonable alternatives” to the proposed action. 40 C.F.R. § 1502.14(a) (2003). That discussion of alternatives “is the heart of the [EIS],” *id.* § 1502.14, and it “guarantee[s] that agency decisionmakers have before them and take into proper account all possible approaches to a particular project (including total abandonment of the project) which would alter the environmental impact and the cost-benefit balance.” Alaska Wilderness Recreation & Tourism Ass’n v. Morrison, 67 F.3d 723, 729 (9th Cir. 1995) (quoting Bob Marshall Alliance v. Hodel, 852 F.2d 1223, 1228 (9th Cir. 1988); see also Angoon v. Hodel, 803 F.2d 1016, 1020 (9th Cir. 1986) (“[T]he touchstone for our inquiry is whether an EIS’s selection and discussion of alternatives fosters informed decision-making and informed public participation.”) (quoting California v. Block, 690 F.2d 753, 767 (9th Cir. 1982))).

Here, the draft EIS does not foster informed decision making because it does not contain a rigorous analysis of alternatives. The analysis of alternatives III and IV is cursory and based on unclear and unsupported assumptions. Apparently, MMS assumes that there would be the same level of development under these alternatives as for alternative I, but the agency provides no supporting data for the notion that leasing fewer acres will lead to the same level of development. Generally, MMS assumes that the deferral areas will protect resources, but again provides insufficient analysis to support these assumption. The critical importance of the Chukchi polynya and spring lead zone to migrating whales and birds and subsistence harvests is not well explained in either the existing environment section nor is the rationale for the various deferrals provided. Furthermore, it is not clearly documented that either alternative III or IV’s proposed buffer zones would adequately protect these resources from oil industry impacts. As well, the Five-Year plan has a different 25-mile buffer zone that inexplicably was not analyzed in this EIS. In other places in the draft EIS, the agency recognizes that forcing development further offshore can increase some impacts. DEIS at IV-26 (“increased pipeline distances would increase the potential for a pipeline spill and would result in larger pipeline construction impacts.”).

The DEIS needs to consider a renewable energy alternative as this could serve to address the national need for sustainable energy in remote, Native American tribal communities, a clearly unmet national need. A useful source is Alaska Energy Authority and Renewable Energy Alaska Project. 2006. Renewable energy atlas of Alaska: A guide to Alaska's clean, local and inexhaustible energy resources. Furthermore, MMS now has statutory authority over renewable energy resources on the OCS and a plan for the Chukchi Sea should also address these resources. The draft EIS needs to consider a carbon reduction alternative, in order to address the national need to reduce greenhouse gas emissions and solve global warming.

## F. The Cumulative Impacts Analysis Is Inadequate.

NEPA requires that the EIS take a hard look at the cumulative impacts on the environment of activities occurring pursuant to Lease Sale 193. 40 C.F.R. § 1502.1; 40 C.F.R. § 1508.7. Cumulative impacts result “from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions,” and “can result from individually minor but collectively significant actions taking place over a period of time.” 40 C.F.R. § 1508.7. The DEIS fails to provide an adequate cumulative impacts analysis in several respects.

The draft EIS section devoted to cumulative impacts contains a perfunctory analysis that fails to fulfill NEPA’s “hard look” requirement. “Although the FEIS contains sections headed ‘Cumulative Impacts,’ in truth, nothing in the FEIS provides the requisite analysis. . . . [I]t makes only conclusory remarks, statements that do not equip a decisionmaker to make an informed decision about alternative courses of action or a court to review the Secretary’s reasoning.” NRDC v. Hodel, 865 F.2d at 865 F.2d 288, 298 (D.C. Cir. 1988). The courts have repeatedly held that the duty to consider cumulative impacts is fulfilled only when the agency takes a “hard look” at the environmental consequences of the various actions. See, e.g., Neighbors of Cuddy Mountain, 137 F.3d at 1379 (agency must take “hard look” at cumulative impacts); Hodel, 865 F.2d at 298 (cumulative impacts analysis must be sufficiently detailed to “equip a decisionmaker to make an informed decision about alternative courses of action . . . .”); North Slope Borough v. Andrus, 642 F.2d 589, 599 (D.C. Cir. 1980) (agency must take “a good ‘hard look’ at the pertinent environmental questions”). To satisfy this requirement, a cumulative impacts analysis must contain “quantified or detailed information,” Neighbors of Cuddy Mountain v. U.S. Forest Serv., 137 F.3d 1372, 1379 (9th Cir. 1998), and should include supporting “references to scientific studies and other materials so that a decisionmaker would have ready access to the information underlying the Secretary’s findings and conclusions.” Hodel, 865 F.2d at 300.

The cumulative effects analysis asserts that new technology will mitigate the effects of widespread development on the North Slope and the Arctic Ocean (DEIS at V-4). This assumption is unfounded. First, most of the examples pertain to onshore development. Second, many new technologies have failed to fulfill their promises. For instance, the draft EIS refers to “roadless” development as a new onshore technology that can reduce environmental impacts. Presumably this is a reference to the Alpine development. What the draft EIS fails to mention is that Alpine, the supposed small footprint oil development, is now being expanded dramatically, becoming a sprawling development that will be connected to the NPR-A by a road and a bridge over the Colville. If a major offshore spill occurs it would have devastating effects and there is no new technology to improve spill response in broken ice or most open water conditions in the Arctic Ocean. Due to global warming the much touted “ice road” technology is now severely limited in duration, (ACIA 2004 at 86) especially given the long travel distances of the Chukchi Sea shores from existing oil and gas infrastructure. Other limitations of the effectiveness of directional drilling, seasonal restrictions and other

mitigations that end up being weakened after initial leasing, are described by P.A. Miller. Broken Promises: The Reality of Big Oil in America's Arctic. <http://www.wilderness.org/Library/Documents/upload/Broken-Promises-The-Reality-of-Big-Oil-in-America-s-Arctic.pdf> (accessed December 21, 2006).

The cumulative case omits consideration of future oil activities from the aggressive leasing plan currently underway in the Beaufort Sea. The draft EIS itself admits that development in the Chukchi would likely encourage a greater level of activity in the Beaufort. DEIS at IV-1 ("Offshore development in the Chukchi outer continental shelf (OCS) would have synergistic effect on the level of offshore activities in the adjacent Beaufort Sea."). This activity could have serious impacts on resources, such as the bowhead whale and Southern Beaufort Sea polar bear population, that use both the Chukchi and Beaufort. Migrating whales could be exposed to multiple noise producing activities. The draft EIS fails to analyze the full cumulative impacts of noise.

Moreover, activities in the Beaufort and Chukchi could expose resources to multiple oil spills. The 5-year Plan DEIS states that up to 5 large spills are assumed to occur from OCS activities in the Alaska OCS.

The draft EIS fails to address the cumulative impacts to fish and wildlife from marine impacts including spills caused by the proposed expansion of the Red Dog Deep-water Marine Terminal. The Sale 193 and cumulative case analysis of subsistence resources and uses and impacts on cultures should include compliance with Section 810 of ANILCA since the proposed oil production relies on an assumed onshore pipeline traversing federal lands including the National Petroleum Reserve Alaska.

The DEIS fails to conduct adequate cumulative impact analysis for marine mammals, especially the combination of global warming and oil and gas exploration and production impacts. Indeed, the draft EIS fails to provide any cumulative impact analysis of Pacific Walrus (DEIS at V-41).

Climate change is another area that should be given more serious consideration in the cumulative impacts analysis. Global warming could have a serious impact on subsistence and human culture and environment beyond the population level effect it could have on various species. According to the NRC, "if migrations of bowhead whales (*Balaena mysticetus*), for example, were to shift farther offshore and if populations of seals near the coast were to be seriously reduced, the consequences for coastal human subsistence cultures could be dramatic." NRC Report at 92. The effect of distribution of subsistence species altered by offshore activities combined with the effects of global warming on subsistence need to be discussed in the cumulative impacts analysis; maps would also be particularly useful to the public understanding of this complicated issue.

In assessing the likely effects of global warming, the EIS also should consider the following sources: Pew Center on Global Climate Change, *Observed Impacts of Global Climate Change in the U.S.* (Nov. 9, 2004); U.N. Environment Programme, *GEO Year Book 2004/5: An Overview of Our Changing Environment* 42-46, 80-84 (2005); National

Academy of Sciences, *Joint science academies' statement: Global response to climate change* (June 7, 2005); The Wildlife Society, *Global Climate Change and Wildlife in North America* (2004), available at [http://www.nwf.org/nwfwebadmin/binaryVault/Wildlife\\_Society\\_Report2.pdf](http://www.nwf.org/nwfwebadmin/binaryVault/Wildlife_Society_Report2.pdf), and Millennium Ecosystem Assessment, *Millennium Ecosystem Assessment Synthesis Report* 119 (Mar. 23, 2005), available at <http://www.millenniumassessment.org/en/products.aspx> (last visited Nov. 16, 2006); Huntington, H.P., and the communities of Buckland, Elim, Koyuk, Point Lay, and Shaktoolik, 1999, Traditional knowledge of the ecology of beluga whales (*Delphinapterus leucas*) in the Eastern Chukchi and Northern Bering Seas, Alaska. *Arctic* 52(1): p. 49-61. This paper and others also describe the high sensitivity of belugas to noise disturbance from boats and other vehicles and traffic.

One example of a relevant type of information that should be considered includes observations of Alaska Native (Yupik) experts from Savoonga and Gambell on marine ice, ice and weather observations, stories, and historical records. See Oozeva, C., C. Noongwook, G. Noonwook, C. Alowa, and I. Krupnik. 2004, *Watching ice and weather our way / Alulka, Tapghaghmii, Mangataaquli, Sunqaanga, Igor Krupnik. Sikumengllu Eslamengllu Eshapallegput*, Edited by Igor Krupnik, Henry Huntington, Christopher Koonooka, and George Noongwook, Washington DC: Arctic Studies Center, Smithsonian Institution. 208. pp.

Another useful reference explaining the magnitude of cultural and environmental change and how it may affect subsistence including in the Barrow area of the Chukchi Sea is Krupnik, I. and Jolly, D. (eds), 2002, *The Earth is Faster Now: Indigenous observations of Arctic environmental Chang*, Fairbanks, Alaska: Arctic Research Consortium of the United States. 384 pp.

Some information based on traditional knowledge gained in the communities is also available in Gibson, M.A., and S.B. Schullinger. 1998. *Answers from the ice edge: The consequences of climate change on life in the Bering and Chukchi Seas*. Anchorage: Arctic Network and Greenpeace. 32 pp.

There is also substantial existing information regarding the effects of coastal erosion on Chukchi Sea communities, including Kivalina, Point Hope and Barrow that was ignored by the DEIS, e.g. GAO 2003. *Alaska Native Villages: Most are affected by erosion and flooding but few qualify for federal assistance*. GAO-04-142. 91 pp. (accessed December 21, 2006, <http://www.gao.gov/new.items/d04142.pdf>); Orson P. Smith. 2006. *Coastal Erosion Responses for Alaska: Workshop Proceedings*. Alaska Sea Grant <http://seagrant.uaf.edu/bookstore/pubs/AK-SG-06-03.html>; *Arctic Sounder* December 14, 2006, at 1-2, *Latest attempts to stem Kivalina's erosion problems fail: Most of \$3 million sea wall falls into the Chukchi Sea*. Such information on coastal erosion is also crucial to evaluate potential feasibility impacts of hypothetical port sites and pipeline landings along the Chukchi Sea.

Issues related to the cumulative impacts analysis of particular resources are further discussed in the discussion of specific resources below.

#### G. The Significance Thresholds Are Inappropriate.

The significance criteria are arbitrary. MMS uses a significance threshold for biological resources of an adverse impact that will result in a decline taking three or more generations to recover. MMS does not provide scientific justification for the criteria used or explain why three generations of recovery is an appropriate threshold for a variety of different species that have very different reproductive and population trends. It is also important to evaluate impacts to fish and wildlife habitats, not just populations and the significance thresholds do not reflect this.

#### H. Failure To Consider Important Issues.

According to the draft EIS, “the issue of aquatic invasive species is directly pertinent to the conservation and management of fishery resources.” DEIS at III-27. Yet, in the draft EIS MMS explicitly excluded the issue from its analysis. See DEIS at II-27 (listing aquatic invasive species as an issue eliminated from analysis). The draft EIS eliminates this issue from consideration based on the assumption that the climate of the Arctic will not support introduced species. There is no support for this assumption provided, however. Accordingly, this issue should be fully analyzed in the EIS.

#### I. The Development Scenario is Incomplete and Unreasonable.

The analysis of environmental impacts (Chapter 4) should begin with a complete and detailed explanation of the assumptions made and the activities projected to take place. It needs to provide an estimate of the location and number of barrels of oil in the “one large oil field” that will be developed (DEIS at IV-3; IV-7) and scientific justification for its estimate of potential production. While Table IV.A-5 shows “estimated resources of 1 billion barrels,” nowhere is this figure justified with scientific analysis. There are no maps of petroleum resource potential, past exploratory well locations, past seismic surveys used to justify the development scenario that is provided. Further, it is not clear from the document what price range MMS used for a basis of its projections. If the oil price range used to estimate the amount of available oil is low the analysis will fail to cover the potential environmental effects at the high end of potential oil prices.

MMS should provide a hypothetical scenario map with location of seismic surveys, predicted exploratory and delineation wells, and the production scenarios including location of platforms, pipelines, processing plants, staging areas, docks and ports, potential sources of fresh water withdrawals and gravel, etc. whether onshore or offshore.

Drilling waste disposal for exploratory wells was not addressed in the assumptions for the effects assessment (DEIS at IV); potential sites for a potential onshore drilling waste treatment and disposal facility at the shorebase need to be shown (DEIS at IV-13, IV-15). Zero discharge is state of the art for drilling muds and cuttings disposal and needs to be evaluated as a mitigation measure (see Jonathon Wills. 2000. *Muddied Waters*, <http://www.alaskaforum.org/other/muddiedwaters.pdf>, accessed December 21, 2006)

Only vague information is provided regarding the highly risky potential production platforms and the discussion of the bottom-founded platform to be used as a central production facility states “no platform has operated in environmental conditions equivalent to the Chukchi Shelf.” (DEIS at IV-13). These are major issues, especially given the damage to offshore rigs during the recent Rita and Katrina hurricanes in the Gulf of Mexico.

The location of the “shorebase” and “pipeline landfalls” are not provided (DEIS at IV-14). The estimate of “one to two barge trips” and 5 aircraft trips per day in the summer open-water season for shorebase construction (DEIS at IV-15) seems very low, given the thousands of plane flights and hundreds of barge and boat trips required to construct the facilities at the Northstar field. Analysis of past construction and operations activity levels for the offshore Northstar field, Endicott, and others should be provided.

The topic of whether oil and gas tankers may be used to transport oil, especially if seas become ice-free, needs to be addressed in the development scenario.

The cumulative impact scenario (Chapter V) similarly fails to give a complete and detailed explanation of the assumptions made and the activities and infrastructure expected to take place. It fails to analyze on-ice seismic surveys, even though those are being considered in the Beaufort Sea and have been extensively used in the past. Potential noise disturbance from barging of onshore and offshore drilling rigs and supplies for exploration and production is ignored as are other sources.

Nowhere does the draft EIS specify the total potential production of oil and gas from the Chukchi Sea (from either the “contribution by Vol. of OCS oil,” Table V-7b or the “Speculative production” in Table V-7c). Although the text implies it is only the 1 billion barrels assumed for Sale 193, this overlooks the potential for the two other Chukchi sea sales proposed in the 5-year Plan. The MMS Five-year Plan shows anticipated production for the proposed program totaling 1 billion barrels for all three sales (Table 6), if this amount is anticipated from a single sale there is no reason not to cancel the first sale.

For the cumulative effects analysis to be meaningful, a hypothetical scenario map should be provided. One example based on Department of Interior information compiled from many sources onto one map is “Arctic Alaska: Offshore and onshore oil and gas development,” (P.A. Miller, D.A. Smith, and P.K. Miller. 1993. Oil in Arctic Waters: The untold story of offshore drilling in Alaska. Anchorage: Greenpeace. 122 pp).

#### J. Economic Analysis

MMS fails to disclose fully the true economic costs to the public for development in the Chukchi, including huge public costs for baseline and post-lease monitoring and development of mitigation measures, volunteer public and community time required for public meetings, comment and review of actions. No costs for federal and state agency human resources for the vast permitting that will be required is calculated. In addition, no

costs for supplemental state and federal infrastructure or oversight are factored in. In fact no “costs” are discussed at all, only projections of profits. Such an analysis only provides a gross revenue projection without the real expense costs factored in. A true cost-benefit analysis needs to be provided which includes contingent valuation and passive use values. We expect that a true cost/benefit analysis could find that the minor amount of oil recoverable in the Chukchi would cost more to the taxpayer than the value of the product. The true costs to taxpayers would be excessive if all public costs were calculated (community and ecological costs, pollution cleanup costs, carbon and climate costs).

In the dismantling, rehabilitation and restoration phase at the end of activities in an area, MMS needs to consider full removal of all infrastructure instead of only requiring industry to plug offshore wells and leave pipelines in place. See DEIS at II-30. The requirement that the taxpayer pay the costs for oversight of a pipeline and plugged wells far offshore in one of the harshest ocean environments in the country is an outright abuse of the U.S. taxpayer - particularly given the profits the oil industry is currently making. The draft EIS and the Five-Year Plan also failed to address existing royalty relief that could significantly reduce OCS revenues.

#### K. The Oil Spill Projections and Impact Analysis Are Flawed.

The DEIS understates the potential consequences from a large spill. MMS projects a 40% chance of a large oil spill (greater than 42,000 gallons – 1,000 barrels) and project the chances this would foul an “environmental resource area” as up to 7% within 30 days (DEIS at IV-3, IV-25). Yet, it fails to describe the risks during longer durations of time, including the subsequent years following the spill incident and these should be included in the text.

A blowout scenario from exploratory well needs to be analyzed. Barge spills are relatively common and it can be expected that there will be far more barging of supplies to support Chukchi Sea operations given the lack of connection with the Dalton Highway compared to Beaufort Sea operations near the existing Prudhoe Bay field. MMS implicitly assumes, though does not explain, that there will be no tanker transport of crude oil from production wells yet does not provide an explicit lease stipulation that would prohibit this. Impacts of tanker spills need to be analyzed for the Chukchi production operations. MMS also needs to describe potential response, cleanup and remediation measures for spills and more clearly describe the lack of response measures. See E. DeCola, T. Robertson, S. Fletcher, S. Harvey, 2000, Offshore oil spill response in dynamic ice conditions: A report to WWF on considerations for the Sakhalin II Project.

The sources of information used to define the environmental resource areas in the oil-spill trajectory analysis need to be provided as without this one cannot understand what resources would be affected. The ecological significance of the various “ERA’s” shown on Appendix A.2 maps need to be depicted in the legend so the general public can comprehend the resources for which a trajectory analysis was done. We are pleased that MMS has run an analysis of “grouped land segments.” However, the results of the analysis are not explained clearly for a reader not versed in MMS’s analysis method; the text needs to better explain the consequences to the natural resources at risk. It would be

very helpful to the public to show the “spillet” tracks for at least some of the trajectory analysis in order for the public to have a clearer understanding of the MMS work. The effects of spills on wilderness values of shorelines were not described.

The DEIS downplays the risks or consequences of chronic smaller crude oil spills. The analysis should also analyze pills of other substances including diesel oil, which is commonly spilled on the North Slope, glycols, which are toxic to animals, and others. While Table IV.A-6 predicts 444 refined oil spills totaling 408 barrels (17,136 gallons) this does not include other toxic substances reported annually to be spilled from the North Slope oil fields by Alaska Department of Environmental Conservation records.

The cumulative impacts of spills ignores effects of potential spills from the new and existing onshore transmission pipelines, as well as spills from the Trans-Alaska Pipeline System including the Valdez Marine Terminal operations and shipping in tankers to market and associated vessels.

The draft EIS fails to fully analyze the potential for pipeline leaks. According to the draft EIS there is “seafloor disturbance caused by the deep ice keels that ground almost yearly on the relatively shallow Hanna Shoal near the center of the proposed lease area.” DEIS at IV-65. However, the draft EIS fails to integrate this information into the discussion of oil spills. Given that Hannah Shoal is the center of the proposed development, these ice keels could severely and regularly damage pipelines. The draft EIS states, “Ice has gouged the seafloor in water up to about 50 m in depth, so almost all of the pipelines would have to be buried deep enough to avoid disturbance from ice keels.” Id.

There is virtually no example of this type of pipeline construction globally and no examples of how such a construction could withstand the impact of tons of pressure presented with an ice keel. The suggestion that pipelines be buried deeper than 50 m is not a proven viable solution to the problem of ice keels. Provided that both Beaufort Sea and Chukchi Sea seafloor is unconsolidated, one should extrapolate that an even deeper trench would be required. Seemingly unaccounted for in this hypothetical engineering proposal is the fact that the seafloor likely undergoes soil movement. The potential for oil spills or chronic leaks due to pipeline damage from ice keels is extremely high, and these impacts are ignored by the draft EIS. Such pipeline leaks could go undetected for years, seriously impacting endangered species and subsistence, and impairing the health quality of the ecosystem.

## II. PARTICULAR RESOURCES OF CONCERN

### A. Water Quality

The analysis of water quality is overly dismissive of the potential for chronic degradation of water quality. There are many potential pollutants, such as drilling mud and process water, that are routinely discharged as a part of offshore oil production. Just because the receiving water is relatively uncontaminated and the discharge may be far offshore, does not mean that the impact will be negligible. Drilling muds contain heavy

metals that will bioaccumulate in the food chain. Moreover, even localized effects can be significant. See, e.g., Anderson v. Evans, 371 F.3d 475, 491 (9th Cir. 2004). The EIS should give more serious consideration to the effect these contaminants will have on the ecosystem.

#### B. Lower Trophic-Level Organisms

The Chukchi Sea benthos generally is richer than other arctic shelves and contains many areas important to benthic grazers such as ducks, walrus, and gray whales. DEIS at III-25. The draft EIS acknowledges that there will be an effect on these organisms, characterizing the effect as “moderate.” DEIS at IV-63. This conclusion, however, may be understated. Given the lack of information about where particularly productive areas are located, the effect could be more than anticipated. Indeed, the draft EIS itself recognizes that pipeline installation would have a “major level of effect.” Id.

#### C. Fish

The analysis of fish has many shortcomings and fails to analyze the full potential for offshore activities to impact fish. Fish are the primary prey for many of the marine mammals in the planning area and represent an important subsistence resource. Many important issues are inadequately analyzed. For instance, the draft EIS reveals that gravel causeways will be used at landfall for pipelines. Such causeways previously have had negative impacts on Arctic fishes, but the draft EIS fails to discuss this history.

The draft EIS fails to reveal the full extent of the impact seismic activities may have on fish. Fish are equipped, like all vertebrates, with thousands of sensory hair cells that vibrate with sound. Some fish species have specialized organs, like the abdominal sac, called a “swim bladder,” which can boost hearing and a “lateral line” of sensory and hair cells that run the length of their bodies. Fish use sound in many of the ways that marine mammals do: to communicate, defend territory, avoid predators, and, in some cases, locate prey.<sup>1</sup>

One series of recent studies showed that fish sustained extensive damage to the hair cells located at the sensory epithelia of the inner ear after they were exposed to impulsive air gun noise.<sup>2</sup> The damage, described as “blebbing” and “blistering” on the surface of the epithelia, “suggest that hair cells had been ‘ripped’ from the epithelia (immediate mechanical damage) or, alternatively, had ‘exploded’ after exposure (physiological damage).”<sup>3</sup> In the context of the DEIS, this study is particularly

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<sup>1</sup> See, e.g., A.N. Popper, Effects of Anthropogenic Sounds on Fishes, 28(10) Fisheries 26-27 (2003); M.C. Hastings & A.N. Popper, Effects of Sound on Fish 19 (2005) (Report to the California Department of Transportation, Contract No. 43A0139); D.A. Croll, Marine Vertebrates and Low Frequency Sound—Technical Report for LFA EIS 1-90 (1999).

<sup>2</sup> McCauley et al., High Intensity Anthropogenic Sound Damages Fish Ears, J. Acoust. Soc. Am. 113 (Jan. 2003).

<sup>3</sup> Id. at 640.

significant because the inner ear of the species examined (pink snapper) “is typical” of a number of important fish species found in the Chukchi Sea, including salmon, cod, and haddock.<sup>4</sup> Fish, unlike mammals, are thought to regenerate hair cells, but the pink snapper in those studies did not appear to recover within approximately two months after exposure, leading researchers to conclude that the damage was permanent.<sup>5</sup> As researchers have consistently acknowledged, even a short-term loss in hearing can (let alone the virtually permanent damage seen in snapper) will substantially diminish its chance of survival: “[f]ishes with impaired hearing would have reduced fitness, potentially leaving them vulnerable to predators, possibly unable to locate prey, sense their acoustic environment, or, in the case of vocal fishes, unable to communicate acoustically.”<sup>6</sup>

As with marine mammals, sound has also been shown to induce temporary hearing loss in fish. Even at fairly moderate levels, for example, noise from outboard motor engines is capable of temporarily deafening some species of fish, and other sounds have been shown to affect the short-term hearing of a number of other species, including sunfish and tilapia.<sup>7</sup>

Nor is hearing loss the only effect that ocean noise can have on fish. Numerous studies, for example, have noted that fish display marked “alarm” responses to airguns and other forms of anthropogenic noise.<sup>8</sup> And for years fishermen in various parts of the world have complained about declines in their catch after intense acoustic activities

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<sup>4</sup> Id. at 641

<sup>5</sup> Id. (some fish in the experimental group sacrificed and examined 58 days after exposure).

<sup>6</sup> See McCauley et al., High Intensity Anthropogenic Sound Damages Fish Ears, at 641; Popper, Effects of Anthropogenic Sounds at 29.

<sup>7</sup> A.R. Scholik and H.Y. Yan, Effects of Boat Engine Noise on the Auditory Sensitivity of the Fathead Minnow, *Pimephales promelas*, 63 *Environmental Biology of Fishes* 203-09 (2002); A.R. Scholik and H.Y. Yan, The Effects of Noise on the Auditory Sensitivity of the Bluegill Sunfish, *Lepomis macrochirus*, 133 *Comparative Biochemistry and Physiology Part A* at 43-52 (2002); M.E. Smith, A.S. Kane, & A.N. Popper, Noise-Induced Stress Response and Hearing Loss in Goldfish (*Carassius auratus*), 207 *Journal of Experimental Biology* 427-35 (2003); Popper, Effects of Anthropogenic Sounds at 28.

<sup>8</sup> See F.R. Knudsen, et al., Awareness reactions and avoidance responses to sound in juveniles Atlantic salmon, *salmo salar L.*, *Journal of Fish Biology* (1992) **40**, 523-534; Robert D. McCauley, et al. Marine Mammal Seismic Surveys: Analysis and Propagation of Air-Gun Signals; and Effects of Air-Gun Exposure on Humpback Whales, Sea Turtles, Fishes and Squid, Curtin University, Centre for Marine Science and Technology (August 1999); C.S. Wardle, et al., Effects of seismic air guns on marine fish, *Continental Shelf Research* **21**, 1005-1027 (2001).

moved into the area, suggesting that noise is seriously altering the behavior of some commercial species.<sup>9</sup> A group of Norwegian scientists attempted to document these declines in a Barents Sea fishery and found that catch rates of haddock and cod (the latter known for its particular sensitivity to low-frequency sound) plummeted in the vicinity of an airgun survey across a 1600-square-mile area, an area larger than the state of Rhode Island. In another experiment, catch rates of rockfish were similarly shown to decline.<sup>10</sup> Drops in catch rates in these experiments range from 40 to 80 percent.<sup>11</sup>

A number of studies, including one on non-impulsive noise, have also shown that intense sound can kill eggs, larvae, and fry outright or retard their growth in ways that may hinder their survival later.<sup>12</sup> Increased mortality for fish eggs has been shown to

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<sup>9</sup> See “‘Noisy’ Royal Navy Sonar Blamed for Falling Catches,” Western Morning News, Apr. 22, 2002 (sonar off the U.K.); Percy J. Hayne, President of Gulf Nova Scotia Fleet Planning Board, “Coexistence of the Fishery & Petroleum Industries,” [www.elements.nb.ca/theme/fuels/percy/hayne.htm](http://www.elements.nb.ca/theme/fuels/percy/hayne.htm) (accessed May 15, 2005) (airguns off Cape Breton); R.D. McCauley, J. Fewtrell, A.J. Duncan, C. Jenner, M.-N. Jenner, J.D. Penrose, R.I.T. Prince, A. Adhitya, J. Murdoch, and K. McCabe, Marine Seismic Surveys: Analysis and Propagation of Air-Gun Signals, and Effects of Air-Gun Exposure on Humpback Whales, Sea Turtles, Fishes, and Squid 185 (2000) (airguns in general).

<sup>10</sup> See A. Engås, S. Løkkeborg, E. Ona, and A.V. Soldal, Effects of Seismic Shooting on Local Abundance and Catch Rates of Cod (*Gadus morhua*) and Haddock (*Melanogrammus aeglefinus*), 53 Canadian Journal of Fisheries and Aquatic Sciences 2238-49 (1996); J.R. Skalski, W.H. Pearson, and C.I. Malme, Effects of Sound from a Geophysical Survey Device on Catch-Per-Unit-Effort in a Hook-and-Line Fishery for Rockfish (*Sebastes spp.*), 49 Canadian Journal of Fisheries and Aquatic Sciences 1357-65 (1992). See also S. Løkkeborg and A.V. Soldal, The Influence of Seismic Exploration with Airguns on Cod (*Gadus morhua*) Behaviour and Catch Rates, 196 ICES Marine Science Symposium 62-67 (1993).

<sup>11</sup> Id.

<sup>12</sup> See, e.g., C. Booman, J. Dalen, H. Leivestad, A. Levsen, T. van der Meeren, and K. Toklum, Effekter av luftkanonskyting på egg, larver og yngel (Effects from Airgun Shooting on Eggs, Larvae, and Fry), 3 Fisken og Havet 1-83 (1996) (Norwegian with English summary); J. Dalen and G.M. Knutsen, Scaring Effects on Fish and Harmful Effects on Eggs, Larvae and Fry by Offshore Seismic Explorations, in H.M. Merklinger, Progress in Underwater Acoustics 93-102 (1987); A. Banner and M. Hyatt, Effects of Noise on Eggs and Larvae of Two Estuarine Fishes, 1 Transactions of the American Fisheries Society 134-36 (1973); L.P. Kostyuchenko, Effect of Elastic Waves Generated in Marine Seismic Prospecting on Fish

occur at distances of 5 meters from an airgun source; mortality rates approaching 50 percent affected yolksac larvae at distances of 2 to 3 meters.<sup>13</sup> Also, larvae in at least some species are known to use sound in selecting and orienting toward settlement sites.<sup>14</sup> Acoustic disruption at that stage of development could have significant consequences on effected species.<sup>15</sup>

### The DEIS Underestimates Potential Impacts To Fish.

Although the DEIS acknowledges the potential for seismic survey operations to cause significant harm to fish, it contains unsupported assertions that no adverse impacts are expected. MMS, however, fails to provide any support for these assertions, which are sometimes contradicted by MMS's own statements. This calls into question MMS's conclusions. It also suggests that the strong disagreements between MMS's own fish analyst and MMS's managers over the analysis in the 2006 Programmatic Environmental Assessment continue in the DEIS.

For example, the DEIS notes that the noise from seismic survey airguns can cause significant behavioral changes in fish and fish stocks, particularly when multiple sources are proposed. In such cases, the "[c]oncurrent seismic surveys may facilitate the stranding of some schooling or aggregated arctic fishes onto coastal or insular beaches in the proposed sale area." DEIS at IV-78. Further, the DEIS explains that studies have shown that "[p]elagic fish-catch rates and local abundance were reduced within 33 km of the airgun array for at least 5 days after shooting," indicating that whether and when the fish returned to the area is unknown. *Id.* at IV-76 (emphasis added).

MMS nonetheless asserts that the effects from such concurrent seismic surveys "most likely would be temporary and localized, and only a moderate level of disturbance or displacement would occur." DEIS at IV-77. This conclusion appears to be based on MMS's assumption that the "3D/2D seismic surveys typically cover a relatively small area and only stay in a particular area for hours, thereby posing somewhat transient disturbances." *Id.* However, the surveys can cover large areas and may last for five months.

As indicated by this past summer's operations, 2D and 3D surveys in the Chukchi Sea can last 5 months or longer, from July (assuming MMS prohibits operations in June) through November (weather permitting). *See* DEIS at II-4; II-28. The 3D surveys are conducted 24 hours a day, weather permitting. *Id.* at IV-10. Over a 20- to 30-day period, the surveys can cover a 200 square mile area. *Id.* Thus, over 5 five months, they could cover at least 1,000 square miles. The 2D surveys operate in a similar fashion, but they can cover even larger areas. *Id.* at IV-10 to IV-11. This past summer, for example, a

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Eggs on the Black Sea, 9 Hydrobiology Journal 45-48 (1973).

<sup>13</sup> Booman et al., Effector av luftkanonskyting på egg, larver og yngel at 1-83.

<sup>14</sup> S.D. Simpson, M. Meekan, J. Montgomery, R. McCauley, R., and A. Jeffs, Homeward Sound, 308 Science 221 (2005).

<sup>15</sup> Popper, Effects of Anthropogenic Sounds at 27.

single 2D surveyor expected to survey over 3,000 miles. *See* 71 Fed. Reg. 49,418, 49,419 (Aug. 23, 2006). It thus is not clear how MMS can claim that these the surveys cover “small” areas and are “transient” in nature.

Similarly, MMS dismisses potential fish strandings from concurrent seismic surveys, explaining that “[g]iven that seismic surveys would be operating at least 17 km (10 mi) from shore, it is improbable that this would occur. A mitigation measure to separate concurrent or coincidental seismic survey operations (Sec. II.B.4) would largely alleviate all risk of fish strandings.” IV-78. However, as noted above, scientific studies observed that fish catch-rates and abundance were reduced at 33 km from the seismic survey source. Not only is this greater than 17 km, but it should be noted that the studies on which this number is based (Engås et al. (1996); Løkkeborg and Soldal (1993)) did not conclude that a 33 km radius around an air gun array is the outer-most extent of a potential fish displacement area. Rather, these studies simply did not survey catch rates beyond 33 km. It is therefore likely that the distance where displacement would occur is even greater.

Finally, in a few instances, the DEIS misstates the conclusion of relevant studies or makes unwarranted (and unconservative) extrapolations based upon others. As a result, the DEIS’s conclusion that the potential seismic surveys will have only insignificant impacts is dubious, at best.

For example, the DEIS states that “sound sources that have resulted in documented physiological damage and mortality of adult, juvenile, and larval fish have all been at or above 180 dB re 1  $\mu$ Pa (Turnpenny and Nedwell, 1994).” DEIS at IV-75. This conclusion ignores McCauley et al. (2000 and 2003), which found physiological damage (likely permanent) to the hair cells of the inner ears of adult fish. Although McCauley et al. exposed fish to a maximum sound level of 182 dB re 1 mPa<sup>2</sup>.s (193 dB re 1 mPa), the study calculates when potentially damaging displacement of the hair cells began, concluding that “[t]he point at which the maximum displacement begins to rapidly increase lies between 155-160 dB re 1 mPa<sup>2</sup>.s” or, using McCauley’s assumptions, approximately 166 - 171 re 1  $\mu$ Pa for a single pulse (see Figure 1, taken from McCauley et al. (2000)). Thus, the DEIS’s implicit conclusion of that physiological damage or mortality to adult or juvenile fish will not be caused at levels below 180 dB re 1  $\mu$ Pa is unwarranted.

Similarly, when discussing the widespread reductions in catch rates recorded by Engås, et al. (1996) and Løkkeborg and Soldal, (1993), the DEIS states that the local abundance “were reduced within 33 km of the airgun array.” DEIS at IV-76. As noted above, this is an unconservative assumption that is not supported by either study. Neither Engås et al. 1996 nor Løkkeborg and Soldal 1993 conclude that a 33 km radius around an air gun array is the outer-most extent of a potential fish displacement area, as the DEIS seems to assume. Given the dramatic reduction in catch rates that resulted from these studies—as high as 80% in one survey—MMS should assume that the use of air gun arrays may exclude fish over greater distances.

Fish play an important role in the Chukchi Sea ecosystem. They serve as prey for larger marine mammals and subsistence for Native Alaskans. Therefore, impacts to fish may have cascading effects. As the DEIS notes, if “seismic surveys cause pinnipeds’ prey to become less accessible, either because they move out of an area or become more difficult to catch, than pinniped distributions and feeding rates are likely to be affected.” DEIS at IV-213. Consequently, it is imperative that MMS adequately assess potential impacts on fish and accurately explain the bases for its conclusions to ensure that the potential impacts are not underestimated.

Moreover, MMS has failed to make any attempt to analyze the cumulative impacts on fish from seismic survey operations. MMS baldly asserts that the “cumulative effect of seismic exploration on fish resources probably would be minor,” but explains that “the effects of specific seismic proposals will be assessed later.” V-21. NEPA requires MMS to consider those impacts now. Once the leases are sold, the lease holders may conduct ancillary activities, including seismic surveys. In addition, it is likely that the oil industry will conduct surveys each year for the next several years. While MMS is preparing another EIS for those activities, NEPA requires MMS to consider them as cumulative impacts in connection with this federal action, *i.e.*, the lease sale.

#### D. Threatened and Endangered Species

##### *I. Marine Mammals*

Many issues of concern were not adequately addressed in the DEIS. See Marz, S. 2006, Ice dependent marine mammals: A survey of background information and issues of concern regarding: ice seals, Pacific Walrus, polar bears and bowhead whales. Anchorage: Alaska Oceans Program. 127 pp.

#### **Bowhead**

The potential impacts to the population of the bowhead are underestimated in the primary conclusions of the draft EIS even though in several places the MMS admits that there are population risks. That the Chukchi/Beaufort Sea population is the only “robust” and recovering population of bowhead world-wide is acknowledged by the draft EIS. The draft EIS states, “The population that could be exposed to the Proposed Action is important to the long-term viability of the species as a whole.” at IV-117. Yet, the population effects that could and are likely to come with bioaccumulation and biomagnification are seriously minimized or ignored. A conclusion that population effects are “unlikely” cannot be justified or substantiated. Instead, given the reduction of killer whale population in Prince William Sound and in the Puget Sound, the MMS should conclude that population level effects are likely to occur with the aggregate leasing plans proposed in the 5-Year Plan.

#### *Oil Spills and Bowhead*

The draft EIS states, “Effects of a large oil spill in Federal or State waters most likely would result in nonlethal temporary or permanent effects.” DEIS at V-63. Not only is there no substantiation for this conclusion, the draft EIS immediately contradicts the conclusion with a subsequent statement asserting that there is not enough information to

even formulate such a conclusion: “However, we reiterate that due to the limitations of available information and due to the limitations inherent in the study of baleen whales, there is uncertainty about the range of potential effects of a large spill on bowhead whales, especially if a large aggregation of females with calves were to be contacted with fresh oil.” *Id.* The lack of the information necessary to make such a conclusion is reiterated elsewhere in the draft EIS, “There are no data on cetaceans adequate to evaluate the probability of such effects [whale mortality].” DEIS at IV-177. The reiteration of faulty conclusions is particularly concerning as they occur repeatedly in the Executive Summary and in the Cumulative Impact Summary in the document - both of which will be relied on by the Secretary of the Interior for his decision on the Chukchi 193 leasing proposal.

The conclusion that the effects of a large spill would impact bowhead with merely “non-lethal” impacts does not follow the draft EIS’s discussion and citation of oil spill impacts. MMS clearly identifies numerous concerns regarding the impact of oil on marine wildlife including whales and summarizes the NMFS’ conclusion that while “leasing and exploration are not likely to jeopardize the continued existence of the bowhead whale...potential additive effects of oil and gas activities associated with exploration, production, and transportation throughout the Chukchi and Beaufort seas is of concern.” at IV-178.

The DEIS fails to adequately inform its discussion of potential lethal impacts to cetacean with oil spills by down-playing the studies of environmental impacts to whales with EVOS. The impacts to Orca whales following EVOS is minimized in the draft EIS. In MMS’s discussion of potential whale mortality or population level effects on bowhead, the MMS falsely concludes that there are “limitations of available information” and “no data on cetaceans adequate to evaluate the probability of such effects.” This conclusion explicitly contradicts findings from EVOS. The statement also contradicts studies cited in the draft EIS regarding oil spills near Santa Barbara. DEIS at IV-228. Post EVOS NOAA findings report that, “After exceptionally high mortality of 20% between September 1988 and spring 1989 and another 20% during the following year in the AB pod of resident (fish-eating) killer whales that had been observed to swim through the spill, losses of adult females from these matriarchially organized family groups led to suppressed reproduction (2). In another pod (AT1) of transient (mammal-eating) killer whales, the 40% loss during the spill is leading to likely disintegration” (Peterson, C., et. al. *Science*, Vol 302). Matkin also has documented the loss of killer whales following the EVOS. The draft EIS makes minor reference to Matkin’s research and under-represents findings from EVOS about cetacean impacts from oil spills. (See Matkin, C. EVOS Restoration Project, Annual Report, 1999).

In addition, impacts to bowhead whale due to direct contact with oil are seriously underestimated. The draft EIS’s conclusion that oil would have non-lethal impacts on bowhead is undermined by the statement elsewhere in the draft EIS that “bowhead whale are, over some of their migratory pathway, relatively fixed in at least part of the ‘road’ they travel during spring migration.” DEIS at IV-117. Thus, the whales would likely not move away from the spilled oil. Nor could it be concluded that oil contact would have

only minor impacts on bowhead whale. Extensive exposure could cause lethal impacts, particularly due to the epidermal make-up of the bowhead. MMS states that, “Although oil is unlikely to adhere to smooth skin, it may stick to rough areas on the surface [on bowhead] (Henk and Mullan, 1997).” At IV-229. The draft EIS fails to discuss further findings of Henk and Mullan and does not discuss the implications of significant oil contact with the roughened skin of the bowhead. MMS cites an MMS study by Albert (1981) that concludes oil contact “...could irritate the skin, especially the eroded areas, and interfere with information the animal receives through the tactile hairs. Because we do not know how these hairs work, we cannot assess how any damage to them might affect whales.” Id.

The 1994 National Research Center science review found bowhead whales to have “dozens to hundreds of roughened areas . . . of skin surface. . . . The great increase in exposed surface (microrelief) of these roughened areas increases the area to which oil can adhere...it is likely that oil contact would be harmful.” NRC at 102. In addition, the bowhead whale eye area is another area that oil can penetrate. “The conjunctival sac associated with the eye is . . . extensive. . . . Thus a large surface exists for an irritant (such as spilled oil) to contact sensitive visual structures.” NRC at 102. Given the above potential sources for oil adherence to skin and ability to contaminate past the dermal wall, the bowhead may be impacted to a greater degree than estimated by the draft EIS.

#### *Cumulative Effects on Bowhead*

As discussed above, the draft EIS fails to adequately assess the cumulative effects of leasing in the Chukchi by ignoring known future projects that are currently in the planning stages, primarily the extensive leasing proposed for the Beaufort Sea. The DEIS does provide ample evidence that there is particular concern for deleterious impacts to bowhead given their long life-spans. Infrastructure, chronic pollution and noise pose serious risks to an animal that can live up to 100 years. In addition, the bowhead is known to almost exclusively use the Chukchi and Beaufort Seas. They do not migrate out of the region for any significant period and when they do, it is only to the Bering Sea. Unlike many whales that traverse several oceans, the bowhead would be forced to survive, given proposed leasing plans, in an environment where at least half of its range has extensive offshore development.

There is substantial research on bioaccumulation, bioconcentration and biomagnification in whales, pinnipeds and other marine wildlife. Much of this research has been performed in the Puget Sound where significant development takes place in a marine environment. See Grant, SCH, et. al., Can. Tech. Rep. Fish. Aquat. Sci., no. 2412, 2002; Hayteas, DL, et. al., Marine Pollution Bulletin, Vol. 40, No. 6 2000; Hall, JE, Paper “Bioconcentration, Bioaccumulation, and Biomagnification in Puget Sound Biota,” UofW Tacoma, 2002. Hall’s paper summarizes the results of numerous studies regarding bioaccumulation and states, “Research has shown that certain chemicals have the ability to be bioconcentrated in organisms directly from the water, and bioaccumulated and biomagnified within food chains, causing higher trophic organisms to become contaminated with higher concentrations of chemical contaminants than their prey...” World-wide, both toothed and baleen whales are showing bioaccumulation of chemicals.

This is particularly true in the Arctic. The DEIS fails to integrate the impacts of global chemical pollution with the impacts from the proposed lease sales. Cumulative impact discussion in the DEIS ignores the global nature of pollution and how that will exacerbate with the proposed development.

#### *Mitigation for Bowhead Impacts*

Mitigation proposals are insufficient to prevent long-term impacts to bowhead. The MMS acknowledges significant lack of data on how the bowhead use the Chukchi Sea for feeding, calving and mating. Yet, the whale's presence in the Chukchi for significant parts of the year is well-documented. Without basic data about bowhead use of the Chukchi, mitigation proposals are rendered useless.

In addition, mitigation measures such as those contained in MMPA incidental take authorizations do nothing to reduce population level effects. Mitigation measures are acknowledged repeatedly to be unpredictable in their effectiveness. In addition, the lack of an enforcement protocol renders these mitigation measures ineffective.

#### **Humpback, Gray, Minke and Fin Whales**

The humpback and fin are endangered species, and the minke is listed as threatened. The Western North Pacific gray whale remains endangered, while the Eastern North Pacific gray whale was delisted in 1994; it is the Eastern stock that utilizes the Chukchi Sea. Although the Eastern Gray is delisted, the importance of its protection should not be underestimated. There is significant lack of data about the distribution of fin, minke and humpback whales in the Chukchi. Yet, there is increased evidence that with climate change, more of these whales are moving into the area.

The draft EIS incorrectly discounts the potential for offshore development to impact these whales, stating, "we conclude it is unlikely there would be adverse effects from noise and disturbance associated with oil and gas seismic-survey activities in the Chukchi Sea evaluation area on fin or humpback whales because of the distance they are expected to be from such activities." DEIS at IV-150. This conclusion contradicts other findings in the DEIS that identify impacts from noise. Additionally, this conclusion contradicts the 5-Year Plan DEIS and the Chukchi Lease Sale 193 draft EIS as both assume that OCS activity may occur in deeper waters away from the shore. At the COMIDA meetings in November 2006, the Hannah Shoal region was presented as the focus and central area of interest for leasing. Clearly, with the location of humpback and fin whales away from the shorelines it should be assumed that impacts could in fact occur to these whales and substantially more discussion should be included of those impacts.

The DEIS notes the potential for vessel traffic impacts as it is likely that the whales will leave the Chukchi Sea region once the pack ice begins to move into the region. Vessels associated with development are likely to do the same. Increased traffic impacts are likely particularly in the narrow passage-way of the Bering Strait. The laws cited by the draft EIS are not adequate mitigation measures because they cannot be enforced in a meaningful way.

The DEIS states, “Neither fin whales nor humpback whales are known to typically inhabit the proposed Chukchi Sea Sale 193 area.” DEIS at IV-180. However, local reports and agency scientists (NSB, COMIDA Meetings, Nov. 2006) document increased sightings of humpback, fin and gray whales. At the Chukchi COMIDA meetings it was noted that a current inventory of whales that utilize the Chukchi Sea is needed.

The draft EIS’s discussion of oil impacts on fin, humpback and gray whales is problematic due to the vague conclusions asserted. In fact, much of the discussion of impacts contradicts other statements within the DEIS, leading to significant inconsistencies throughout the analysis. For example, while the draft EIS cites observations of whales behaving normally in oiled waters and seems to suggest that whales are relatively unaffected by contact with oil, it also cites research that undermines this conclusion. For example the draft EIS discusses the Santa Barbara spill which killed numerous humpback whales. The draft EIS also cites Matkin et al. (1994) who, “reported that killer whales had the potential to contact or consume oil, because they did not avoid oil or avoid surfacing in slicks.” IV-226. Thus, a correct conclusion by MMS should be that these whales may not be able to detect oil in the water or know how to avoid it. Additionally, because of the lack of study of these whales it would be virtually impossible to know what the effects of that oil contact would be because the animals could not be kept track of to determine their fate. The draft EIS fails to make accurate conclusions about impacts to these whales and lacks enough significant data to be able to establish impacts to fin and humpback whales.

Gray whales are particularly at risk with the proposed development, yet the draft EIS fails to accurately document those impacts. While the draft EIS provides some information about gray whale use of the area it fails to acknowledge the significance of this habitat and its overlap with seismic, drilling, and other operations.

Currently, gray whales are believed to congregate along offshore shoals in the northern Bering and Chukchi seas for feeding during the summer months. Larger aggregations of feeding whales have been reported at these shoals. It is likely that shallow coastal and offshore-shoal areas provide habitat rich in gray whale prey, and their association and congregation in larger numbers with offshore shoals in the northern Chukchi Sea may indicate that these are important feeding areas for the expanding population (Moore and DeMaster, 1997).  
DEIS at IV-219.

One of the above cited highly used shoals is the Hannah Shoal in the Northeast corner of the leasing area, just off of the Barrow point. This is also the central location expected to be developed by industry. However, the DEIS fails to mention this fact at all or analyze the impact to gray whales of the loss of this primary feeding area. With Hannah Shoal development, gray whale impacts are bound to occur, particularly given the extensive pipeline infrastructure planned for the area.

Both gray whales and walrus are at great risk from pipeline development in the Hannah Shoal area (COMIDA Meetings, Nov. 2006). Both marine mammals are bottom feeders that rely on benthic species populations. The impact from pipeline infrastructure displacement is greatly minimized by the draft EIS (see Walrus section). The impact to gray whales from infrastructure disturbance to feeding area may result in movement away from the area. If the whales continue to feed in the area, a greater risk is assumed with the impacts of bioaccumulation. For example, "drilling muds probably would not kill benthic organisms, but any heavy metals in them might be accumulated by benthic organisms, adding to the body burden in vertebrate consumers." DEIS at IV-65.

The Hannah Shoal area is known to have annual ice keels (deep gouges into the sea floor). DEIS at IV-65. The impact of these on pipelines are not discussed in the DEIS. There is mention of the possibility of chronic, undetected oil leaks, but this concept is not integrated into any of the other discussions of impacts from oil spills or discharges. Undetected leaks from underwater pipelines could impact gray whales by contaminating the benthic communities they feed on and subsequently accumulating in the whale. Additionally, if the whales continue to choose to feed in this area, then traffic and other impacts would be realistic.

### **North Pacific Right Whale**

The right whale is the most endangered whale with a population perhaps as low as 100 individuals. The Chukchi provides potential habitat for this whale. According to NMFS, "The North Pacific right whale (*Eubalaena japonica*), historically ranging in the North Pacific Ocean from latitudes 70° N to 20° N;" 69 Fed. Reg. 17560 at 17561; see Hideo Omura et al., *Black Right Whales in the North Pacific*, 13 SCI. REP. WHALES RES. INST. 1, 44 (1969). Moreover, North Slope Natives have reported seeing right whales in the Chukchi. Testimony was provided on this at the public hearing in Point Hope. Given this species' perilous status, an activity that could potentially impact even one individual, or impact current or potential habitat, should have been analyzed in the EIS.

## *2. Marine and Coastal Birds*

### **Kittlitz's murrelets**

The DEIS, by way of the Biological Evaluation included as Appendix C, briefly addresses potential impacts to Kittlitz's murrelet, a candidate species. Because Kittlitz's murrelets spend much of their time on the water, offshore oil spills may prove devastating to this species. Unless MMS can establish the efficacy of some method to promptly contain and remove spilled oil throughout the year, the EIS should conclude that such spills pose a considerable threat to Kittlitz's murrelets.

### **Spectacled eiders and Steller's eiders**

Because MMS has concluded that without comprehensive mitigation measures, Lease Sale 193 is likely to adversely affect spectacled eiders and Steller's eiders, and is

likely to adversely modify the Ledyard Bay Critical Habitat area, Fish and Wildlife Service (FWS) must prepare a Biological Opinion pursuant to Section 7(b) of the ESA. The mitigation measures identified by MMS are wholly inadequate to address the threats posed by Lease Sale 193 and subsequent development. Absent a blanket prohibition on any and all activities within the Ledyard Bay Critical Habitat Area, FWS must find that Lease Sale 193 will adversely modify designated critical habitat. Moreover, without a method for effectively responding to oil spills that occur during the broken-ice period, FWS cannot reasonably find that Lease Sale 193 is not likely to jeopardize the continued existence of threatened populations of either spectacled eiders or Steller's eiders.

MMS's failure to discuss impacts to spectacled eiders and Steller's eiders in the text of the DEIS itself violates NEPA. MMS cannot satisfy its obligations pursuant to NEPA by preparing a document that purports to serve as both a Biological Assessment, under Section 7(c) of the ESA, and a portion of an EIS. MMS cannot relegate this discussion of important environmental impacts to an appendix where it may escape the scrutiny of the public and the decision maker. Even if we accepted that the Biological Evaluation satisfies, as a matter of form, MMS's obligation, pursuant to NEPA, to evaluate environmental impacts to ESA-listed eiders under NEPA (which we do not), the Biological Evaluation is flawed in several respects. In addition to its many substantive deficiencies, which are described below, the Biological Evaluation does not include three of the figures listed in its table of contents, and important to any critical independent evaluation of the conclusions reached by MMS.

As proposed, Lease Sale 193 actually encompasses portions of the Ledyard Bay Critical Habitat Area in violation of the ESA.

Even assuming that it qualifies as a portion of the DEIS, the Biological Evaluation presents an insufficient analysis of cumulative impacts.

The majority of both ESA-listed populations of eiders utilize the Arctic Coastal Plain for nesting, including the National Petroleum Reserve-Alaska (NPR-A). This is the location of the proposed transport pipeline route for Chukchi Sea oil to Trans-Alaska Pipeline Pump Station 1 described in the DEIS. With limited exceptions, the Bureau of Land Management has opened the entire NPR-A to oil and gas leasing. Indeed, winter exploration in the vicinity of Peard Bay is imminent. Onshore activities occurring pursuant to lease sales and existing oil leases in the NPR-A may have considerable impacts to both spectacled eiders and Steller's eiders. Indeed, FWS's biological opinion for the Northwest NPR-A expressed serious concerns about the effects of oil activity on eiders and recommended that the high density nesting areas be put off limits to leasing. BLM rejected this suggestion and many of these areas have been leased. Existing leases and future lease sales in the Beaufort Sea may adversely affect both spectacled eiders and Steller's eiders. Proposed offshore leasing in the Bering Sea may adversely affect Steller's eiders. Notwithstanding any future consultation under the ESA, such impacts must be incorporated into the cumulative impacts analysis for Lease Sale 193. MMS's failure to discuss and substantively evaluate the cumulative impacts of oil and gas leasing and development in adjacent onshore and offshore environments violates NEPA.

The Biological Evaluation acknowledges that global warming will “likely have significant stochastic impacts on Steller’s eiders,” but inexplicably declines to evaluate these anticipated impacts in any further detail. DEIS App. C at 59. Global warming has already modified, and will continue to alter, the Arctic landscape utilized by both spectacled eiders and Steller’s eiders. The EIS should analyze in detail the anticipated effects of global warming on the molting, staging, foraging, nesting and migration habitats and behavior of both spectacled eiders and Steller’s eiders.

The Biological Evaluation misrepresents the risk of an oil spill and neglects to discuss and evaluate critical aspects of the potential threat that spilled oil poses to eiders.

In its discussion of the risk of an oil spill having a population-level impact on ESA-listed eiders, the Biological Evaluation impermissibly departs from the fundamental assumption underlying MMS’s analysis of the environmental impacts of Lease Sale 193: that the lease sale will result in the development of a single commercially viable field that will produce one billion barrels of oil. After reporting probabilities ranging up to 8% that spilled oil will contaminate spectacled eider critical habitat in Ledyard Bay or any of four Spring Lead Systems, the Biological Evaluation attempts to discount the significance of this risk by suggesting that “the probability of a successful commercial find is in the range of 10%, indicating that production is unlikely.” DEIS App. C at 58. MMS may not undercut the assumption on which its entire NEPA analysis rests in order to minimize the considerable risk that spilled oil poses to spectacled eiders and Steller’s eiders.

Moreover, the Biological Evaluation impermissibly segments the risk of spilled oil affecting spectacled eider and Steller’s eider populations. The EIS should present, as a single number, the combined probability of spilled oil contacting any one of the four Spring Lead Systems or the Ledyard Bay critical habitat area. The probability of such an outcome would approach 16%. See DEIS App. C at 56 (reporting discrete probabilities of oil contaminating any one important area, the sums of which are as high as 16%). Moreover, the EIS should clearly indicate that oil spilled offshore in the fall or winter could not feasibly be removed or contained but would persist in the marine environment at least through the Spring of the following year and into the summer.

The Biological Evaluation anticipates 25 “small-volume” oil spills during the life of production, or 750 to 1,000 such spills overall, totaling between 12,906 and 17,210 gallons of spilled oil. DEIS App. C at 57; see also DEIS at IV-14.<sup>16</sup> Sea-ice and inclement weather will preclude effective removal or containment of the large majority of this spilled oil. Yet, the Biological Evaluation avoids analyzing the impacts of these anticipated oil spills in any detail, invoking uncertainty concerning the amount of this oil that will contact spectacled eiders or Steller’s eiders. The EIS should analyze the threat

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<sup>16</sup> The Biological Evaluation reports that the production period will last 25 years, while the DEIS indicates that the production period will last between 30 and 40 years. The EIS and oil spill analysis should operate on the same set of assumptions concerning the duration of oil production. Thirty to forty years is a more realistic assumption.

posed by small oil spills. Moreover, the EIS should clearly indicate that if spilled oil migrated into the vicinity of Ledyard Bay, then response activities would adversely affect both spectacled eiders (who occupy this area during the majority of the open water season) and spectacled eider critical habitat.

The Biological Evaluation fails to discuss or evaluate the possibility that oil spilled from an onshore facility or pipeline will affect the nesting habitat of spectacled eiders and Steller's eiders and contribute to these species' decline.

Before proceeding with any offshore lease sale in the Chukchi Sea, MMS should establish that an effective method exists for containing and removing oil from marine environments during the broken-ice season. In addition, MMS should restrict leasing and any related activities in proximity to areas that are of greatest importance to spectacled eiders and Steller's eiders, including the Ledyard Bay Critical Habitat area and Peard Bay.

The Biological Evaluation does not include any alternatives that would avoid impacts to ESA-listed eiders and spectacled eider critical habitat. The EIS should consider such alternatives.

The Biological Evaluation contains several arbitrary assertions, assumptions and analytical gaps that undermine its evaluation of environmental impacts.

The Biological Evaluation makes a critical assumption about the location of an onshore facility (i.e., that it will be constructed between Point Belcher and Icy Cape), but it neglects to provide any basis or support for this assumption. DEIS App. C at 8. This industrial facility could just as easily be located between Cape Lisburne and Icy Cape, adjacent to spectacled eider critical habitat, which would then be subjected to frequent over flights and vessel traffic. MMS must justify its assumption about the location of the onshore facility. Regardless of any such justification, however, the EIS should clearly identify those portions of the lease sale that, if developed, would likely lead to construction of an underwater pipeline through the Ledyard Bay Critical Habitat area and an onshore facility abutting it. MMS should complete similar analysis for near shore coastal areas that are important to Steller's eiders, such as Peard Bay.

In evaluating the impacts to nesting habitat from the construction of an onshore facility and pipeline, MMS erroneously assumes that spectacled eider and Steller's eider nests are evenly distributed throughout the Arctic Coastal Plain. This arbitrary assumption is contradicted by several of the studies referenced by MMS in the Biological Evaluation. The EIS should evaluate the potential range of impact to ESA-listed eiders depending on the location of an onshore facility and pipeline. Moreover, the EIS should evaluate an alternative that specifically restricts the location of any onshore facility and pipeline so as to minimize impacts to the most densely utilized eider nesting areas.

The Biological Evaluation arbitrarily declines to discuss the indirect impact to spectacled eiders of increased access to their nesting habitat as a result of the construction

of a road adjacent to an onshore pipeline. Notwithstanding any restrictions on the use of lead shot, increased access for waterfowl hunters could increase spectacled eiders' exposure to lead shot, which has been identified as a major cause of the decline of the species. The EIS and BiOp should address this threat explicitly.

Although it identifies predation as a principal cause of nesting failure for spectacled eiders, the Biological Evaluation arbitrarily fails to explicitly state that predation is also a principal cause of nesting failure and mortality for Steller's eiders. *See* DEIS App. C at 28. The EIS and BiOp should clarify that predation poses a severe threat to the nesting success and survival of both spectacled eiders and Steller's eiders.

The Biological Evaluation arbitrarily assumes that future mitigation measures to control predator populations—in the form of best management practices—will completely neutralize the threat to spectacled eiders and Steller's eiders posed by the increases in predator populations that have historically accompanied industrial development on the Arctic Coastal Plain. DEIS App. C at 50. Without knowing what these mitigation measures consist of, or even whether any such measures will ever be implemented, MMS should not assume that they will be completely effective in reducing the threat of predation.

The Biological Evaluation arbitrarily assumes that prohibitions on seismic activity within the Ledyard Bay Critical Habitat Area will render exploration and development within this area impractical. Rather than make this spurious assumption, MMS should simply prohibit any activities within or immediately adjacent to the Ledyard Bay Critical Habitat Area.

The Biological Evaluation arbitrarily declines to analyze possible impacts to non-breeding male spectacled eiders that molt in Ledyard Bay, in contravention of NEPA and the ESA.

The Biological Evaluation asserts that spectacled eiders concentrate in waters from 12 to 30 miles offshore in Ledyard Bay. DEIS App. C at 37. This arbitrary assertion is not supported by the article that MMS cites.

Similarly, the Biological Evaluation suggests that a 1,500 foot elevation restriction on flights over Ledyard Bay will minimize disturbance to eiders from aircraft, but fails to cite any evidence of the efficacy of such an elevation restriction. DEIS App. C at 39. Even if such over flight restrictions will prove effective, their duration and scope are too restricted. Such restrictions should begin in late May, should extend until spectacled eiders have all left Ledyard Bay, and should apply during all phases of oil and gas development, not simply during seismic exploration.

The Biological Evaluation's discussion of and conclusions regarding the potential for fatal collisions with aircraft, vessels and structures is fatally flawed. MMS arbitrarily adopts FWS's prior estimate of mortality from collisions with oil and gas structures in the *Beaufort Sea*, and concludes that this estimate proves sufficiently accurate in the *Chukchi*

*Sea*. DEIS App. C at 46. These different areas are utilized by eiders with differing frequency and intensity and for different purposes. Migration corridors along the coast of the Chukchi and migration paths that cross the Chukchi to Siberia warrant particular attention. The EIS and Biological Opinion should independently evaluate and estimate the risk of mortality from collisions with industrial aircraft, vessels and structures in the Chukchi Sea.

The Biological Evaluation arbitrarily assumes that impacts of seismic activities on ESA-listed eiders will be minimal, despite a paucity of dearth of evidence to support this assumption. DEIS App. C at 40-41. While we would prefer that MMS prohibit all seismic activity in the Chukchi Sea, if MMS is going to permit them, it should require that operators who conduct such seismic activities also undertake studies to discover the impacts of seismic air guns to ESA-listed eiders.

These arbitrary assertions, assumptions and analytical gaps singly and collectively undermine MMS's analysis of the potential impacts to spectacled eiders and Steller's eiders in violation of NEPA, the APA, and the ESA.

The Biological Evaluation impermissibly relies on deferred, ineffective, non-mandatory or insufficiently extensive mitigation measures to reduce identified impacts.

The Biological Evaluation suggests that lighting restrictions will reduce fatal collisions with vessels and structures, but the identified stipulations do not make such restrictions mandatory. *See* DEIS App. C at 45. Likewise, the Biological Evaluation identifies several mitigation measures that MMS elects not to impose at this juncture—including altitude restrictions on flights over Ledyard Bay during later phases of development, restrictions on vessel activity within Ledyard Bay during later phases of development, and the use of best management practices to minimize predation, among others. Yet, MMS fails to thoroughly and transparently assess the environmental consequences of post-leasing activities in the absence of such mitigation measures. As previously mentioned, the Biological Evaluation does not establish the efficacy of the limited over flight altitude restriction that it imposes on seismic activities. Even presuming its effectiveness, arbitrary restrictions on the geographic scope and duration of this altitude restriction will limit its ability to reduce impacts to ESA-listed eiders.

The Biological Evaluation inexplicably declines to impose restrictions on the location of an onshore facility, an underwater pipeline, or an onshore pipeline. MMS should do so in order to protect the habitat of ESA-listed eiders.

#### E. Birds

The proposed lease area is within the migratory path of large populations of birds that summer in the Arctic. These birds are threatened by many aspects of the offshore leasing. Oil development can disturb marine birds. Offshore facilities create hazards that will lead to collisions.

#### F. Marine Mammals

The lease sale appears to contravene the basic purpose of the MMPA, which is to prevent marine mammal populations from diminishing “below their optimal sustainable population.” 16 U.S.C. § 1361(2). Because the affected populations of walrus and polar bears are already declining, any additive impacts to the populations will interfere with subsistence harvest.

#### **Polar Bears**

##### **The Status of Affected Polar Bear Populations:**

The Lease Sale 193 Draft EIS describes the Chukchi/Bering Seas (“CBS”) polar bear population as being “in peril.” DEIS at III-81. The available evidence, including declining subsistence harvests, indicates that the CBS polar bear population is “already in decline” and that existing levels of legal harvest and poaching in Russia alone could halve the CBS population in less than twenty years. See DEIS at IV-240, III-81.

As the DEIS recognizes, anthropogenic global warming has already begun to fundamentally alter the Arctic environment. Along with over harvest of CBS polar bears, global warming will synergistically interact with the impacts of increasing oil and gas activities in the Arctic marine and coastal environments to adversely affect the CBS and Southern Beaufort Sea (“SBS”) polar bear populations into the foreseeable future. Accordingly, the DEIS concludes that “[a]ny bears lost to a large oil spill . . . likely would exceed sustainable levels, affecting both productivity and subsistence use, and potentially causing a decline in the bear population.” DEIS at IV-239. This conclusion applies equally to bears lost due to any activity related to oil and gas development. The DEIS should explicitly acknowledge this.

The DEIS presents incomplete and inaccurate information concerning affected polar bear populations. First, the DEIS overstates both the population estimate and the population growth rate for the SBS polar bear population. Compare DEIS at III-82 with Eric Regehr, et al., Polar bear population status in the southern Beaufort Sea: U.S. Geological Survey Open-File Report 2006-1337, 12 (2006). In addition, the DEIS assumes unrealistic survival rates for polar bear cubs of the year and yearlings, and consequently overstates the rate of recruitment. See DEIS at III-78, IV-240. Researchers recently estimated a survival rate for cubs of the year in the SBS population that is considerably lower than the 50-60% recruitment rate reported by the DEIS. See Eric Regehr, et al., Polar bear population status in the southern Beaufort Sea, 11. This recent report represents the best available scientific data on the population dynamics of polar bear populations in Alaska, and MMS should incorporate the findings of this report into the EIS. Because the CBS polar bear population faces the added threats of over harvest in Russia, the survival and recruitment rates estimated for the SBS should serve as upper limits for these parameters for the CBS population.

Despite the current precarious status of the CBS and SBS polar bear populations, the DEIS arbitrarily concludes that the impacts from activities undertaken in connection with Lease Sale 193 will be “slight.” DEIS at IV-234. Any additive mortality may reduce reproductive rates, diminish the availability of polar bears for subsistence uses and cause the affected population to decline. At present, polar bears in the Chukchi Sea exist relatively free from the harmful effects of industrial activities. Anticipated impacts from industrial activities associated with Lease Sale 193 will add to the variety of stressors that currently deteriorate polar bears’ physical health. This in turn may cause additional mortality to a population that is already declining. MMS’s conclusion that impacts from Lease Sale 193 will be slight is arbitrary in violation of NEPA.

### **Informational gaps and analytical oversights**

The DEIS does discuss the potential impacts to the CBS polar bear population caused by changes to the Arctic environment attributable to global warming, but it fails to include the documented impacts to the SBS population caused by global warming, such as reduced recruitment rates and diminishing physical stature of polar bears. *See* Eric Regehr, et al., Polar bear population status in the southern Beaufort Sea. This information is pertinent to a thorough and complete evaluation of the impacts of Lease Sale 193, because individuals from the SBS population spend considerable time in portions of the Chukchi Sea that MMS intends to offer for leasing. *See, e.g.*, Steven Amstrup, Movements, distribution, and population dynamics of polar bears in the Beaufort Sea (PhD Dissertation, University of Alaska-Fairbanks, 1995). The EIS should discuss the documented impacts of global warming on SBS polar bears and should take steps to avoid exacerbating these impacts.

The DEIS identifies coastal areas along the coast of the Beaufort Sea that have the highest densities of maternal den sites, but does not include similar information for the Chukchi Sea. This information is highly pertinent to the possible impacts that aircraft overflights, an onshore facility, and an onshore pipeline may have on CBS polar bears, and it should be included in the EIS. If MMS is unable to obtain this information, the EIS should provide a detailed summary of the existing credible evidence concerning polar bear denning habitat along the Chukchi coast. *See* 40 C.F.R. § 1502.22(b).

MMS fails to assess impacts to the denning, feeding and migratory habitats the U.S. has committed to protect under its international Treaty Obligations for Polar Bears under the Agreement for the Conservation of Polar Bears.

### **Mitigation measures**

NEPA demands that an agency take a hard look at mitigating measures when discussing the environmental consequences of a proposed project. *See* 40 C.F.R. § 1502.16. Pursuant to this standard, an EIS may not merely list, or only perfunctorily describe mitigation measures. Rather, the EIS should critically evaluate the effectiveness of proposed mitigation measures.

The DEIS fails to identify or evaluates insufficiently mitigation measures aimed at protecting polar bears. Rather than identify any particular mitigation measures with specificity, the DEIS adopts the approach of referring to mitigation measures in very general terms, grouping them under the following three broad categories: 1) conditions attached to incidental take authorization that Fish and Wildlife Service will issue pursuant to §101(a)(5) of the Marine Mammal Protection Act; 2) oil spill response plans (“OSPRs”) that MMS will approve; and 3) information to lessees (“ITL”) provisions that have been developed by MMS. DEIS at IV-241–45. This discussion of mitigation measures, identified only in abstract, overly general terms, deprives the public of a meaningful opportunity to comment on the desirability of these measures. Because many of these identified measures have not yet been developed and so cannot be identified with specificity or discussed in any detail (e.g., conditions to incidental take authorization and contents of OSRPs), the public cannot accurately assess MMS’s conclusory determination that such measures will prove effective. This approach undermines MMS conclusion that the mitigation measures will prevent a significant impact to polar bears and impermissibly defers analysis of identified mitigation measures in violation of NEPA.

Ultimately, the DEIS concludes that because of the cumulative impacts of overharvest, global climate change and industrial activities, “continued close attention and effective mitigation practices with respect to polar bears are warranted.” DEIS at V-52–53. The DEIS does not identify these mitigation practices with specificity. Nor does the DEIS establish that any previously identified mitigation measures are effective or will continue to be so in the context of a dramatically changing arctic environment. In short, the DEIS fails to evaluate or even identify these necessary mitigation measures, in violation of NEPA.

The DEIS identifies future increases in polar bear-human conflicts as a concern arising from industrial development along Alaska’s arctic coast. DEIS at IV-235, III-79. Such conflicts can prove lethal to polar bears. MMS fails, however, to suggest any mitigation measures to address this anticipated impact.

To the limited extent that the DEIS actually identifies specific mitigation measures, these prove deficient to adequately address and avoid anticipated impacts to the CBS polar bear population. MMS relies on OSRPs to minimize adverse impacts from oil spills. Any such response plan depends on timely detection of oil spills. MMS indicates that recently, chronic leaks in oil pipelines have gone undetected despite MMS regulations that require monitoring measures. MMS observes that its regulations “are only as effective as their enforcement.” DEIS at IV-244. Yet, the DEIS fails to prescribe measures to ensure improved enforcement of MMS monitoring regulations.

MMS’s apparent assumption that lessees will be able to effectively respond to oil spills is not supported by the facts. The DEIS indicates that “effective mitigation measures will be developed” to minimize potential impacts to polar bears “on a case-by-case basis.” DEIS at IV-245. MMS identifies two methods of response to an oil spill: mechanical methods and non-mechanical methods. MMS anticipates that mechanical

methods will be unavailable during broken ice periods (or during the majority of any calendar year), yet the DEIS identifies only in situ burning as a non-mechanical method for containing or eliminating spilled oil. In situ burning will not prove effective if spilled oil is trapped beneath sea ice for any appreciable period of time. Indeed, MMS fails to present any means of effectively responding to oil that is spilled beneath sea ice. If MMS lacks any such means, it should openly acknowledge this. If MMS is aware of an effective method for responding to oil spilled beneath sea ice, the EIS should clearly identify it and establish its effectiveness. Absent identification of an effective method of responding to an underwater oil spill that occurs during the winter, MMS cannot reasonably conclude that the potential impacts to polar bears from an oil spill are not significant.

The DEIS identifies several ITLs as mitigation measures. Critical provisions of these ITLs, however, contain precatory language rendering them effectively unenforceable. The ITLs cannot, as MMS seems to suggest, moderate the impacts of offshore oil and gas leasing and development in the Chukchi Sea unless lessees voluntarily act in accordance with the ITLs. MMS arbitrarily assumes that lessees will voluntarily abide by the precatory guidance included in the ITLs. MMS likewise assumes that lessees will obtain authorization to incidentally take marine mammals, and subject themselves to the consequent conditions imposed by Fish and Wildlife Service. MMS neglects, however, to establish that such an approach would prove economically rational for all lessees. The DEIS improperly relies on these mitigation measures in violation of NEPA.

The DEIS suggests that whale carcasses should be removed from the coast to mitigate the potential impacts of an oil spill. DEIS at IV-245. MMS' reliance on this measure to reduce impacts to polar bears is misplaced. Any such action is not within the purview of MMS to effectuate and should not be relied on by the agency as an effective mitigation technique. Furthermore, removal of whale carcasses will likely have the countervailing effect of increasing the mortality of polar bears in the SBS and CBS populations. If accomplished, it will deprive bears of access to a vital food source during the fall, when bears have minimal access to alternate food sources. Preventing bears from utilizing this important food source will diminish the physical condition of individual bears and may lead to increased mortality.

### **Oil Spill Analysis**

The DEIS erroneously concludes that an oil spill will not result in significant adverse impacts to polar bears. See DEIS at IV-234. Moreover, its discussion of the risk posed by spilled oil is incomplete in several critical respects, in violation of NEPA.

Although the DEIS identifies chronic small leaks in an underwater pipeline as a potential threat, it fails to analyze the likelihood of detection of such leaks, the efficacy of response to any such persistent leak, nor the potential impact thereof. See id. Nor does the DEIS forecast the likelihood that spilled oil will contact and harm individual polar

bears apart from contact with large congregations of polar bears. The EIS should take a hard look at these potential impacts.

Leads and Polynyas provide critical habitat to polar bears during the winter and spring, and polar bears may congregate at these features in relatively high concentrations. The draft EIS inexplicably fails to evaluate the potential impacts to polar bears from oil reaching these recurrent features. The draft EIS also neglects to evaluate the potential impacts to polar bears from spilled oil reaching openings, which occur during spring break up and fall freeze up and that are preferentially occupied by polar bears.

The draft EIS insufficiently discusses impacts to polar bears in coastal areas. The draft EIS reports the probability of oil reaching Barrow in the summer, DEIS at IV-238, despite the fact that polar bears aggregate there during the fall. The DEIS should include the probability of spilled oil contacting Barrow and other high-use coastal areas during both the summer and the fall.

The discussion of the potential impacts from a large oil spill on polar bears concentrated at different coastal locations improperly segments the CBS polar bear population and fails to present the aggregate probable impact. The draft EIS suggests that there is a 13% probability of a concentration of polar bears on Wrangel Island coming into contact with spilled oil within 60 days of a spill and an 11% probability of a concentration of polar bears at Barrow coming into contact with spilled oil within 60 days of a spill. DEIS at IV-238. The draft EIS then concludes that the probability of an oil spill contacting “a polar bear aggregation within 60 days” is less than 13%. DEIS at IV-245. This is misleading and inaccurate. Rather than simply selecting the higher value as the overall probability, the draft EIS should report the combined likelihood of spilled oil reaching Barrow or Wrangell (somewhere between 13% and 24%).

Similarly, MMS’s segmentation of the potential risk that spilled oil will affect different species understates the potential threat and is misleading. The draft EIS discusses the risk that an oil spill poses to wildlife, species-by-species. Accordingly, it presents discrete probabilities that spilled oil will contact significant concentrations of individual species. See, e.g., DEIS at IV-238, IV-225–26. By segmenting the risk to wildlife populations from an oil spill, the DEIS is able to report relatively low probabilities that any single species will be significantly adversely affected. By doing so, however, the draft EIS fails to accurately report the overall risk that wildlife will be significantly harmed by an oil spill. The draft EIS should supplement its analysis of the risk of an oil spill by reporting a single combined probability that spilled oil will contact one or more sizeable congregations of wildlife.

Finally, the evaluation of the potential impacts to polar bear populations from spilled oil should clearly state that the anticipated sub-lethal long-term effects do not depend on the particular location of an oil spill. The EIS should explicitly address the likelihood of an oil spill causing sub-lethal, long-term effects to polar bears and Pacific walrus.

## Cumulative Impacts Analysis

The DEIS fails to adequately assess the cumulative impacts of offshore oil spills on polar bears. Though purporting to evaluate the overall likelihood of an offshore oil spill affecting the CBS or SBS polar bear populations, the DEIS merely refers to the truncated discussion of the potential for an oil spill included in the environmental assessment prepared by MMS in connection with Lease Sale 202 in the Beaufort Sea. DEIS at V-49. That document, in turn, fails to rigorously evaluate the likelihood of an oil spill occurring as a result of past or future lease sales, indicating merely that “[d]evelopment of additional offshore production facilities and pipelines will increase the potential for large offshore spills.” MMS, Environmental Assessment for Proposed OCS Lease Sale 202, 55 (August 2006). Instead of segmenting the risk of an offshore oil spill by discretely referring to the risk of a spill in the Beaufort Sea, the EIS should combine the probability of a spill in the Chukchi with the probability of a spill in the Beaufort and present an additional figure representing the overall probability of a large offshore oil spill. Moreover, the DEIS should account for all past, present, and reasonably foreseeable future lease sales in the Chukchi and Beaufort Seas when deriving these combined probabilities, including all lease sales provided for by the proposed five year plan for OCS lease sales (2007-2012). See 40 C.F.R. § 1508.27(b)(7).

The draft EIS overlooks the potential impacts of past, present and reasonably foreseeable future onshore leasing, exploration and development of oil and gas deposits in coastal areas of the National Petroleum Reserve-Alaska in violation of NEPA. Such development has the potential to further exacerbate human-polar bear conflicts during the fall when bears congregate along the coast of the Chukchi Sea, as well as to adversely affect polar bears’ terrestrial denning habitat. The EIS should address these cumulative impacts.

Finally, the draft EIS arbitrarily concludes that the combined impacts to polar bears from global warming and oil-related industrial activities merit only “continued close attention and effective mitigation practices.” DEIS at V-53. Global warming induced changes are already evident in polar bear populations in Alaska and elsewhere. See, e.g., Eric Regehr, et al., Polar bear population status in the southern Beaufort Sea. The draft EIS forecasts additional impacts to “virtually every aspect” of polar bears’ existence as a result of the synergistic interplay between global warming and industrial activity in the Arctic.<sup>17</sup> DEIS at V-52. The draft EIS overlooks the dramatic changes to the Arctic marine environment that have already adversely affected polar bear populations in Alaska. Consequently, the draft EIS improperly adopts a “wait and see” approach to restricting offshore oil and gas activities that will further harm polar bears. Moreover, the draft EIS relies on “effective mitigation practices” without specifically

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<sup>17</sup> These include: a decline in ringed seals, polar bears’ primary prey species and a subsequent decline in polar bears’ physical condition, reproductive rate, survival rate, and populations; increased polar bear-human conflicts, especially during the ever-lengthening fall open water season; increasing incidences of polar bears drowning and starving to death; increasing destruction of polar bears’ terrestrial denning habitat; and increasing impediments to pregnant females reaching terrestrial denning regions. DEIS at V-49–52.

identifying these measures or critically evaluating them to ensure that they are effective or will remain so in the future. DEIS at V-53. Pursuant to NEPA, the EIS may not rely on these unspecified, unimposed and unproven mitigation measures to reduce identified impacts.

### **Pacific walrus**

The Pacific walrus population is presently in decline. Population declines have contributed to declining subsistence harvest of Pacific walrus. Oil and gas industry activities in the Chukchi Sea, including seismic activities, aircraft and vessel traffic, and the risk of oil spills may inhibit walrus recovery or may cause further decline of the Pacific walrus population. MMS should take steps to stem further declines in walrus populations and the subsistence harvest of walrus.

The EIS should identify those areas where the edge of sea ice frequently occurs over waters less than 60 m deep. The risk posed to Pacific walrus by spilled oil is especially acute in such areas, see DEIS at III-71, and such areas should be specifically discussed in MMS's evaluation of the potential risk from an oil spill. The EIS should prescribe measures to eliminate such risks.

The draft EIS arbitrarily concludes that seismic activities will only negligibly affect Pacific walrus.

Likewise, the draft EIS arbitrarily concludes that Pacific walrus in sea ice habitats will not react to aircraft at elevations above 1,000 feet. It does not indicate any elevation threshold above which Pacific walrus at terrestrial haulouts will not react to aircraft. Any additional displacement of Pacific walrus from forage areas will likely further contribute to declines in the walrus population. Unless MMS can establish that industrial activities will have no effect on Pacific walrus in forage areas, it should conclude that such activities will significantly impact Pacific walrus.

Walrus seek the shallower waters of the Chukchi and the Hannah Shoal area and northeast corner is a recognized use area for walrus. Similar to impacts to gray whales, walrus could be particularly affected by development in the northeast corner (Hannah Shoal area) in several ways: bioaccumulation of toxins from the mollusks they feed upon; loss of food source due to infrastructure, noise or pollution; traffic impacts; and oil spills.

The potential for population affects for walrus should be assumed to be high. The population is already in decline and being impacted from climate change. Climate change impacts are not yet well-documented, but are acknowledged in the scientific literature. Walrus impacts from development could be secondary and go undetected due to a lack of study and cooperation with Russia on population abundance studies. As noted in the draft EIS, as loss of ice occurs walrus are forced to use land haulouts creating a host of impacts (trampling of calves, loss of food due to local overconsumption and competition). DEIS at III-72. These impacts would be magnified in the event of an oil spill. With large concentrations of the population in few areas, the risks for a large number of animals to

be impacted are great. This is not analyzed in the DEIS. Additionally, without baseline abundance numbers there will be little ability to know if the walrus population is being effected by development. As such, mitigation and monitoring would be rendered useless.

Also problematic is the draft EIS's inaccurate estimation of the seafloor area likely to be impacted by pipeline construction. The MMS provides no substantiation for cutting the estimate for Chukchi seafloor acreage disturbance in half compared to Beaufort Sea development. The draft EIS states:

The subsea soil in the Chukchi Sea is mostly unconsolidated, as explained in Section III.B.1.b. Twelve-foot deep pipeline trenches in unconsolidated Beaufort Sea soil would have been up to 130 ft wide at the top, as estimated for a development pipeline to the Liberty Prospect (USDOJ, MMS, 2002:Sec. III.C.3.e(2)(b)2b)). If we assume that Chukchi pipeline trenches would be about half that width (70 ft), about 1,000-2,000 acres of Chukchi seafloor might be disturbed during the burial of production pipelines.

There is no reason for MMS to assume there would be less width to pipeline trenches in the Chukchi. This greatly reduced estimation of disturbance to the seafloor renders useless and fundamentally flawed the draft EIS's analysis of impacts for species that depend on the seafloor habitat, particularly walrus.

The DEIS identifies the northeast corner of the proposed lease area as being highly "inhabited by mollusks (clams) and other fauna." It also notes that recolonization is slow and will take up to 9 years, with clams the last to recover – requiring over a decade. The walrus could have serious feeding impacts due to such a disturbance given its reliance on clams and benthic fauna. The likelihood of population effects from just this impact is significant. However, this analysis is not provided in the DEIS nor are population level effects noted for walrus. Rather, the impacts to walrus are greatly minimized.

It is highly probable that with development the walrus would undergo undetected population level effects. Given that the Pacific walrus is the only healthy population of walrus in the world (with only one small population of Atlantic walrus remaining elsewhere), an entire species of marine mammal is at risk with the proposed leasing plan.

The draft EIS fails to conduct *any* cumulative impact analysis of Pacific Walrus

### **Beluga**

There are different impacts to toothed cetaceans, as documented by EVOS, from oil spills. These impacts occur as a result of chronic inputs into the marine environment from either detected or undetected oil leaks or regular permitted discharges. Toothed whales, primarily beluga, in the proposed leasing area are at risk from chronic or oil spill contamination due to the potential bioaccumulation of toxins. The beluga is already experiencing serious health issues that are proving to impair the health of the Inuit in Canada. Toxicity levels are high enough to now require a limit on the number of beluga

taken in Canada for subsistence. The Alaska beluga are already showing some of these effects.

There are no abundance estimates and little distribution information for beluga. Scientists know very little at all about calving and feeding locations. However, agency scientists recognize that beluga are not ubiquitous and tend to form groups the use particular places on a regular basis. This means that beluga tend to form regional local populations. The draft EIS fails to take this fact into consideration and instead relies on an outdated interpretation that considers only total numbers of animals. This approach could seriously impede subsistence use of the beluga in key areas and potentially eliminate the beluga in the case of a large spill from certain traditional hunting areas. In Pt. Lay this impact could prove devastating as the community relies mainly on beluga for subsistence.

#### G. Terrestrial Mammals

Development in the Chukchi would involve construction of a major new onshore pipeline that would transect the entire Northwest Planning Area of the NPR-A and continue on into the Northeast Planning Area. Two caribou herds would be affected by development in the Northwest Planning Area—the Western Arctic Herd (WAH) and Teshekpuk Lake Caribou Herd (TCH). This could interfere with caribou movement and limit access to important habitat and raises serious concerns about the overall long-term cumulative effects of industrial development on both herds. The draft EIS does not adequately evaluate the cumulative effects of industrial development on caribou associated with this new pipeline and development in both the Northwest and Northeast planning areas. It also does not address the potential of rolling back habitat protection for the TCH calving grounds within the Northeast Plan.

Although the concentrated calving area of the WAH is located largely outside the southwestern border of the Northwest NPR-A planning area, significant summer and transitional use occurs within the area that could be transected by a massive new pipeline. Oil and gas development may have substantial effects on caribou during the summer season—not just during calving. Summer is the season when caribou cows must concentrate on foraging to meet the demands of lactation and gain weight to achieve a threshold that enables conception in the fall (Cameron et al. 1993). Reproductive pauses are known to occur if the necessary weight gain is not achieved during summer (Cameron 1994, Cameron and VerHoef 1994, Gerhart et al. 1997, Cameron et al. 2000), which may lead to decreased productivity in the herd (Cameron et al. 2002). Summer is also the season when caribou are harassed by insects. Oilfield industrial infrastructure may further compound insect harassment during this critical period due to avoidance by caribou of surface development resulting in reduced access to preferred habitats (Curatolo and Murphy 1986, Murphy and Curatolo 1987, Nellemann and Cameron 1998, Cameron et al. 2002).

This CAH is the largest in Alaska and can be considered an ecological keystone population in northwestern Alaska. Many Native villages throughout northwestern Alaska depend on this population for their subsistence use. Because the Western Arctic

Herd is so much larger and so many more people depend on it for their subsistence needs, it will be critical to thoroughly evaluate the long-term cumulative effects of oil development and transportation infrastructure on this population. The DEIS did not adequately address the long-term potential impacts of oil and gas development on the WAH.

Development of a pipeline in the NPR-A is also a concern for the Teshekpuk Lake Caribou Herd, which now numbers about 40,000 animals (ADF&G unpublished data) and is an important subsistence resource for the villages of Barrow, Nuiqsut, Atqasuk, Wainwright, Anaktuvuk Pass and Point Lay (Carroll 2002, Yokel 1992). The northeastern portion of the Northwest Planning Area, between Dease Inlet and Ikpikuk River, has been identified as caribou insect relief habitat (BLM 2003). This is also an area of high oil potential. Thus the potential for impacts to caribou during the summer insect season is high for the reasons cited above in reference to the WAH.

Carroll (personal communication 2002) has identified several characteristics of the TCH that must be considered in future management, research, and conservation activities. The TCH is significant for subsistence hunting for several of the North Slope villages, including Barrow, Atqasuk, and Wainwright. It is also important periodically for other villages such as Anaktuvuk Pass and Nuiqsut. Because as much as 8-9% of the herd is harvested annually, Carroll suggested that any negative effect on population recruitment could have a strong impact on local hunters. Carroll also reported that the TCH demonstrates strong fidelity to a small calving area around Teshekpuk Lake and that calves born in this area have a higher survival rate than those born during migration. Carroll suggested that because most caribou of the TCH have been exposed to minimal development activity, they may react more strongly to industrial disturbance than caribou that may have become more habituated to such activity.

#### H. Subsistence and Cultural Resources

For millennia, the communities of Alaska's North Slope have used the marine and terrestrial resources of the Chukchi region for both subsistence practices and cultural identity. Although MMS recognizes the importance of the region's fragile and bountiful ecology to these communities, the agency has neither adequately addressed the disproportionate impacts of Lease Sale 193 on these communities nor adequately consulted with the tribes as required by the Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations and accompanying Presidential memorandum (1994). Furthermore, MMS has failed to achieve substantive Environmental Justice. Indeed, opening the remote Chukchi Sea and shoreline represents yet another milestone in a national oil development strategy that almost seems designed to cause disproportionate impacts on Alaska's remote indigenous communities.

MMS attempts to downplay the magnitude of impacts to subsistence resources by once again using inappropriate significance thresholds. For example, in order for a

subsistence resource impact to be considered significant, one or more important subsistence resources must be unavailable for one to two years. Potentially affected communities have repeatedly indicated that this is much too high a hurdle and that MMS must adopt significance thresholds that reflect the true magnitude of lesser disruptions in subsistence resources, which they consider not only essential nourishment, but the basis of cultural identity.

MMS similarly sets an inappropriate significance threshold for sociocultural impacts. In order to attain significance, an impact must cause chronic disruption of sociocultural systems for two to five years. Again, communities have repeatedly indicated that attaining even a fraction of this level of impact would not only be significant—it could be a virtual death knell for cultures that have existed in the Chukchi region for millennia. To illustrate the capriciousness of these thresholds, consider a scenario whereby a remote Chukchi community loses its main subsistence resources for ten months and is forced into relocation and dependence upon a severely limited non-traditional diet for twenty months. This would not meet the MMS definition of significance.

Placing an elevated burden on communities for several years before impacts are considered significant is not only arbitrary, but ignores the main intent of the concept of environmental justice, which is to prevent low-income and minority communities from shouldering a disproportionate share of the negative environmental effects of an agency action. MMS clearly must re-define their significance criteria.

The draft EIS also fails to include serious consideration of potential human health concerns related to industrialization of the Chukchi. This is an area that should not be overlooked. Given the presence of contaminants in the fats of many of the species subsistence users rely upon, further pollution should not be dismissed so lightly. Moreover, there is a need for a multifaceted human health assessment to reveal all of the potential impacts of the proposal. Aaron Wernham, MD, MS conducted a brief health impacts analysis of the proposal to lease areas around Teshekpuk Lake that identifies the multiple issues arising from this type of proposal that need to be addressed. See Wernham, The Final Amended Integrated Activity Plan/Final Environmental Impact Statement for the Northeast NPR-A: A Brief Analysis of the Potential Human Health Impacts. In it, Werham identified the following potential impacts on community health:

1. Increases in social and psychological pathology, including depression, suicide, domestic violence, and alcohol and substance abuse.
2. Permanent and severe cultural changes as a result of loss of the central, stabilizing role of subsistence practices.
3. Increased incidence of diabetes, obesity, and cardiovascular disease.
4. Increases in pulmonary diseases.
5. Potential increase in cancer related to contaminants.
6. Other contaminant-related effects, including endocrine disruption, reproductive problems, and developmental delay.
7. Changing patterns of infectious disease.

8. Changing patterns of sexually transmitted diseases.
9. Increases in accidental injuries and deaths.

Id. at 5.

MMS also fails to meet their burden to adequately address cumulative impacts on subsistence resources, sociocultural systems, and Environmental Justice. Despite the extensive list of potential impacts to subsistence resources such as bowhead whales and caribou from both this lease sale and ongoing development of the Beaufort Sea and NPR-A, MMS arbitrarily concludes that routine operations will not cause any significant cumulative impacts. MMS further concludes that a large oil spill “could” cause significant impacts to biological resources and sociocultural systems,<sup>18</sup> but concludes that a large oil spill is “unlikely.”<sup>19</sup> Yet MMS elsewhere admits that the likelihood of an oil spill, just for the life of this individual lease sale, is 40%. Considered cumulatively with other lease sales in the Beaufort, it is apparent that an oil spill is not only likely, it is a virtual certainty. It is unclear how MMS considers this insignificant.

These statements also contradict statements in the Draft EIS for the Proposed 5-Year Plan 2007-2012, where MMS states:

1. Significant cumulative effects on subsistence resource use are possible and likely.<sup>20</sup>
2. During the 2007-2012 Leasing Program, the cumulative impact of one or more important subsistence resources becoming unavailable, undesirable for use, or greatly reduced in numbers for a period of 1 or 2 years for one or more Alaska coastal communities is very likely.<sup>21</sup>
3. If present rates of climate change continue . . . rapid and long-term impacts on subsistence resources (availability), subsistence-harvest practices (travel modes and conditions, traditional access routes, traditional seasons and harvest locations), and the traditional diet could be expected.<sup>22</sup>

It is unclear how MMS reconciles these conclusions with contradictory statements proffered in the Chukchi Lease Sale 193 Draft EIS.

It is clear that Lease Sale 193 will cause significant impacts to both subsistence resources and sociocultural systems. Instead of addressing these issues and seriously confronting this failure to achieve Environmental Justice, MMS inflates significance thresholds, offers contradictory statements designed to justify moving forward with the

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<sup>18</sup> DEIS at V-3.

<sup>19</sup> DEIS at V-3.

<sup>20</sup> 5 Yr. Plan DEIS at IV-442.

<sup>21</sup> 5 Yr. Plan DEIS at IV-442.

<sup>22</sup> 5 Yr. Plan DEIS at IV-442.

Lease Sale, and attempts to obscure unacceptable impacts to Chukchi communities. MMS must cancel the sale, recognize the cumulative significant disproportionate impacts to communities of Alaska's North Slope, and offer a real vision on how to achieve Environmental Justice.

Inupiat and other local residents have repeatedly opposed oil and gas leasing in the Chukchi Sea and Arctic Ocean and their comments repeatedly ignored. MMS did not visit most of the affected communities during the scoping phase nor during scoping for its Five-Year Plan. MMS has rarely visited Chukchi Sea communities other than Barrow during past lease sale EIS review periods or when past seismic or drilling activities occurred. The public comments submitted on prior Chukchi Sea lease sales, as well as all prior Arctic Ocean lease sales, contain a wealth of traditional knowledge in these hearings testimonies. should be incorporated by reference into this EIS, including:

Chukchi Public Hearings

(<http://www.mms.gov/alaska/ref/publichearingsChukchi/PublicHearings.htm>);

25 Years of Testimony Related to Proposed Activities on the Arctic Continental Shelf and Related Areas from 1975 to 2002

(<http://www.mms.gov/alaska/ref/PublicHearingsArctic/PublicHearings.htm>.)

"Native Voices" in P.A. Miller, D.A. Smith, and P.K. Miller. 1993. Oil in Arctic Waters: The untold story of offshore drilling in Alaska. Anchorage: Greenpeace. 122 pp.

Sincerely,

Dan Ritzman  
Director  
Alaska Coalition

Elise Wolf  
Alaska Watch

Cindy Shogun  
Executive Director  
Alaska Wilderness League

Brendan Cummings  
Staff Attorney  
Center for Biological Diversity

Deirdre McDonnell  
Staff Attorney  
Earthjustice

Melanie Duchin  
Global Warming Campaign  
Greenpeace

Charles Clusen  
Director, Alaska Projects  
Natural Resources Defense Council

Pam Miller  
Arctic Coordinator  
Northern Alaska Environmental Center

Whit Sheard  
Alaska Program Director  
Pacific Environment

Eleanor Huffines  
Alaska Regional Director  
The Wilderness Society

Anne Wilkas  
Interim Executive Director  
Trustees for Alaska